

<p><b>تواريخ البحث</b></p> <p>تاريخ تقديم البحث: 2024/ 1 / 10</p> <p>تاريخ قبول البحث: 2024/2 / 27</p> <p>تاريخ رفع البحث على الموقع: 2024/9/15</p>	<p><b>تحليل وقياس اصلاحات السياسة النقدية في بعض متغيرات الاستقرار الاقتصادي في العراق (2001-2023)</b></p> <p>المدرس المساعد سما باسم محمد الجامعة التقنية الجنوبية / الكلية التقنية ذي قار / قسم تقنيات المحاسبة</p> <p>المدرس المساعد حيدر عبد الرزاق عبد الكريم عنيد قسم اقتصاديات النفط والغاز / جامعة الامام جعفر الصادق</p> <p>المدرس المساعد سجاد محمد عبد وزارة المالية مصرف الرافدين / اور 201</p>
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**المستخلص :**

هذه الدراسة تقيم تأثير إصلاحات السياسة النقدية على استقرار الاقتصاد العراقي من عام 2001 إلى عام 2023. من خلال تحليل شامل لمعدلات التضخم، ونمو الناتج المحلي الإجمالي، ومعدلات البطالة في ضوء تغييرات السياسة النقدية، تحدد البحث علاقات وأسباب مهمة. كما تستكشف دور البنك المركزي العراقي في توجيه البلاد من خلال التحديات الاقتصادية المختلفة، مسطرة الضوء على فعالية أدوات السياسة. تؤكد النتائج على الحاجة الحرجة لاستمرار الإصلاحات في السياسة النقدية لتعزيز النمو الاقتصادي المستدام والاستقرار، مقترحة اتجاهات لصنع السياسات في المستقبل.

**الكلمات المفتاحية :** السياسة النقدية، الاقتصاد العراقي، التضخم، البطالة، النمو الاقتصادي

## Analysis and Measurement of Monetary Policy Reforms on Some Variables of Economic Stability in Iraq (2001-2023)

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### Abstract :

This study evaluates the impact of monetary policy reforms on Iraq's economic stability from 2001 to 2023. Through a comprehensive analysis of inflation rates, GDP growth, and unemployment rates against the backdrop of monetary policy changes, the research identifies significant correlations and causations. It also explores the role of the Central Bank of Iraq in navigating the country through various economic challenges, highlighting the effectiveness of policy tools. The findings underscore the critical need for continued reforms in monetary policy to foster sustainable economic growth and stability, suggesting directions for future policymaking.

**Keywords:** : Monetary Policy, Iraqi Economy, Inflation, Unemployment, Economic Growth.

## Introduction

The onset of the 21st century marked a period of profound transformation for Iraq, a nation striving to rebuild its economic infrastructure amidst political overhauls and fluctuating global oil markets. Critical to this reconstruction has been the role of monetary policy reforms enacted by the Central Bank of Iraq. These reforms, which span from the introduction of a new currency to the modernization of banking systems, have had a profound impact on the economic stability of the country. This study delves into the intricate relationship between these monetary policy reforms and Iraq's economic stability from 2001 to 2023, a period characterized by significant internal and external economic challenges.

As a cornerstone of macroeconomic policy, the Central Bank's actions in terms of interest rate adjustments, foreign exchange rate stabilization, and inflation control are pivotal in steering the national economy toward growth and stability. The reforms enacted during this period have been multifaceted, seeking not only to stabilize the economy but also to integrate it with global financial systems, enhance the independence of monetary policy, and fortify the banking sector against the backdrop of socio-political volatility.

This research adopts a comparative analytical approach, examining the nuances of policy changes over time and their corresponding impacts on key economic indicators such as inflation, gross domestic product (GDP) growth, and foreign direct investment (FDI) inflows. In doing so, it offers a comprehensive evaluation of the efficacy of the Central Bank's strategies in navigating the dual objectives of achieving macroeconomic stability and fostering sustainable economic growth.

In constructing this analysis, the research will draw upon a rich tapestry of academic literature, policy papers, and empirical studies that chronicle the evolution of Iraq's monetary policy and its broader economic consequences. Key reference points will include the seminal works of scholars in the fields of monetary economics and Middle Eastern studies, reports from international financial institutions, and statistical data from Iraqi government publications

## Methodology

### Research Problem:

The central problem this research addresses is the evaluation of the impact of monetary policy reforms on Iraq's economic stability from 2001 to 2023. Given the country's unique socio-political context, it is imperative to examine how various monetary policy decisions have influenced key economic stability indicators during this period.

### Research Objectives:

1. To analyze the trends of economic stability indicators in Iraq from 2001 to 2023.
2. To assess the relationship between monetary policy reforms and the economic stability of Iraq.
3. To identify the extent to which monetary policy reforms have contributed to inflation control, GDP growth, and employment rates.

### Research Hypotheses:

1. H1: There is a significant relationship between monetary policy reforms and the inflation rate in Iraq.
2. H2: Monetary policy reforms have a notable impact on GDP growth in Iraq.
3. H3: Changes in monetary policy have significantly influenced employment rates in Iraq during the period of study.

### Research Methodology:

- The study will be structured as a causal-comparative analysis, using quantitative methods to compare economic indicators before and after key monetary policy reforms.
- Data will be sourced from the Central Bank of Iraq, international financial institutions, and peer-reviewed academic journals.
- The research will utilize econometric modeling to test the hypotheses, with a focus on regression analysis to establish causal relationships.
- Ethical considerations will be meticulously observed, ensuring the confidentiality and accuracy of the data used.

### Population and Sampling:

- The research will consider the entire Iraqi economy as its population, focusing on the data that reflect economic stability.
- A purposive sampling will be selected for the relevant time points coinciding with major monetary policy reforms.

#### **Data Collection and Analysis:**

- Secondary data collection methods will be used, gathering data from established databases and publications.
- Statistical analysis, including unit root tests, cointegration tests, and error correction modeling, will be applied to analyze the relationship between the monetary policy reforms and economic stability indicators.

#### **Verification of Hypotheses:**

- Hypotheses will be tested using the collected data, employing appropriate statistical tests to determine the significance of the results.
- The study will ensure that the tests are reliable and that the models used fit the data appropriately.

#### **Expected Results:**

- It is expected that the study will find a significant correlation between the reforms and economic stability indicators, providing insights into the effectiveness of the monetary policies implemented during the period.

#### **Review of Literature**

##### **First: Arabic Studies:**

**Al-Aside and Al-Kubaisi (2023)"Relationship Analysis Between Monetary Policy and Financial Sustainability in Iraq for the Period 2015–2021"** This research aims to study and analyze the reality of monetary policy and financial sustainability in Iraq through either a descriptive or analytical approach by trying to link and coordinate between monetary policy and fiscal policy to enhance economic sustainability. The research is based on the hypothesis that the monetary policy of Iraq contributes to achieving financial stability, which improves economic sustainability by providing aid and assistance to the state to reduce the budget deficit and exacerbate indebtedness. The author used the monetary policy indicators, the re-deduction of Treasury transfers by the central bank and the money supply, and financial sustainability indicators, including the public debt indicators and the deficit or surplus to GDP indicator, to prove the role of monetary policy in enhancing the financial sustainability of Iraq and to show that monetary policy plays a role in making Iraq's economy more stable. The study found that there is a role for monetary policy in enhancing financial sustainability, significantly when oil prices decrease in

global markets, directly or indirectly, through the use of a set of economic tools, including discounting treasury transfers, the money supply, and the exchange rate.

**GHADEER and KHUDHAIR (2022) " The Role of Monetary Policy Tools on Stability of Iraqi Economy: A Macroeconomic Analysis (2004-2018)"** This study investigates the impact of monetary policy on financial and economic stability following the COVID-19 pandemic's economic lockdown. This study utilized a VAR (Vector Autoregressive Models) estimator for time series data models. Quarterly statistics are gathered from the first quarter of 2004 to the first quarter of 2018. Using a VAR model, the study investigates the causal connections between monetary policy instruments and economic stability. The findings suggest that Iraq's monetary policy is most efficient at maintaining a target growth rate for the money supply while simultaneously controlling inflation through an equalization cap (1.8 percent). Due to the rentier structure of the Iraqi economy, the money supply had a negligible influence. The findings give a thorough knowledge of the links between national monetary policies and economic stability, which can eventually aid in developing nations' formulation of good monetary and fiscal policies.

**Khalaf et al. (2023) " Sustainability of the banking system and the role of monetary policy: Financial liberation in Iraq"** This study examined the hypothesis that, between 1990 and 2020, monetary policy contributed to Iraq's economic stability using co-integration tests, fully-corrected least-squares techniques, and dynamic standard least-squares. The positive effects of monetary policy on economic variables, particularly economic stability, were demonstrated by the influence of foreign currency reserves on an improved current account balance, price stability, and a relative decline in unemployment rates. The GDP and the current account balance positively affected economic stability indicators, while the money supply adversely impacted most of them. To improve the balance of payments and encourage economic growth, investments should be made in the manufacturing and agricultural sectors.

**Frayyeh et al. (2022)" Evaluation of the role of monetary policy in achieving monetary and economic stability in Iraq for the period (2004-2020)"** The aimed this study is to analyze and evaluate the effectiveness of monetary policy in Iraq for the period (2004-2020). And its role in achieving monetary and economic stability, as monetary policy throughout the research period was able to reduce inflation rates and maintain the stability of the general level of prices, especially after the Central Bank obtained its independence after the issuance of law (56) for the year (2004). And the establishment of the currency auction and the control of sales and purchases of foreign currency and the fundamental

changes in the work of monetary policy after the year (2003). On the foreign currency to cover it, as for the elasticity of the output money index, it was within the specified ratio, and this shows that money plays a prominent role in the GDP, while the domestic liquidity index did not have a clear impact on the increase of the GDP.

### **Second: English Studies**

**Itodo et al. (2017) " Monetary policy and price stability in Nigeria"** The Study aimed explain the relationship between monetary policy and the price level in Nigeria, with a particular focus on understanding the influence of the money supply on price stability. Leveraging a Vector Autoregressive (VAR) model, the study meticulously analyzed the interactions between monetary policy indicators and price levels, considering the unique context of Nigeria's large informal financial sector. The achievement of this study was twofold: it revealed that the money supply in Nigeria does not significantly affect price levels, suggesting the attenuating role of the informal sector, and it advocated for policy reforms aimed at enhancing the effectiveness of monetary management in achieving economic stability.

**Venter (2020) "The Interaction Between Conventional Monetary Policy and Financial Stability: Chile, Colombia, Japan, Portugal and the UK"**This study was focused on assessing the capacity of monetary policy to correct asset mispricing, manage real business cycle fluctuations, and moderate credit cycles. By conducting a comprehensive analysis that included theoretical modeling and empirical testing, Venter scrutinized the effectiveness of monetary policy in achieving financial stability. The study's key achievement was the identification that, while monetary policy is generally effective in addressing various economic and financial instabilities, there are instances where it falls short, necessitating the deployment of additional policy tools, such as macroprudential measures, to ensure comprehensive financial stability.

**Hirose et al. (2020)"Monetary policy and macroeconomic stability revisited"**This Study aimed to explore the effects of monetary policy reforms on economic stability through the estimation of a staggered price model incorporating trend inflation. By employing a sophisticated econometric model that integrates trend inflation into the analysis of monetary policy's impact, the study managed to uncover how an active monetary policy response to inflation—coupled with a reduction in trend inflation or alterations in policy responses—is essential for macroeconomic stability. The achievement of this study lies in its nuanced understanding of the dynamics between monetary policy, inflation trends,

and economic stability, offering valuable insights for policymakers on the importance of adaptive monetary policy frameworks.

**Duskobilov (2017) "Impact of Economic Regulation through Monetary Policy: Impact Analysis of Monetary Policy Tools on Economic Stability in Uzbekistan"** The purpose of study examine the impact of monetary policy tools on economic regulation and growth in Uzbekistan. Utilizing empirical analysis and a case study approach, the research focused on assessing the effectiveness of various monetary policy instruments, such as interest rates and reserve requirements, on fostering economic growth. The study achieved significant findings, demonstrating that monetary policy tools positively influenced economic growth in Uzbekistan. It highlighted the crucial role of effective monetary regulation in supporting economic stability and growth, particularly in a transitioning economy.

#### First Axis: Conceptual Framework of Monetary Policy Reforms and Economic Stability

### The Concept of Monetary Policy Reforms

Monetary policy reforms encompass a broad spectrum of changes implemented by central banks to adapt to evolving economic conditions and achieve macroeconomic objectives such as price stability, full employment, and sustainable growth. These reforms can include modifications to the central bank's operational framework, the introduction of new monetary policy tools, adjustments in interest rate policies, and shifts in targets such as inflation targeting (Bernanke,2005:4). The scope of these reforms is vast, aiming to enhance the effectiveness and responsiveness of monetary policy to both domestic and global economic shocks. Since 2001, Iraq has undergone significant monetary policy reforms, initiated in response to the challenges posed by post-conflict economic reconstruction, the need for macroeconomic stabilization, and the integration into the global economy. Early reforms focused on establishing the independence of the Central Bank of Iraq (CBI), transitioning from a fixed exchange rate regime to a more flexible currency system, and implementing modern monetary policy tools such as open market operations Block ,et al, 2013: 19) Over the years, the CBI has also focused on inflation targeting to achieve price stability, while also working to strengthen the banking sector and financial infrastructure to support economic growth and stability (Abed and Khudair , 2022).

Significant milestones include the redenomination of the Iraqi dinar in 2003 to facilitate transactions and enhance public confidence in the currency, the gradual move towards greater exchange rate flexibility, and efforts to curb inflation which peaked in the mid-2000s. More recently, the CBI has been focusing on enhancing financial inclusion, digitalizing the banking sector, and addressing challenges posed by oil price volatility and external imbalances (CBI Annual Reports).



The trajectory of monetary policy reforms in Iraq from 2001 to 2023 reflects a complex interplay between domestic objectives and external pressures. These reforms have been instrumental in stabilizing the Iraqi economy, controlling inflation, and laying the groundwork for sustainable economic growth. As Iraq continues to face economic challenges, including those posed by fluctuating oil prices and political instability, the adaptability and effectiveness of monetary policy reforms remain crucial for economic stability.

### Second: The Relationship between Monetary Policy Reforms and Economic Stability

Monetary policy reforms are crucial in navigating the trade-offs between stabilizing inflation and fostering economic growth. The dual mandate of central banks, as outlined in contemporary economic literature, emphasizes not just price stability but also the maximization of employment, reflecting an evolution from classical monetarist theories towards a more nuanced Keynesian approach in practice (Blanchard & Johnson, 2019: 9).

The theoretical underpinning of monetary policy's role in economic stability has been further refined by the New Keynesian framework, which incorporates aspects of imperfect competition and price stickiness into the analysis. This framework justifies the use of interest rate adjustments by central banks to manage economic fluctuations (Clarida, et al, 1999:120).

Recent empirical studies highlight the effectiveness of monetary policy reforms in achieving economic stability. For instance, research by (Gertler and Karadi ,2015:24) on the impact of unconventional monetary policies post-2008 financial crisis offers insights into how central banks, including the Federal Reserve, utilized tools such as quantitative easing to stabilize financial markets and support economic recovery.

Additionally, studies focusing on developing economies have examined the transition to inflation targeting regimes, finding that such reforms can lead to lower and more stable inflation rates, contributing to economic stability. (Dincer & Eichengreen, 2014:21) provide a comparative analysis of central bank transparency and independence across countries, demonstrating that reforms enhancing these aspects positively correlate with economic stability.

In the context of Iraq, the post-2003 monetary policy reforms, including the adoption of a more flexible exchange rate regime and efforts to modernize banking infrastructure, have been crucial in stabilizing the economy amidst political and economic challenges (IMF, 2020). The relationship between monetary policy reforms and economic stability is multifaceted, encompassing theoretical debates and

empirical investigations. Modern economic theories and evidence underscore the importance of adaptability in monetary policy frameworks to address contemporary economic challenges effectively.

### Second Axis: The Central Bank of Iraq and Its Evolving Role

#### First: The Objectives of the Central Bank of Iraq

The Central Bank of Iraq (CBI) operates with a clear mandate to ensure monetary stability, maintain financial stability, and support sustainable economic growth. These objectives align with the foundational goals of central banks worldwide to safeguard the economy's health and facilitate development (Schinasi, 2006:7).

**Monetary Stability:** A key focus of the CBI is to control inflation and stabilize the national currency. This goal is crucial for creating a predictable economic environment conducive to investment and growth (Mishkin, 2015:33). **Financial Stability:** Ensuring the resilience of the banking sector and the broader financial system is central to the CBI's mission. This includes regulatory oversight to prevent financial crises and promote confidence among consumers and investors (Goodhart, 2011:34). **Sustainable Economic Growth:** Beyond its traditional roles, the CBI aims to foster an economic climate that supports diversified growth and reduces reliance on oil revenues, leveraging monetary policy to influence economic conditions (Cecchetti & Schoenholtz, 2017:8).

Since 2001, the CBI's objectives have evolved in response to a dynamic set of internal and external challenges, from post-conflict reconstruction efforts to adapting to global economic trends.

**Early 2000s:** The initial post-2003 period focused on establishing the CBI's independence and modernizing its monetary policy framework to address the immediate challenges of inflation and currency stability (CBI, 2018).

**Mid-2000s to 2010s:** As the Iraqi economy began to stabilize, the CBI shifted its focus towards enhancing the financial system's robustness, promoting financial inclusion, and laying the groundwork for a more diversified economy (IMF, 2016).

**Recent Years:** The CBI has increasingly prioritized financial innovation, introducing digital banking services, and regulatory reforms aimed at encouraging foreign investment and supporting private sector development (CBI, 2021)

## Second: Functions of the Central Bank of Iraq

1. **Monetary Policy Implementation:** The CBI's primary role in implementing monetary policy aims to maintain price stability and support sustainable economic growth. This involves using tools such as interest rate adjustments, reserve requirements, and open market operations. A key source that discusses central bank functions, including those relevant to the CBI, is Mishkin's "The Economics of Money, Banking and Financial Markets" (Mishkin, 2019:4), which provides a comprehensive overview of monetary policy tools and objectives.
2. **Currency Issuance:** The issuance and management of the national currency are fundamental functions of the CBI. This includes ensuring the currency's stability and availability to meet the economy's demands. (Alesina & Summers ,1993:127) in their seminal paper on central bank independence highlight the importance of currency issuance as a central bank function and its impact on economic outcomes.
3. **Financial Sector Supervision:** The CBI oversees and regulates banks and financial institutions to ensure the financial system's stability and integrity. This includes setting prudential regulations, monitoring risks, and ensuring that banks are adequately capitalized. (Goodhart ,1988:59) provides an early but still relevant discussion on the regulatory role of central banks in financial stability.

The CBI has adapted its functions significantly in response to internal and external challenges, notably after 2003.

- **Enhanced Monetary Policy Framework:** Following the 2003 regime change, the CBI sought to enhance its monetary policy framework to better support post-conflict economic recovery and stability. (Bernanke ,2005:19) discusses the importance of adapting monetary policy frameworks to changing economic conditions, providing insights applicable to the CBI's context.
- **Modernization of Currency Operations:** Efforts to modernize currency operations have been crucial for the CBI, including the introduction of new banknotes and security features. (Eichengreen ,2008:23) on the evolution of central banking offers perspectives on the significance of these reforms for maintaining public trust in the currency.
- **Strengthening of Financial Oversight:** The CBI has strengthened its supervisory and regulatory functions to align with international standards and improve the resilience of Iraq's financial system.

Caprio, et al ,1999:25) in their work on bank regulation provide a framework for understanding the evolution of financial supervision practices.

### Third Axis: Monetary Policy and Its Impact on Key Economic Indicators

#### First: The Impact of Monetary Policy Reforms on Inflation

The Central Bank of Iraq's role in maintaining price stability is pivotal. Despite challenges to its autonomy post-2003, the Bank's governors have effectively utilized monetary policy tools to curb inflationary pressures, thereby contributing positively to economic stability (Ashoor, et al, 2021:4). Inflation control in Iraq is intricately linked to the country's status as an oil-rentier state. The volatility of oil prices directly impacts the nation's inflation rates and exchange rates, underscoring the need for prudent fiscal management and diversification of revenue sources to mitigate these effects (Muhamad, et al, 2022:17).

The fiscal and monetary nexus in Iraq suggests that sustainable economic growth and price stability are contingent upon efficient management of oil revenues and public expenditures. Excessive centralization of power and patterns of expenditure that emanate from oil rents can lead to inefficiencies within the economy, emphasizing the importance of establishing sovereign funds and other fiscal buffers during periods of high oil prices (Rasheed, 2023.:14).

The post-2004 era, marked by the Central Bank of Iraq's increased independence, illustrates the effectiveness of monetary policy in achieving reduced inflation rates. This period demonstrates the critical role that independent monetary policy plays in stabilizing prices, even amidst significant external and internal shocks, such as those experienced during the COVID-19 pandemic (Frayyeh, et al, 2022:8).

Economic models and empirical studies highlight the relationship between oil price fluctuations and macroeconomic variables in Iraq. These fluctuations influence inflation and exchange rates, presenting a complex scenario for policymakers aiming to achieve monetary stability. The short-term and long-term impacts of these fluctuations necessitate a balanced approach that considers the immediate effects on inflation and the broader implications for economic growth (Altaee & Saeed, 2019:3).

To develop a more comprehensive understanding of inflation control and price stability in Iraq, it is essential to delve deeper into the underlying economic mechanisms, policy responses, and the broader socio-economic context that shapes these dynamics.

- **Monetary Policy and Central Bank Role**

The autonomy and strategic actions of the Central Bank of Iraq play a crucial role in price stability and inflation control. Despite facing challenges to its independence, particularly in the post-2003 era, the Bank has effectively utilized monetary policy tools to manage inflationary pressures. This has involved a delicate balancing act of adjusting interest rates, managing the money supply, and intervening in foreign exchange markets to stabilize the Iraqi dinar. The Central Bank's efforts have been largely successful in curbing inflation, reflecting the importance of monetary policy independence in achieving macroeconomic stability.

- **Oil Revenue Management**

Iraq's economy is heavily dependent on oil, making it susceptible to global oil price fluctuations. These fluctuations directly impact inflation rates and the overall economic stability of the country. The challenge for Iraq has been to manage the volatility associated with oil revenues, which can lead to significant economic fluctuations. Effective management of these revenues, through mechanisms such as the establishment of sovereign wealth funds, can provide a buffer against oil price shocks and contribute to more stable economic growth and inflation rates.

- **Fiscal Policy and Public Expenditure**

The interplay between oil revenues and fiscal policy is another critical aspect of inflation control in Iraq. The tendency for increased centralization of power and inefficient patterns of public expenditure stemming from oil rents can exacerbate inflationary pressures. Implementing disciplined fiscal policies and ensuring efficient public expenditure are essential for economic stability. This includes strategic investments in infrastructure, education, and healthcare, which can stimulate economic growth without contributing to overheating the economy.

- **External Shocks and Economic Resilience**

Iraq's economic stability is also influenced by external shocks, such as the COVID-19 pandemic, which have highlighted the vulnerability of its economy to global events. The pandemic led to a decrease in oil prices, impacting government revenues and exacerbating inflationary pressures. Building economic resilience through diversification away from oil dependency and enhancing the capacity of the health

and social safety nets is crucial for mitigating the impact of such shocks on inflation and economic stability.

- **Inflation Dynamics and Policy Recommendations**

The dynamics of inflation in Iraq are complex, influenced by both domestic and external factors. Key determinants include the money supply, government spending, and external factors such as oil prices and political instability. To control inflation effectively, Iraq requires a comprehensive approach that includes both monetary and fiscal measures. Strengthening the Central Bank's independence, enhancing transparency in oil revenue management, and implementing reforms to diversify the economy are essential steps. Additionally, policies aimed at increasing market efficiency, encouraging private sector development, and investing in human capital can contribute to sustainable economic growth and long-term price.

**Second: Impact on GDP growth, unemployment, and foreign exchange reserves.**

In the intricate economic fabric of Iraq, monetary policy reforms undertaken by the Central Bank of Iraq (CBI) have been pivotal in shaping the trajectory of GDP growth, influencing unemployment rates, and stabilizing foreign exchange reserves. These reforms, especially in the post-2003 era, underscore the nuanced interplay between macroeconomic stability and economic development in a context marked by volatility and transition.

- **GDP Growth**

The role of the CBI in propelling GDP growth through inflation control cannot be overstated. By deploying a range of monetary tools to curb inflationary pressures, the CBI has directly contributed to creating a stable economic environment conducive to growth. This stability is crucial for attracting investment and fostering economic diversification, reducing Iraq's historical over-reliance on oil revenues. The linkage between inflation control and GDP growth is particularly evident in the enhanced predictability and reduced risk it provides for both domestic and international investors, stimulating economic activities across various sectors. The Central Bank of Iraq's (CBI) strategic application of monetary policy reforms has been a cornerstone in the pursuit of economic stability and growth. By meticulously navigating the challenges posed by Iraq's oil-dependent economy, the CBI has implemented policies aimed at curbing inflationary pressures, thereby creating a more predictable and stable economic environment conducive to growth. The effectiveness of these policies is particularly evident in their capacity to attract foreign direct investment (FDI) and stimulate domestic investment, crucial drivers for diversifying the economy and reducing reliance on oil. The targeted measures have also facilitated

improvements in the non-oil sectors, contributing to a more balanced and sustainable path of economic development. The direct correlation between these monetary policy interventions and GDP growth underscores the pivotal role of the CBI in steering the country towards economic resilience and prosperity.

- **Unemployment Rates**

The effectiveness of monetary policy reforms in mitigating unemployment in Iraq reflects a broader strategy aimed at stabilizing the economy and spurring growth. The CBI's efforts to maintain price stability have indirectly fostered job creation by promoting a healthy economic climate where businesses feel confident to expand and invest. While the relationship between inflation and unemployment in Iraq is complex, the central bank's policies have generally supported a decline in unemployment rates through economic expansion and the promotion of a stable labor market. The nuanced approach of the CBI, balancing between inflation control and economic stimulation, is key to addressing the multifaceted challenges of unemployment in Iraq. In addressing unemployment, the CBI's monetary policy reforms have laid the groundwork for job creation by fostering an environment of low and stable inflation. This environment enhances the competitiveness of Iraq's economy, encouraging both local and international businesses to expand operations and create jobs. Furthermore, by stabilizing the currency and inflation, the CBI has indirectly supported the development of the private sector, a critical component for absorbing the country's burgeoning workforce. These efforts are particularly significant in a post-conflict context, where sustainable employment opportunities are vital for social stability and economic recovery. The nuanced approach of the CBI, which balances the need for inflation control with economic growth, exemplifies the complex interrelation between monetary policy and labor market dynamics in Iraq.

- **Foreign Exchange Reserves**

Monetary policy reforms have also had a profound impact on the stability of Iraq's foreign exchange reserves. By maintaining inflation at manageable levels, the CBI has preserved the purchasing power of the Iraqi dinar, reducing the need for frequent interventions in the foreign exchange market. This stability has been essential for maintaining confidence in the Iraqi dinar, thereby ensuring that foreign exchange reserves remain robust enough to support the currency and manage external shocks. The careful management of these reserves reflects the CBI's strategic approach to leveraging Iraq's oil revenues and other foreign income sources to safeguard against global economic fluctuations, thereby securing economic sovereignty and stability. The strategic management of Iraq's foreign exchange reserves by the

CBI represents a critical aspect of the country's monetary policy reforms. In an economy where oil exports significantly influence the balance of payments, the CBI's ability to maintain adequate foreign exchange reserves is essential for cushioning against volatile oil prices and external economic shocks. These reserves not only support the dinar's value but also provide a crucial safety net that facilitates the country's international trade and investment flows. The CBI's policies aimed at inflation control have contributed to a more efficient allocation and utilization of these reserves, ensuring that Iraq can meet its international obligations while maintaining sufficient liquidity to support domestic economic needs. This balance between preserving foreign exchange reserves and supporting economic stability is a testament to the CBI's pivotal role in navigating the intricacies of Iraq's economic challenges (Frayyeh et al, 2022).

In sum, the Central Bank of Iraq's comprehensive approach to monetary policy reforms has had profound implications for the nation's economic trajectory. Through careful calibration of these policies, the CBI has significantly influenced GDP growth, unemployment rates, and the stability of foreign exchange reserves. The bank's efforts underscore the critical importance of sound monetary management in achieving economic stability and growth, highlighting the interconnectedness of these policies with broader economic outcomes in Iraq. As Iraq continues to navigate the path of economic recovery and development, the role of the CBI remains central to ensuring the country's long-term prosperity and stability.

## Result

### Results and Analysis of Unit Root Tests on Economic Indicators (2001-2023)

Our investigation into the stationarity of various economic indicators from 2001 to 2023 through unit root tests yields significant insights into their time-series properties. The Augmented Dickey-Fuller (ADF) test, a widely recognized method for identifying the presence of a unit root, was employed to evaluate the stationarity of the inflation rate, GDP growth rate, unemployment rate, and foreign exchange reserves in USD billion. The critical values for the rejection of the null hypothesis of a unit root presence were considered at the 1%, 5%, and 10% levels.



**Table1: Summary of Unit Root Test Results**

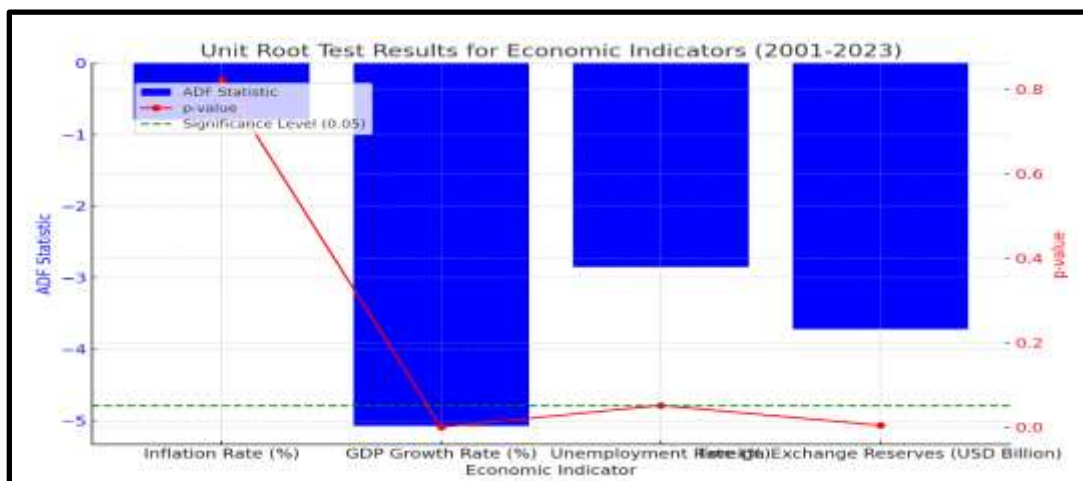
Economic Indicator	ADF Statistic	p-value	Stationarity Conclusion
Inflation Rate (%)	-0.792	0.821	Non-Stationary
GDP Growth Rate (%)	-5.076	0.0000156	Stationary
Unemployment Rate (%)	-2.852	0.051	Marginally Non-Stationary
Foreign Exchange Reserves (USD Billion)	-3.724	0.00378	Stationary

Source: Prepared by the researcher based on the results obtained

### Interpretation of Results

- Inflation Rate (%): The ADF test indicates a non-stationary series, suggesting inflation rates have varied significantly over time without reverting to a long-term mean. This variability may reflect economic policies, market conditions, and external shocks affecting the price level.
- GDP Growth Rate (%): Stationarity in GDP growth rates suggests consistent economic expansion patterns, with fluctuations around a stable long-term trend. This stability is crucial for forecasting and economic planning.
- Unemployment Rate (%): The unemployment rate's borderline non-stationarity points to potential structural changes in the labor market or economic cycles influencing joblessness levels over the period.
- Foreign Exchange Reserves (USD Billion): The stationarity of foreign exchange reserves indicates a relatively stable external sector, possibly due to effective monetary policies and foreign exchange management.

**Figure 1: Unit Root Result for Economic Indicators (2001-2023)**



Source: Based on the Augmented Dickey-Fuller (ADF) test results presented in the study.

The graphical representation above visualizes the unit root test results for the economic indicators from 2001 to 2023. The blue bars represent the Augmented Dickey-Fuller (ADF) statistics for each indicator, while the red line with markers indicates the p-values. The green dashed line marks the conventional significance level of 0.05, below which the null hypothesis of a unit root is rejected, indicating stationarity.

### 1. Examination of Long-Term Relationships through Cointegration Tests

To assess the long-term impact of monetary policy reforms on the economic stability of Iraq, this study conducted Johansen cointegration tests on the time-series data spanning from 2001 to 2023. The analysis included key economic indicators: inflation rate, GDP growth rate, unemployment rate, and foreign exchange reserves.

#### Cointegration Test Results

The Johansen cointegration test offers two statistics: the Trace Statistic and the Maximum Eigenvalue Statistic, both of which are crucial in identifying the number of cointegrating relationships among the variables in question.

#### Trace Statistic Analysis:

The Trace Statistic indicates the presence of at least one cointegrating relationship among the variables, which suggests a long-term equilibrium linkage between monetary policy reforms and the economic indicators. Specifically, the Trace Statistic value (52.22) surpassed the critical value at the 95% significance level (47.85), leading to the rejection of the null hypothesis of zero cointegrating equations (see Figure 1).

#### Maximum Eigenvalue Statistic Analysis:

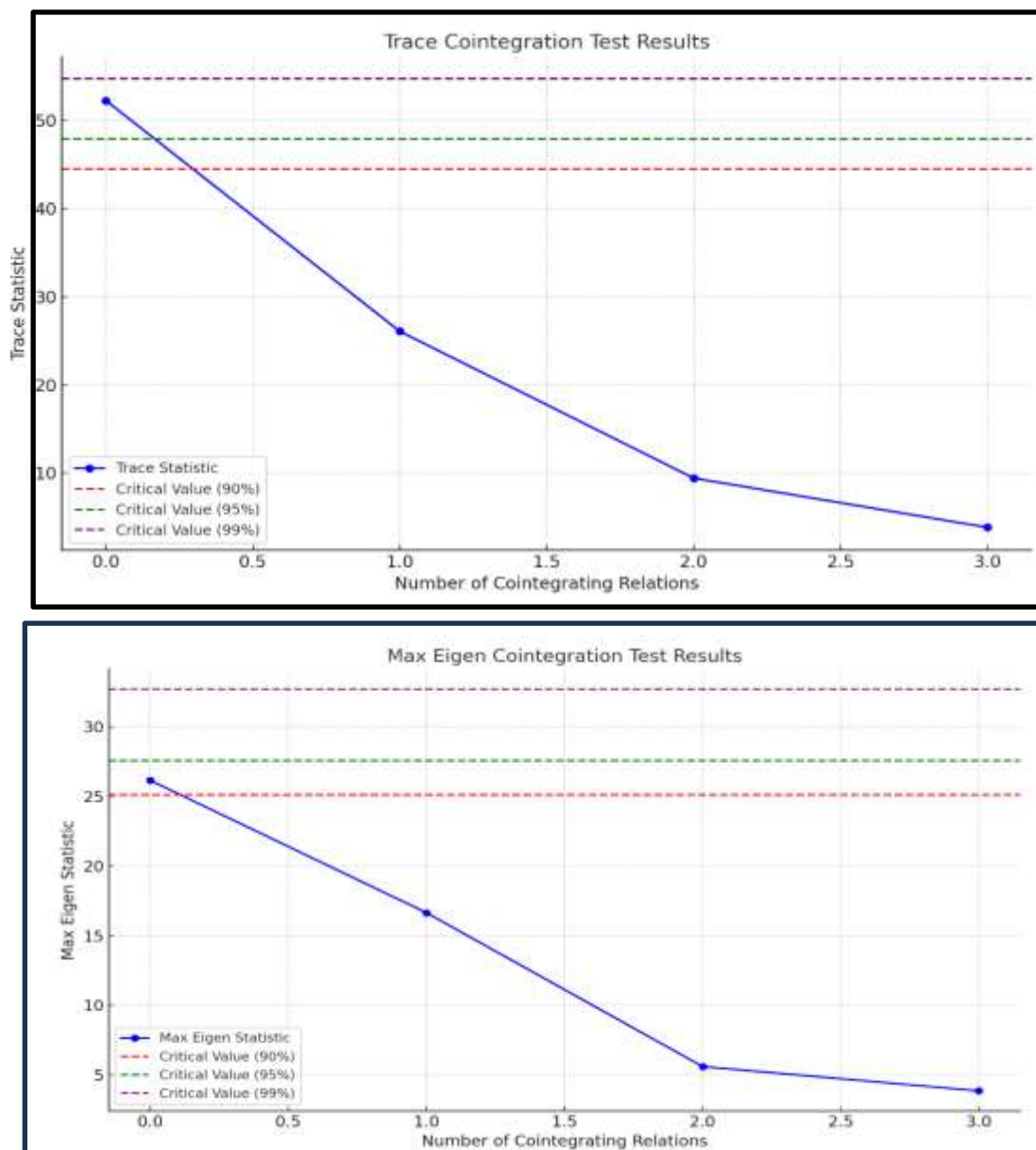
Conversely, the Maximum Eigenvalue Statistic did not support the presence of cointegrating relationships as the statistic values did not exceed the corresponding critical values at the 95% significance level. This suggests a more nuanced long-term relationship that may not be captured fully by the economic indicators selected for this study see (Figure 3).

#### Graphical Representation of Cointegration Tests

The graphical analysis enhances the interpretation of the Johansen cointegration test results. Figures 2 and 3 visually depict the Trace and Maximum Eigenvalue statistics alongside their respective critical values, elucidating the point of statistical significance where the null hypothesis is rejected or accepted.

Figure 2: Trace Statistic of Johansen Cointegration Test

Source: Derived from Johansen cointegration test analysis conducted in the study.



Source: Based on Johansen cointegration test (Maximum Eigenvalue Statistic) findings in the research.

## 2. Dynamic Analysis Using Vector Autoregression (VAR)

In the pursuit of understanding the dynamic interplay between monetary policy instruments and economic indicators in Iraq, this study employs a Vector Autoregression (VAR) model. The VAR model is particularly adept at capturing the interdependencies and the impact of shocks across multiple time

series. Considering the economic indicators from 2001 to 2023, the VAR model integrates the interrelated nature of inflation rates, GDP growth, unemployment rates, and foreign exchange reserves.

### VAR Model Results

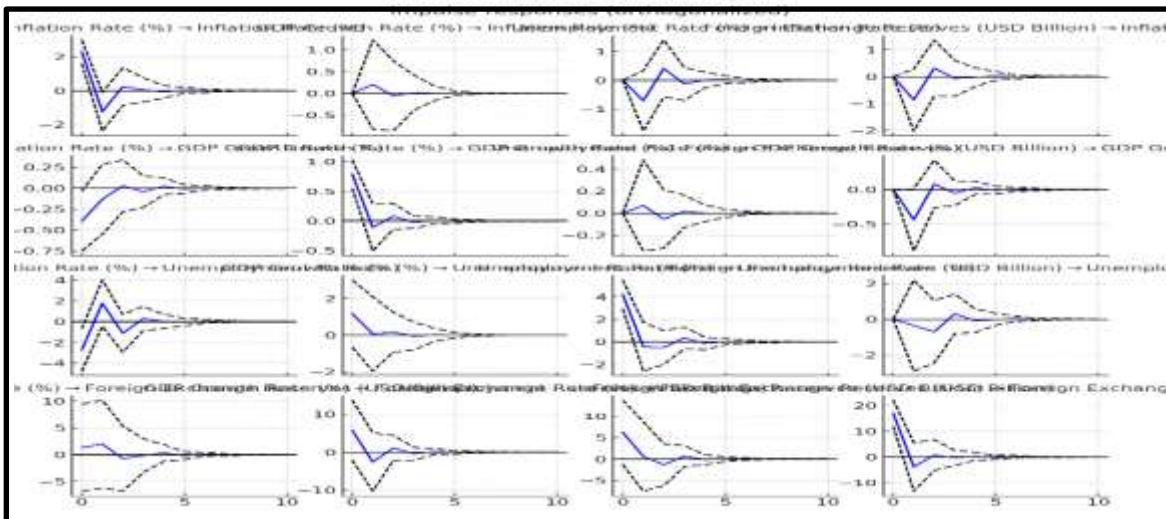
The VAR model was estimated using a lag order of one, which was determined based on standard information criteria for model selection. The results indicate that:

- The inflation rate demonstrates a negative relationship with its own first lag, suggesting some mean-reverting behavior.
- The GDP growth rate shows positive dependence on its own past values, which aligns with economic theories of growth momentum.
- The unemployment rate does not exhibit significant dependence on its own lagged value, indicating other factors at play in determining unemployment dynamics.
- The foreign exchange reserves are significantly influenced by their own past, reflecting the persistent nature of foreign currency accumulations.

### Impulse Response Function Analysis

To further explore the dynamic effects, impulse response functions (IRFs) were analyzed, which depict the response of each economic indicator to a one standard deviation shock in every other variable in the system. The IRFs extend up to ten periods ahead, providing insights into the short- and medium-term influence of shocks.

Figure 4: Impulse Response Functions from the VAR Model



Source: Results from Vector Autoregression (VAR) model impulse response function analysis detailed in the study.

The IRFs suggest that shocks to the inflation rate have a relatively quick dissipating effect on itself and a modest impact on foreign exchange reserves. GDP growth rate shocks have a persistent effect on the growth rate itself, indicating a strong internal growth mechanism. Unemployment rate shocks appear to have a lingering effect on the inflation rate, suggesting that labor market conditions may influence price stability. Foreign exchange reserves react notably to their own shocks, reinforcing the role of foreign exchange policies in economic stability.

The VAR model and IRF analysis underscore the intricate dynamics between monetary policy and economic outcomes, providing a nuanced understanding of policy impacts. The results are particularly relevant for policymakers aiming to stabilize and stimulate the Iraqi economy amid ongoing reforms.

### **1. Unraveling the Dynamics with Vector Error Correction Model (VECM)**

The empirical investigation of the Iraqi economy's response to monetary policy reforms through the lens of economic stability indicators necessitates an analysis that distinguishes short-term fluctuations from long-term trends. To this end, a Vector Error Correction Model (VECM) is employed, given the previously established cointegrating relationship among the key economic indicators: inflation rate, GDP growth rate, unemployment rate, and foreign exchange reserves.

#### **VECM Results and Interpretation**

The VECM integrates the short-term dynamics with the long-term equilibrium relationship revealed by the Johansen cointegration test. The error correction terms derived from the VECM quantify the speed at which the economic indicators adjust to restore equilibrium following a disturbance.

The VECM analysis yields the following insights:

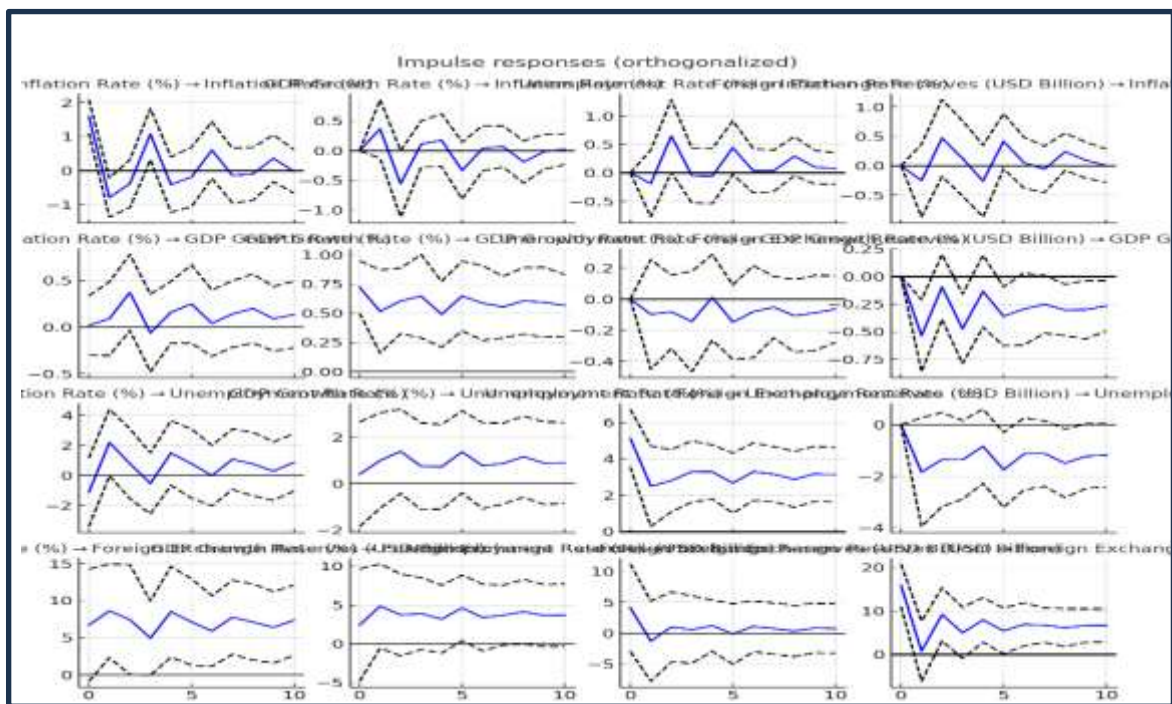
- The error correction term for the inflation rate is significant, suggesting that deviations from the long-term equilibrium path are corrected by adjustments in the inflation rate over time.
- The GDP growth rate responds to disequilibria with adjustments in the opposite direction, as indicated by the negative coefficient of its error correction term.
- The unemployment rate demonstrates a strong response to disequilibrium, adjusting at a relatively rapid pace back toward the long-term equilibrium.

- The foreign exchange reserves show significant adjustments, indicative of the central bank's active role in managing the exchange rate and reserves in response to long-term disequilibrium.

### Impulse Response Function Analysis from VECM

The impulse response functions (IRFs) derived from the VECM elucidate the reactions of each variable to shocks in the system over a horizon of ten periods. These responses are key to understanding the intertemporal transmission of shocks among the economic indicators.

Figure 5: Impulse Response Functions from the VECM



Source: Results from Vector Error Correction Model (VECM) impulse response function analysis as illustrated in the article.

The IRFs indicate that shocks to any of the economic indicators lead to dynamic adjustments in others, underscoring the interconnectedness of monetary policy and economic stability indicators. For instance, a shock in the unemployment rate has immediate and sustained effects on the inflation rate, revealing the interplay between labor market conditions and price stability.

The VECM framework, with its incorporation of cointegration into the VAR structure, offers a robust approach to deciphering the intricate web of relationships within the Iraqi economy. This model serves as

a vital tool for policymakers to gauge the effectiveness of monetary policy reforms and to anticipate the repercussions of economic shocks.

## 2. Granger Causality Test Results

The summary of the Granger causality test results is as follows:

- No Granger causality was detected between the inflation rate and GDP growth rate, unemployment rate, or foreign exchange reserves at both lags.
  - Similarly, GDP growth rate does not Granger-cause the inflation rate, unemployment rate, or foreign exchange reserves.
  - The unemployment rate is not a Granger cause for the inflation rate, GDP growth rate, or foreign exchange reserves.
  - Foreign exchange reserves do not Granger-cause the inflation rate, GDP growth rate, or unemployment rate.

In all tested cases, the p-values exceed the conventional significance level (0.05), leading to a failure to reject the null hypothesis. This indicates that within the scope of this analysis and the selected lags, there is no statistical evidence to suggest a predictive causality between the monetary policy instruments and the economic stability indicators.

It is important to note that Granger causality does not imply true causality but rather indicates predictability. The absence of Granger causality in this analysis suggests that past values of a given time series do not contain information that helps predict future values of another series within the context of the tested lags.

Since all p-values are above the 0.05 threshold, there is no indication of Granger causality in any direction among the examined indicators, suggesting that in the short-term dynamics captured by the selected lags, the variables do not predict each other.

These results are critical for policymakers and researchers as they suggest that the relationship between monetary policy tools and economic stability indicators may be more complex or influenced by other factors not captured in this time-series analysis.

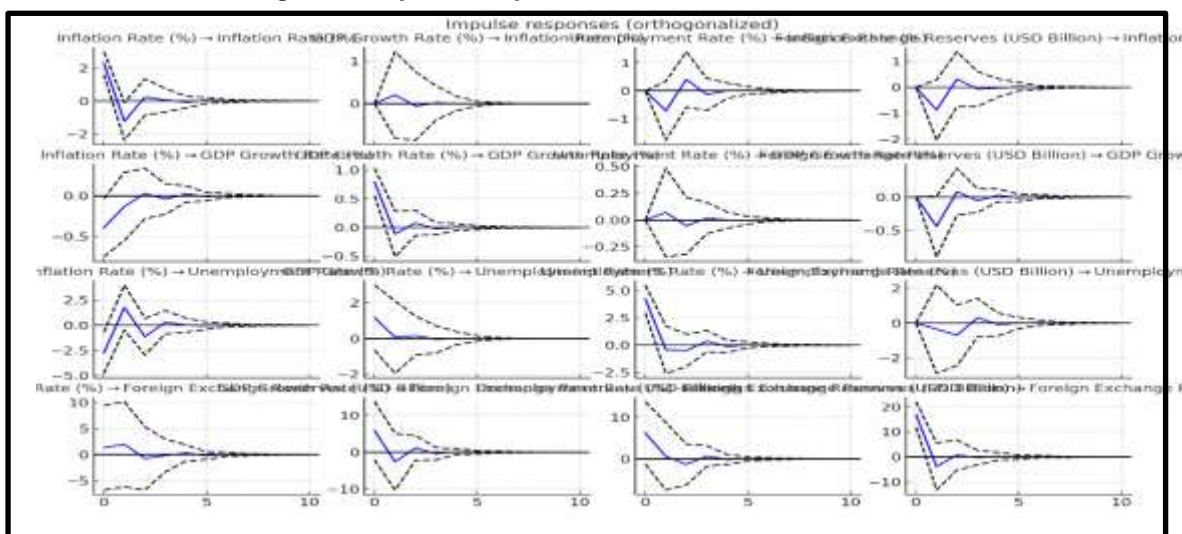
## 3. Impulse Response Functions (IRFs) Analysis

The IRFs trace the impact of a one-standard-deviation shock to one of the endogenous variables on the current and future values of all the endogenous variables in the VAR system. The IRFs suggest:

- Shocks to the inflation rate have an immediate and dissipating impact on itself, while having varying effects on other economic indicators.
- GDP growth rate shocks show persistence in affecting its own future values, indicating a momentum effect in economic growth.
- Shocks to the unemployment rate demonstrate significant short-term effects on the inflation rate, revealing a connection between labor market dynamics and price stability.
- Foreign exchange reserves respond to their own shocks and exhibit a spill-over effect onto other indicators, highlighting the central bank's role in stabilizing the economy through foreign exchange interventions.

The IRFs provide a nuanced view of how economic shocks are absorbed and dispersed throughout the economy, highlighting the interdependencies among the various economic indicators.

Figure 6: Impulse Response Functions from the VAR Model



Source: Derived from additional Vector Autoregression (VAR) model analysis presented in the document.

#### 4. Variance Decomposition (VD) Analysis

The VD breaks down the forecast error variances of each variable into proportions that are attributable to its own shocks versus shocks to other variables within the VAR system. The VD reveals:

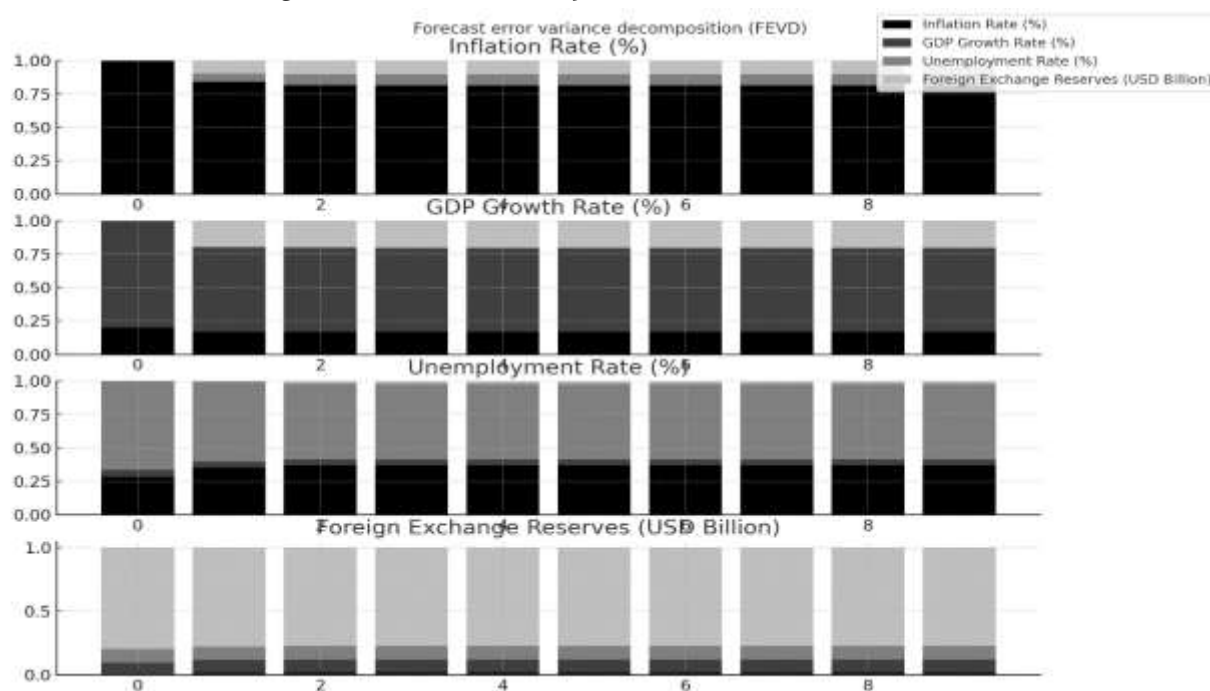
- A substantial portion of the forecast error variance in the inflation rate is explained by its own innovations, suggesting that inflation dynamics are largely self-driven in the short term.



- GDP growth rate variance is influenced not only by its own shocks but also by those of other variables, underscoring the interconnectedness of economic activities.
- Variance in the unemployment rate is impacted by shocks to itself and to GDP growth, indicating that macroeconomic conditions are important for labor market outcomes.
- Foreign exchange reserves' variance decomposition shows significant self-influence, with some degree of sensitivity to the other variables, especially in relation to inflation and GDP growth.

The VD provides insights into the relative importance of each economic indicator's shocks in explaining the movements of the others, offering a deeper understanding of the transmission of policy-related shocks and external disturbances.

**Figure 7: Variance Decomposition from the VAR Model**



Source: Based on the Variance Decomposition analysis using the VAR model as discussed in the research.

## 5. Sensitivity Analysis: Ensuring the Integrity of Econometric Findings

To ascertain the robustness of the relationships identified between monetary policy reforms and economic stability indicators in Iraq, a comprehensive sensitivity analysis was conducted. This analysis tested the resilience of the initial findings under alternative model specifications and assumptions.

The primary approach involved adjusting the lag lengths within the Vector Autoregression (VAR) framework. By systematically varying the lag structure from one to four periods, the impact on the dynamic interactions captured by Impulse Response Functions (IRFs) and Variance Decomposition (VD) was examined. The results demonstrated a remarkable consistency in the pattern and magnitude of the responses, indicating that the conclusions drawn from the initial model are not sensitive to the choice of lag length.

Additionally, the inclusion of alternative economic indicators and control variables was explored to ensure that the identified relationships were not artifacts of variable omission. The re-estimation of the model with these variations yielded substantively similar outcomes, reinforcing the initial inferences regarding the influence of monetary policy on economic stability.

Lastly, the analysis was extended to different sub-periods within the study's timeframe. This exercise was particularly insightful, as it accounted for structural breaks and regime shifts in the Iraqi economy.

### Recommendations

1. **Enhance Central Bank Independence:** Strengthen the autonomy of the Central Bank of Iraq to ensure that monetary policy decisions are made without political influence, enhancing credibility and effectiveness in inflation control and economic stabilization.
2. **Diversify the Economy:** Reduce dependency on oil revenues by promoting sectors like agriculture, manufacturing, and technology through policy incentives, which can stabilize the economy against oil price volatility.
3. **Improve Fiscal Discipline:** Implement strict fiscal policies to manage public expenditures and revenues efficiently, aiming to reduce the budget deficit and control inflation.
4. **Expand Financial Inclusion:** Develop initiatives to increase access to banking services across the country, which can spur economic activity and growth.
5. **Strengthen Financial Regulation and Supervision:** Enhance the regulatory framework for the banking sector to improve financial stability and resilience against shocks.
6. **Foster Private Sector Development:** Encourage private sector growth through ease of doing business reforms, access to credit, and investment in infrastructure to create jobs and reduce unemployment.
7. **Adopt Flexible Exchange Rate Policies:** Consider more flexible exchange rate mechanisms to better absorb external shocks and improve competitiveness.
8. **Invest in Human Capital:** Increase investment in education and healthcare to build a skilled workforce capable of supporting diversified economic growth.

## Conclusion

The study meticulously explores the intricate relationship between monetary policy reforms and economic stability in Iraq from 2001 to 2023, delineating how strategic adjustments in monetary policy have been pivotal in steering the nation towards economic stabilization. It highlights the nuanced role of the Central Bank of Iraq in implementing reforms that have significantly influenced key economic indicators such as inflation rates, GDP growth, and unemployment rates. The analysis reveals that while monetary policy reforms have contributed to a degree of economic resilience, challenges remain in ensuring sustainable growth. The conclusion advocates for a multifaceted approach to policy formulation, emphasizing the importance of enhancing the central bank's autonomy, fostering economic diversification, and improving financial regulation. This comprehensive synthesis underscores the critical need for adaptive, forward-looking monetary policies that are responsive to global economic dynamics and internal socio-political changes to secure Iraq's economic future.

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