



The Impact of Fixed Exchange Rate Policy on Inflation In The Iraqi Economy for the period (2004-2023)

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Abstract

This study aims to verify a long-term correlation between Iraq's official currency rate and inflation rate from 2004 to 2023, utilizing the ARDL bounds test approach for joint integration. This is carried out following an assessment of the series' stability using authorized tests based on yearly data. Numerous findings from the study confirmed a link between the variables. The Econometric method demonstrated that the relationship between the independent variable (FEX), which stands for the fixed exchange rate, and the inflation rate variable (INF) validated the research hypothesis by presenting the results of the long-term estimation of the existence of a positive and significant relationship between the economic variables. This suggests that the fixed exchange rate regime enhances the impact of changes on the stability of Iraq's inflation. The findings of the ARDL test showed that there was a long-term equilibrium link between the fixed exchange rate and inflation. The inflation rate (INF) will rise by 143 for every 1% increase in the currency rate (FEX) and vice versa, assuming all other factors affecting the model stay the same. As a result, the study suggests that in order to control inflation rates, the monetary authority must maintain stable exchange rates, choose the exchange rate accurately, and decide whether to alter the foreign exchange rate.

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Introduction

Exchange rate policies are part of the economic policies on which the Iraqi economy depends, as these policies significantly affect most external and internal variables. Exchange rates are significant in all countries due to their economic impact. However, determining the exchange rate is not a simple matter, as it is complex. The exchange rate is the rate that determines the value of the local currency against the foreign currency. It is also an intermediary tool for trade exchange and reflects the value of goods and services within the country. The exchange rate cannot be chosen randomly but must be based on economic indicators and policies consistent with the country's economic situation. Many macro variables within the economy affect the exchange rate (Ha et al., 2020), and the research will analyze these variables and the extent of their impact on exchange rates. The exchange rate is a major tool in economic policy, as it can stimulate economic growth if used efficiently. It is also

considered essential in achieving economic stability, as it directly impacts various economic variables. The importance of studying exchange rate fluctuations and their impact on economic performance is highlighted, as this study contributes to clarifying the relationship between exchange rate changes on inflation rates and gross domestic product. Developing countries in general, and Iraq in particular, face multiple and complex challenges in their development path, characterized by significant changes across stages of economic growth. Among these challenges, exchange rate fluctuations stand out, negatively affecting efforts to achieve economic development, economic stability, and the general price level. They undermine efforts to promote economic growth, which is represented by increasing gross domestic product.

In the case of Iraq, the instability of exchange rates is evident, which prompted monetary policy to adopt a fixed exchange rate for its currency, limiting these factors' contribution to supporting economic

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growth rates. The importance of studying the impact of exchange markets is highlighted by the significant disparity between currencies at the global level, as these markets represent an essential tool for dealing with the problems of multiple currencies and their international acceptance. In this context, it has tended, like other countries, to adopt policies aimed at managing exchange rates in order to achieve economic growth and ensure economic balance in light of economic fluctuations and crises, whether local or global. To achieve these goals, Iraq has implemented a set of economic reforms aimed at enhancing the stability of the national economy and reducing the impact of these fluctuations on economic performance.

The impact of the exchange rate on economic variables has been the subject of numerous prior studies, such as Hadi's (2022) research, *The Impact of the Exchange Rate on Some Macroeconomic Variables in Iraq*. Given the numerous economic shifts and crises brought on by the events in Iraq, the study examined how exchange rate policies in the Iraqi economy affected the most significant macroeconomic indicators throughout the 1991–2021 study period. According to the study's findings, there is a direct proportionality over the long run. Because the parallel exchange rate rise is directly correlated with the broad money supply and the GDP, we observe that a 1% increase in the long-term parameters of the independent variables represented by the broad money supply and the parallel exchange rate results in a 3.23–9.75 increase in the GDP rate. There is an inverse link between the trade balance and GDP, so a 1% rise in the trade balance results in a 3.27 fall in GDP.

(Wafaa Ibrahim Askar, & Raghad Hussein Ali, 2014) In his research, the impact of foreign exchange rate fluctuations on some economic variables (GDP, trade balance, inflation) in Iraq for the period 2010–2021 addressed the reciprocal relationship between the exchange rate and the trade balance, i.e. all commercial and financial transactions on the debit side of the balance of payments are represented by the demand for foreign currency and all transactions on the debit side are defined by the supply of foreign currencies. In addition to the fact that the exchange rate plays a significant role in monetary stability, since fluctuations in local exchange rates impact inflation rates, increasing the dollar's value relative to the dinar has a noticeable impact on the general level of prices. Therefore, maintaining exchange rate stability helps to lower inflation and manage its growth rates, particularly since the Iraqi economy lacks the flexibility of its production machinery, lacks diversity, and is restricted to oil

exports. Economic stability can be attained if the variables influencing the exchange rate are under control. In addition, the stability of the exchange rate helps achieve stability for the studied variables in the long term.

Changes in the exchange rate and their effects on a few macroeconomic factors in Iraq over time (2004–2020) was the title of a study (Abdullah, 2023) that sought to demonstrate the effects of exchange rate changes on certain macroeconomic variables in Iraq as well as the type of impact whether positive or negative that these changes had during the study period. The study came to several results, the most significant of which is that the Central Bank's foreign reserves had a noticeable impact on the exchange rate and overall level of prices during the study period. In addition to the recommendations it recommends, the most prominent of which is that it is necessary to limit the powers related to the exchange rate to the Central Bank of Iraq and not to interfere with other parties in the currency. Perhaps the most important of which is the necessity of diversifying sources of income and revenues and not relying on oil revenues that are exposed to fluctuations in the global market, rising and falling from time to time, in order to strengthen and strengthen the exchange rate of the Iraqi dinar against other foreign currencies.

This study's primary goal was to investigate the connection between Nigerian output, inflation, and naira depreciation. The study's findings on the impact of exchange rate depreciation on output were inconsistent. In the medium and long term, impulse response functions caused output to expand due to exchange rate depreciation. However, the reverse (contractionary effect) was noted on the short-term horizon. Generally, these results imply that output expansion is not always the result of implementing a flexible exchange rate system, particularly in the near term. Fundamentally important concerns include things like government credibility, trust, and discipline. However, Nigeria doesn't appear to have comparable issues, which is partially demonstrated in a number of policy implications. According to results from modern models, the parallel exchange rate has a short-term contractionary effect on output. Increases have followed official exchange rate shocks in the money supply, prices, and parallel exchange rates. Among the elements that distort the official foreign exchange rate are prices, the loan rate, and the parallel exchange rate. An accommodating monetary policy, a decline in the lending rate, and improvements in the official exchange rate all accompany innovations in the parallel exchange

rate—the lending rate and price cause many parallel exchange rate changes.

Importance of the research: This study is significant because it clarifies how the fixed exchange rate affects the inflation rate. It reviews these indicators' clear and essential effects, representing one of the main drivers of economic growth. The foreign exchange rate is considered one of the pivotal variables that affect the macro economy, as it is a major tool that affects the effectiveness of monetary policy in influencing economic variables, such as inflation. Studies indicate that the exchange rate is essential in achieving economic stability.

Research problem: The Iraqi economy suffers from fluctuations in exchange rates, which makes these changes an obstacle that sometimes negatively affects the inflation rate. The following question arises: To what extent does the change in the exchange rate of the dinar affect the inflation rate in Iraq? Does the relative fixing of the dinar's value lead to stability in the inflation rate? And what is the response in enhancing the effects of changes in the fixed exchange rate on inflation?

Research Hypothesis :To address the questions raised within the framework of the research problem, the following hypothesis was adopted:

The fixed exchange rate policy enhances changes' impact on the stability of inflation in the Iraqi economy.

Research objective: This research aims to achieve the following:

- Study the conceptual aspects of exchange rates and inflation.
- Analyze the impact of fixed exchange rates on the inflation rate in Iraq.

Theoretical Review:

1. Exchange rate: It indicates how many monetary units of one currency must be exchanged for one unit of another currency. This rate varies according to several economic factors, such as supply and demand for currencies, inflation levels, interest rates, and the political and economic stability of the country. It is an important tool for determining the country's economic performance, as it is used as an indicator of economic stability and affects international trade, inflation, and investment. (Kaboro & Mose, 2021). The foreign currency units needed to buy one local currency unit are the basis for determining the nominal exchange rate. Based on the supply and demand equation, changes are

made according to economic conditions. As for the types of exchange rates, the price of a local currency in terms of foreign currency units is known as the nominal exchange rate and is determined by the exchange market. The actual exchange rate is the accurate price of a local currency compared to other currencies (Krishnaveni et al., 2023). A group of factors affect the exchange rate. They are divided into technical aspects, including market conditions and information about currencies and economic activities that reach the market. Moreover, they are divided into reports on price sources, which affect market movements and answer the question, "What is happening in the markets?" In addition, future expectations about currencies directly affect price movements. Economic factors are related to supply and demand, where the increase or decrease in demand for the national currency affects the price. Monetary policies deal with how the central bank and government handle currency. (Ramasamy & Abar, 2015). As for the fixed exchange rate, it is through the intervention of monetary authorities to determine the exchange rate to monitor incoming and outgoing currencies, as the state can fix its currency exchange with a country with many commercial transactions or with a basket of foreign currencies. It is necessary to know the reason for fixing the exchange rate system, as it loses a tool of economic policy that helps in correcting the trade balance, as fixing the exchange rate reduces the risk and uncertainty in changes that occur in the exchange rate and thus in economic activity decisions and the trade balance. Fixed exchange rates also restrict central banks, affecting the economy (Ergeshidze, 2017).

2. Inflation: Inflation is defined as a sustained increase in prices and is understood as a decrease in the purchasing power of money when purchasing goods and services over a long period. This occurs when the amount of money circulating within the economy increases, leading to an increase in aggregate demand compared to the aggregate supply of goods and services. This leads to higher prices because a large amount of money is chasing a small amount of goods. On the other hand, foreign currency values rise due to this expansion in the money supply. In the short term, a decrease in import costs can positively affect the level of inflation, leading to an increase in institutions' profitability. This profitability motivates institutions to improve their competitiveness compared to other countries (Domaç et al., 2001). As is the case with the multiplicity of definitions of inflation, there have been multiple criteria used to determine the types of inflation, including the criterion of government control, which distinguishes between two types of inflation -

suppressed inflation and apparent inflation - and the criterion of inflationary pressure, which distinguishes between creeping inflation and runaway inflation; the criterion of comprehensiveness, which distinguishes between two types of inflation - actual inflation and partial inflation; and the degree of influence of external factors, which covers one type - imported inflation. Finally, the measure based on the inflation expectations rate distinguishes between two types of inflation: expected and unexpected (Suri, 2003).

3. Theoretical relationship between exchange rate and inflation:

The relationship between exchange rate and inflation is one of the fundamental economic concepts that reflect the interaction between the value of the local currency and the price level within the economy. This relationship depends on the type of economic system and the nature of the monetary policies followed.

The change in the exchange rate reflects the differences in inflation rates between countries. If inflation rises in a particular country, the value of its currency will decline in the long run compared to countries with low inflation.

Where the central bank manages the exchange rate flexibly, high inflation often leads to a decline in the currency's value due to decreased demand. Inflationary pressures may be felt in systems that rely on a fixed exchange rate policy if monetary and fiscal policies do not match the economic reality.

In the case of a decline in the value of the local currency (an increase in the exchange rate), this often leads to a rise in inflation due to the increase in the cost of imports and the increase in the price of production. In contrast, if the value of the local currency rises (a decrease in the exchange rate), this may contribute to reducing inflation due to the decline in the costs of imported goods. Whereas the relationship between the exchange rate and inflation depends on the openness of the economy, the nature of imports, and the currency management system. This relationship has a direct and

substantial effect in import-dependent economies, while in economies with productive diversification, the effect may be less pronounced (Mami Salal Sahib, 2023).

4. Analyze the exchange rate regime and inflation in Iraq

The Central Bank converts part of the liabilities in Iraqi dinars against the dollar received from the financial account of oil export revenues to finance the government's internal spending, as the accumulation of foreign exchange represents Iraq's international reserves, which are used partly as a means of intervention in the money market to absorb current demand and the surplus on the currency (generated from the general budget through its expenditures financed by the Iraqi dinar), through hedging policies, to achieve a balance between supply and demand in the money market and maintain the stability of the local currency exchange rate, so stability requires the Central Bank to raise the nominal exchange rate by a percentage that limits the percentages of increase in inflation rates above its target level that ensures the stability of the value of the local currency. The more inflation increases, the currency's value must be raised to avoid fluctuations in real income and, thus, to avoid fluctuations in aggregate demand. Table 1 shows the development of the exchange rates of the US dollar against the Iraqi dinar in the Iraqi economy during the study period. In 2004, after adopting the exchange rate system managed by the Central Bank through the currency selling window, the official exchange rate was re-evaluated to reach (1460) dinars per dollar, and the value of the dinar improved to achieve (1180) in 2008 with a negative growth rate (-2.80). It continued to decline in the following years, reaching (1207) in 2012 with a negative annual growth rate (-0.82). Then, the exchange rate rose in 2021 to reach (1450) with an annual growth rate (11.19), as a result of the country's financial situation, the high deficit in the general budget, and the inability to pay public expenditures, which prompted the Central Bank to reduce the value of the local currency.

Table 1 Exchange rate, inflation and growth rate in Iraq

year	INF	FEX	Growth rate
2004	26.8	1460	-
2005	37.1	1474	0.95
2006	53.1	1463	-0.74
2007	30.9	1214	-17.01
2008	12.7	1180	-2.80
2009	8.3	1185	0.42
2010	2.5	1185	0

2011	5.6	1217	2.70
2012	6.1	1207	-0.82
2013	1.9	1222	1.24
2014	2.2	1206	-1.30
2015	1.4	1247	3.39
2016	0.1	1275	2.24
2017	0.2	1251	-1.88
2018	0.4	1208	-3.43
2019	-0.2	1201.7	-0.52
2020	3.2	1304	8.51
2021	5.3	1450	11.19
2022	4.3	1450	0
2023	4	1300	-10.34

Source: The Researcher's work is based on the Central Bank of Iraq, General Directorate of Statistics and Research, and Annual Bulletins.

Following the exchange rate policy managed by the central bank led to decreased inflation rates. As shown in Table 1, this indicates the effectiveness of monetary policy in targeting inflation through this mechanism.

Methodology and data:

The research relies on the descriptive and quantitative approach to study the impact of fixed exchange rates on the inflation rate and gross domestic product. This is done using statistical, quantitative and analytical tools, relying on sources and references issued by the Central Bank and the Iraqi Ministry of Planning (2004-2023) based on annual data to analyze the relationship between variables. This data was obtained from the economic reports published by the website of the Central Bank of Iraq, as well as the Iraqi Ministry of Planning, where it was transformed, and this data offers a useful collection of information that the researcher can use to examine the connection and address the earlier study questions. The model's general formula is established using the following formulas:

$$INF = f(FEX) \dots\dots\dots (1)$$

$$\Delta INF_t = C + \sum_{t-1}^n \alpha_1 INF_{t-1} + \sum_{t-1}^n \alpha_2 FEX_{t-1} + \beta_1 FEX + \mu_t \dots\dots\dots (2)$$

Where:

FEX: Fixed exchange rate.

INF: Inflation.

Δ : First difference of the variable. C: Constant term. n: Upper limit of the optimal lag period.

α_1, α_2 : Slope in the short term.

B_1 : Slope in the long term.

μ_t : Random error term.

Results and Discussion

1. Time series stationary test: Before starting statistical estimation of the model, it is necessary to test the stability of the time series, as relying on unstable variables gives misleading results, and the relationship between these variables is not accurate, which is called misleading or false regression. Through it, the stationarity of the series can be detected at $(I_2 I_1 I_0)$ by comparing the critical values test (table values) at the three levels (10% 5% 1%) with the calculated t value.

Table 2: Unit Root Test for Augmented Dickey-Fuller (ADF)

		At level			1 st difference		
		None	Intercept	Trend & Intercept	None	Intercept	Trend & Intercept
Prob 5%	FEX	0.2930	0.7262	0.0317	0.0192	0.0400	0.0027
	INF	0.5595	0.8205	0.0830	0.0096	0.0329	0.0017

Source:

Extracted from Stata₁₇ output

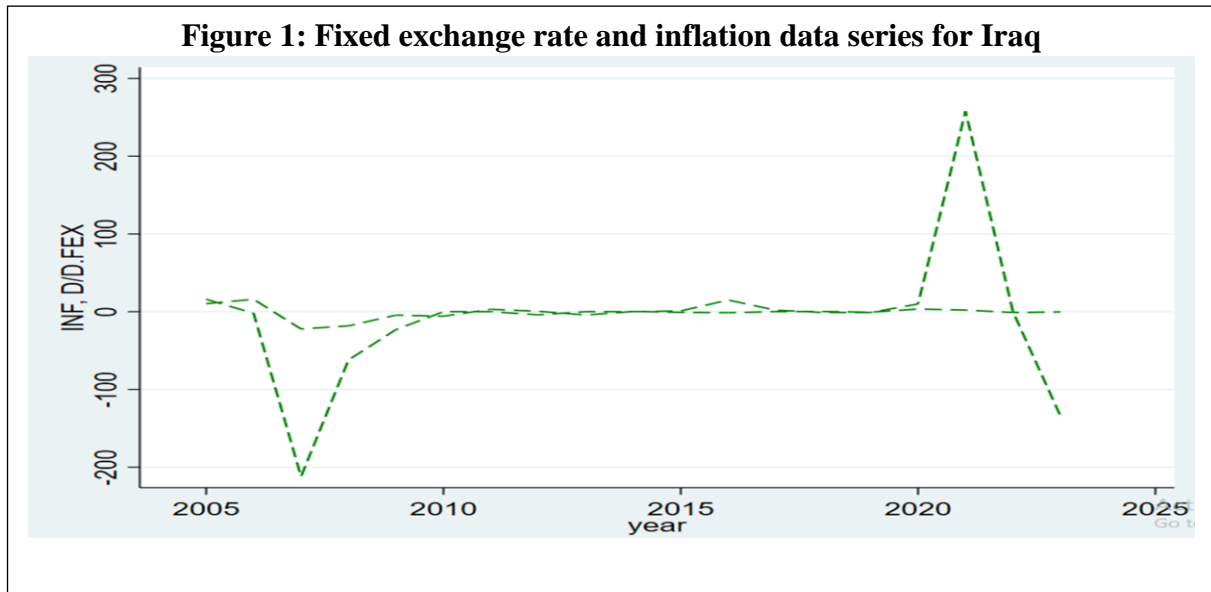


Table 2 shows that the constant exchange rate and inflation variables are non-stationary at level (I_0) and stationary at the first difference. (I_1) at a 5% significance level, i.e. the prob value is smaller than a 5% significance level.

Source: Researchers' work based on the statistical program (STATA 17).

From our analysis, it is clear that the variables are stationary at the first difference. Due to the small sample size and the stationarity of the variables at the first difference, it is possible to use the ARDL bounds test model, which is more appropriate and provides

better results than multivariate cointegration methods in case of small sample characteristics.

2. Cointegration Test:

To detect the existence of cointegration between variables, ARDL uses the F-Bound test, the first step in this model.

Table 3: ARDL Bound test

Pesaran/Shin/Smith (2001) ARDL Bounds Test		
Sample: 2005 thru 2023		
H ₀ : no levels of relationship		
Critical Values (0.1-0.01), F-statistic, Case 3		
F-statistic = 6.710		K= 1
Critical Value Bounds		
I₀ Bound	I₁ Bound	Significance
4.04	4.78	10%
4.94	5.73	5%
5.77	6.68	2.5%
6.84	7.84	1%
T-statistic	-2.831	

Source: Extracted from Stata₁₇ output

The data in Table 3 implies that the variables are simultaneously integrated because the F-statistic value (6.710) is more than the upper limit (I_1) at a significance level of 5%. Thus, by rejecting the null hypothesis (no joint integration between the variables)

and accepting the alternative hypothesis (joint integration), it is confirmed that there is a long-term equilibrium relationship in at least one direction between the official exchange rate and the inflation rate in Iraq.

3. ARDL Test Estimation Analysis:

Table 4 demonstrates that the official exchange and inflation rate variables have a considerable long-term association, with the statistical value of (T) exceeding the tabular value. Furthermore, the null hypothesis is rejected because the P-value value is less than 5%, while the alternative hypothesis is accepted. If the

official exchange rate (FEX) rises by 1%, the inflation rate will increase by 1439908, and if it falls, the opposite will occur. In this case, an appreciation of the exchange rate (an increase in the value of the local currency) is a tool to curb inflation by reducing the cost of imports and stabilizing production costs and aggregate demand.

Table 4: Estimates the model's error correction parameter

ARDL (1 0) regression							
Sample: 2005 - 2023							
Number of obs = 19							
R-squared = 0.4562							
Adj R-squared = 0.3882							
Log likelihood = -61.014371				Root MSE = 6.5422			
	D.FEX	Coefficient	Std. err.	t	P> t	[95% conf. interval]	
ADJ	INF	-.3105045	.1096739	-2.83	0.012	-.5430028	-.0780062
	L1.						
LR	FEX	.1439908	.0543901	2.65	0.018	.0286889	.2592927
SR	_cons	-53.66536	17.14404	-3.13	0.006	-90.0091	-17.32163

Source: Extracted from Stata₁₇ output.

Any short-term imbalance in this relationship will be corrected by the error correction model from its long-term equilibrium at a rate of -.3105045 annually, which means that 31% of the imbalance from the year before will be corrected this year. Therefore, the mechanism of the impact on the inflation rate will rectify any deviations from its long-run equilibrium in the short-run dynamics. The coefficient of determination, or R², is 0.45, meaning that the official exchange rate is one of the explanatory factors that explains 45% of the changes in the inflation rate overall. The remaining 55% represents non-equational changes in the dependent variable.

does not have common issues. According to the findings, almost 37% of the variations in the inflation rate may be explained by the independent variable. With a p-value of 0.0041, below the 5% significance level, and a value of 10.82 for the (F) statistic test, it is statistically acceptable to use the estimated model. Therefore, considering the estimated model's overall relevance, the alternative hypothesis is accepted, and the null hypothesis is rejected.

4. Model quality testing:

There are several tests to determine the model's quality. Table 5 demonstrates that the model has or

Table 5: Breusch–Godfrey LM test for autocorrelation

lags(p)	chi2	df	Prob > chi2
1	0.934	1	0.3338
H ₀ : no serial correlation			

Source: taken from the output of Stata17.

Additionally, Table 6 shows that serial correlation 0.934 probability value (Prob. Chai Square), which at does not affect the model based on the Breusch- 5% is not significant. As a result, the alternative Godfrey test. There is no serial correlation, and the hypothesis is rejected, and the null hypothesis is results are independent of each other, as seen by the accepted.

Table 6: Model Quality Test of the Model

Source	SS	df	MS		
Model	.488007002	1	.488007002	Number of obs	= 20
Residual	.812154394	18	.045119689	R-squared	= 0.3753
				Root MSE	= .21241
Total	1.3001614	19	.068429547		
Parameters				Test values	
Test of heteroskedasticity by Breusch–Pagan/Cook–Weisberg The residual term's fitted values are the variable.				chi2(1) = 2.54 Prob > chi2 = 0.1113	
RESET test Excluded: The residual term's powers of fitted values				F(3, 13) = 2.64 Prob > F = 0.0938	

Source: taken from the output of Stata17.

According to Table 6's Breusch-Pagan test, the model has no instability of variance problem. The null hypothesis's (Prob) value of (0.1113), higher than 5%, shows that the alternative hypothesis is rejected and accepted. According to the Ramsey Regression Equation Specification Error Test, which rejects the null hypothesis and accepts the alternative hypothesis, the estimated model does not have the issue of description error because the statistical values of the F test (2.64) and its P-Value (0.0938) are both greater than 5%.

Conclusions and recommendations:

This study uses the ARDL limits test approach for cointegration to confirm whether there is a long-term relationship between Iraq's official currency rate and inflation rate from 2004 to 2023. The exchange rate is one of the most significant economic factors influencing the Iraqi economy. The long-run estimation results show a positive and substantial link between the short and long-term economic variables. This lends credence to the research hypothesis that the fixed exchange rate policy enhances the effect of adjustments on Iraq's inflation stability. Given that the P-value is less than 5% and the statistical value of (t) is higher than the table, When the findings of the ARDL test demonstrated that there was a long-term equilibrium link between inflation and the fixed exchange rate, The null hypothesis was disproved and the alternative hypothesis was approved. Considering that every other factor affecting the model stays the same, a 1% increase

in the exchange rate (FEX) will result in a rise in 143 in the inflation rate (INF).

Using the official exchange rate, the Central Bank uses a variety of strategies to affect the inflation rate.

The following suggestions are made in light of the findings:

The monetary authorities should activate their role in a way that complements other economic policies by controlling the exchange rate to address structural imbalances and changes in the inflation rate in the Iraqi economy.

To control inflation rates, the monetary authority is required to maintain stable exchange rates, be accurate in choosing an exchange rate, and set the appropriate timing to change the foreign exchange rate.

Those in charge of the Iraqi economy must review the experiences of some countries in this field in order to benefit from them in addressing some of the imbalances affecting the Iraqi economy and its local currency. It is necessary to limit the powers related to the exchange rate to the Central Bank of Iraq and not to interfere with other parties in its work.

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