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The Shock of Money Supply and Its Impact on Foreign Direct Investment in Iraq for the Period (2004–2023)

Ali Saleem hatem Naghmash Alaa Abbas Dakhel Al-Rikabi
Alisaleem6a6@gmail.com alaa.dakhel@qu.edu.iq
University of Al-Qadisiyah

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Corresponding Author : Ali Saleem hatem Naghmash

Abstract : This research highlights how monetary supply shocks affect foreign direct investment (NI) in Iraq during the period (2004-2023) by analyzing and identifying the causes of these shocks' effects, enabling policymakers to make informed decisions to mitigate risks and manage shocks through effective monetary policy capable of stabilizing the economy. The research problem focuses on answering the following question: Do monetary supply shocks have direct or indirect negative effects on foreign direct investment in Iraq during the period (2004-2023)? To achieve the objectives, the inductive method was employed, measuring and analyzing the impact of monetary supply shocks on foreign direct investment using econometric analysis. The study concluded that monetary supply shocks have indirect effects on foreign investment through their influence on inflation and exchange rates, key variables in foreign investors' decision-making. Additionally, investment responses to monetary supply shocks vary over the short and long term; short-term effects tend to be negative due to monetary instability and exchange rate volatility, whereas positive effects may emerge in the long term if monetary policy
stabilizes.

Keywords: Money supply , shock Money supply , Foreign direct investment , Monetary policy , Iraqi economy

INTRODUCTION: Economic shocks have garnered significant attention since the latter half of the twentieth century, appearing suddenly worldwide and affecting both developed and developing countries. Economic shocks are classified into financial, monetary, and real shocks. This research focuses primarily on monetary shocks, as monetary policy holds significant importance for economic policymakers due to its direct effect on economic activity and stability. Policymakers bear the responsibility of maintaining stability in monetary variables and preventing shocks that could negatively impact macroeconomic variables and economic activity. Monetary shocks are significant economic phenomena referring to expected or unexpected changes in monetary policy, which can have deep and long-term effects on the economy. They notably affect the stability and growth of national economies. These shocks result from intended or unintended changes in some monetary variables, such as interest rate shocks, money supply shocks, and exchange rate shocks, influencing aggregate economic variables including foreign investment. Iraq has experienced significant political and economic transformations since 2004, including substantial economic restructuring, currency reform, modernization of the monetary apparatus, and reconstruction of infrastructure and essential services. Recently, the Iraqi economy has shown noticeable development due to increased oil revenues and international cooperation, though challenges such as unemployment persist. Understanding the impact of these monetary shocks is crucial for designing effective economic policies and achieving sustainable growth, especially in an increasingly globalized and technologically advanced world where such shocks are becoming more common. This study aims to analyze the impact of monetary supply shocks on foreign direct investment in Iraq during the period (2004-2023) using advanced econometric models.

Research Importance

The importance of this research lies in clarifying how the money supply shock affects foreign investment in Iraq during the period (2004–2023), by analyzing and identifying the causes behind the effects of such a shock. This understanding enables monetary policymakers to make informed decisions aimed at reducing and managing the risks associated with money supply shocks.

Research Problem

The research problem is represented by the following question:
Do monetary shocks have direct or indirect negative effects on foreign direct investment in Iraq during the period (2004–2023)?

Research Objectives

This research aims to achieve the following objectives:

- To understand the theoretical framework of monetary shocks and macroeconomic variables in Iraq.
- To analyze how monetary shocks affect macroeconomic variables in Iraq during the period (2004–2023).
- To measure and analyze the impact of monetary shocks on selected macroeconomic variables in Iraq during the period (2004–2023) using econometric analysis.

Research Hypothesis

The research is based on the hypothesis that monetary shocks have both negative and positive effects on foreign investment in Iraq, and that there is a significant relationship between monetary shocks, exchange rates, and interest rates during the period (2004–2023). This relationship becomes more evident during periods of political and economic instability.

Research Methodology

To achieve the research objectives, the inductive method was adopted, in addition to measuring and analyzing the impact of monetary shocks on foreign investment in Iraq during the period (2004–2023), using econometric analysis techniques.

Research Scope

A. Spatial scope: Iraqi economy
B. Temporal scope: Period from 2004 to 2023

Research Structure

- **Chapter One:** Theoretical framework (Monetary supply shocks and foreign investment)
- **Chapter Two:** Analysis of monetary supply shocks and their impact on foreign investment in Iraq (2004-2023)
- **Chapter Three:** Measurement and econometric analysis of the effects of monetary supply shocks on foreign investment in Iraq (2004-2023)

Chapter 1: Monetary Supply Shock and Foreign Direct Investment — Theoretical and Conceptual Framework

1.1: The Concept of Monetary Shocks

Monetary shocks have become one of the significant economic problems in the present time, and no country is immune to or isolated from experiencing these shocks. All economies, whether advanced or developing, face monetary shocks that affect the economy in general and the monetary system in particular. Linguistically, the term "shock" means a surprise or disaster that causes human anxiety (Ahmed Mokhtar, 2008, p. 1284). In economics, it refers to an event that leads to a decline in the welfare of individuals, society, or a specific region. Monetary shocks typically take the form of an increase or decrease in the demand for money relative to its supply, and they can be measured through the central bank's behavior in its interventions in the money supply (Angelo, 2012, p. 1). Monetary shocks are unplanned or unintended changes in central bank policy that are not direct responses to economic conditions. These shocks can manifest as statistical innovations that serve as external factors in monetary policy (Christiano, Eichenbaum, & Evans, 1998, pp. 7–8). Furthermore, they can take the form of deliberate or unintended changes in some monetary variables such as money supply, money demand, interest rates, exchange rates, and credit, leading to direct and indirect effects on various economic variables (Siegel, 1984, p. 487). A shock is defined as a sudden increase in the means of payment (De Arcangelis & Di Giorgio, 2000, p. 1). Monetary policy shocks are statistical innovations representing exogenous elements (Abdul Sattar, 2002, p. 25). Friedman and Schwartz defined them as movements that did not occur or appear in another period or circumstance (Lahura, 2012, p. 2).

1.2: Sources of Monetary Shocks

Monetary shocks arise from several random factors that affect monetary policy decisions. These factors vary from differing economic perspectives among monetary policymakers regarding the state of the economy, to variations in their personalities, temperaments, and viewpoints. Additionally, the ideas and proposals presented by participants during private meetings, and the manner in which discussions and debates are conducted in formulating monetary policy, play a significant role in the emergence of such shocks. Furthermore, political and technical factors, such as measurement errors in the available data, also influence decisions related to monetary policy. Due to the diversity of

these sources, it is difficult for policymakers to control or precisely identify them, which adds to the complexity of the matter. The most important sources of monetary shocks include the following (Al-Ghalibi & Mutooq, 2013, p. 207):

1. **Monetary Policy Implementation Mechanisms**: Central banks rely on several mechanisms to implement monetary policy. One of the most prominent is the use of quantitative measures, such as setting an imprecise interest rate that does not account for expected changes in output and inflation. This leads to instability and volatility, especially during periods targeting unborrowed reserves.
2. **Preferences and Objectives of Central Banks**: When a central bank is particularly insensitive to inflation, it may set a higher interest rate than necessary. Conversely, if inflation is high, the central bank might set a significantly low interest rate, being willing to endure losses in order to reduce inflation.
3. **Policymakers' Beliefs About How the Economy Works**: These beliefs are another source of shocks. For example, if the central bank believes inflation is not highly responsive to economic downturns, it may set interest rates lower than needed.
4. **Monetary Policy and Political Factors**: The central bank may pursue an unusually expansionary policy to align with politicians' desire to win voter support, especially in its role as the government's bank and financial advisor.
5. **Other Objectives**: Sometimes, the central bank places significant importance on exchange rates and attempts to control their movements, which affects future inflation and economic growth. The central bank might cite currency strength as a reason for the flexibility of monetary policy (Ghristiano, Eichenbaum, & Evans, p. 8).

1.3: Causes of Monetary Shocks

The causes of monetary shocks often stem from sudden and unintended random factors that have a significant impact on monetary policy decision-makers. Among these causes are:

- **Use of Inaccurate Measures**: Shocks may arise due to central banks using traditional yet inaccurate measures, especially when relying on quantitative tools.
- **Inappropriate Procedures**: Inappropriate actions can obscure the relationship between monetary policy and other economic variables, or create the illusion of a false causal link.
- **Deficiencies in Traditional Measures**: These include the possibility of autonomous movements in the money supply, such as increases during good times due to a higher money multiplier. (Ismaila, 2015)
- **Preemptive Movements**: Traditional measures may include anticipatory movements to avoid issues related to endogenous growth, such as the Federal Reserve using the interest rate on funds or unborrowed reserves as a measure of monetary policy (Romer & Romer, p. 2).
- **Central Bank Reputation**: The reputation of the central bank plays a crucial role in the success or failure of monetary policy. Central bank policies depend on its credibility and the expectations of agents (consumers and firms) regarding inflation.
- **Open Economies**: Open economies make monetary policy face a trade-off between domestic objectives (such as output and inflation) and external goals (such as trade balance stability), increasing the complexity of monetary policy and making it more vulnerable to both internal and external shocks (Haider, previously cited source, p. 26).

1.4: Monetary Supply Shock:

It is defined as a sudden and random event leading to changes in the money supply. The shock occurs between nominal money and balances held by individuals when the monetary authority injects money unexpectedly, causing an imbalance between actual cash balances and desired holdings (Kollmann, 2011, p. 2). Monetary supply shocks are sudden changes in the money supply that directly or indirectly affect several macroeconomic variables such as GDP, general prices, exchange rates, and economic growth (Bhattachary & Sachikar, 2005, p. 135). Monetary supply shocks arise from several factors, not limited to monetary policy reflected in the central bank's behavior and private banking services; they may also result from external factors such as sudden increases in oil prices, which have a prominent effect on the economy due to its low price elasticity. Shocks can also occur in foreign exchange markets due to large capital flows, potentially causing numerous crises in developing countries' economies (Alsreiti & Ghazlan, 2010, p. 74). Monetary supply shocks are characterized by asymmetric effects, which is an international phenomenon not confined to a particular economy (Malone, 2000, pp. 3–8).

1.5: The Concept of Investment

Definition of Investment:

Investment is the employment of money with the aim of generating returns or profits. It can also be defined as any acquisition of funds for the purpose of obtaining or consuming a product (Hardan, 1997, p. 13). Investment refers to the process of allocating capital to assets or projects with the intent of generating future profits. This process involves evaluating potential risks and returns (Artiukh, 2024).Investment is also defined as the addition or improvement of the existing capital stock in society. It includes the formation of fixed capital and changes in inventories. Recently, the concept of investment has expanded to include not only capital goods but also investment in human capital. Therefore, investment encompasses projects such as non-residential buildings, infrastructure like roads and bridges, machinery

and equipment, as well as investments in the health and education sectors. Investment can be classified into three main types: private investment, public investment, and foreign investment (Allawi & Lateef, 2013, p. 217). Keynes defined investment as the expenditure that stimulates purchase, which in turn creates investment (Diterlin, p. 22). Another definition sees investment as the use of monetary and physical savings to form capital assets (fixed assets) that are used in the production of goods and services—this refers to **real investment** (Khalaf, 2007, p. 163).Investment is also defined from a financial perspective as the relinquishment of money owned by an investor at a specific point in time in exchange for a future return, ultimately leading to an increase in income (Schaffner, 2014, p. 22).

1.6: Types of Investments

1. **According to Geographical Location:**

a. **Domestic Investment:** Refers to all investment opportunities available within the local market regardless of the investment tools used—such as real estate, securities, gold, and various projects (Ramadan, 1998, p. 61).

b. **Foreign Investment:** Refers to the use of surplus funds in investment tools and opportunities available in foreign markets, i.e., investment outside the national borders of the investor's country, whether the investment is individual or collective, direct or indirect (Ramadan, 1998, pp. 61–62).

2. **According to the Nature of Investment:**

a. **Real Investments:** These involve creating productive assets for the purpose of profit, or acquiring capital assets—such as land, factories, productive companies, and projects. Real investments lead to a tangible increase in GDP and the formation and accumulation of national fixed capital. These investments usually carry low risk but are also characterized by low liquidity and incur costs for insurance, transport, storage, and maintenance (Kadawi, 2008, p. 14).

b. **Financial Investments:** These involve investing in financial instruments such as securities, which do not grant the holder ownership of a tangible asset, but rather a financial right that allows the holder to claim a real asset. These securities include equity tools (stocks) or debt instruments (bonds) (Kadawi, same source, p. 14).

3. **According to Investment Duration:**

a. **Short-Term Investments:** These may be domestic or foreign and include time deposits, securities, stocks, bonds, short-term credit facilities, working capital financing, and trade finance (import/export). Due to the availability of information and shorter time frames, they are considered less risky (Al-Hudhiri, 2000, p. 45).

b. **Long-Term Investments:** These include assets and investment projects intended to be held and operated over a long period. They are not easily convertible into cash, even through sale. The aim of such investments is to generate cash flows by recovering the invested capital over a specific period, with a return that matches the risk. This applies to both domestic and foreign investments. Examples include real estate for sale, hotels, factories, agricultural land, and transportation projects. These require significant capital and professional management. Risks stem from the long time horizon and associated uncertainties (Al-Hudhiri, same source, p. 47).

4. **According to the Executing Party:** (Shindi, 2011, p. 49)

a. **Government Investment:** Includes public investments executed by the state, typically in projects funded and managed by the government. These often aim to provide public services or improve infrastructure.

b. **Private Investment:** Involves investments made by individuals or the private sector. This type of investment is characterized by greater flexibility and adaptability to market demands, with the main goal of achieving private profits.

c. **Mixed Investments:** These are investments involving cooperation between the public (governmental) and private sectors in specific projects, aiming to combine the advantages of both sectors for maximum economic benefit.

1.7: Factors Influencing Investment(Al-Shabib, 2000, p. 47)

1. **Political Stability:**

Political stability plays a vital role in attracting investments. This is influenced by the variation in political risks between countries and is measured by analyzing political changes and international relations. A stable political system enhances the stability of legislation and economic regulations, fostering investment growth and expansion.

2. **Economic Stability:**

Economic stability can be assessed using indicators such as GDP, internal and external balance, and the balance of payments. It depends on economic policies—whether interventionist or liberal—as well as international trade relations, interest rates, and exchange rates.

3. **Interest Rates:**

The interest rate significantly affects the economy and investments by influencing investment costs. Interest rates are affected by the supply and demand for money, risk levels, and monetary policy. Fluctuations in global interest rates influence investment flows both domestically and internationally.

4. **National Income:**
National income affects investments through its volume, growth rates, and distribution. An increase in income leads to higher savings and investments, which strengthens aggregate demand and encourages further investment.
5. **Inflation Rates:**
High inflation negatively impacts investment by increasing risks and eroding purchasing power. This leads to uncertainty and negatively affects the real value of investments.
6. **Infrastructure and Economic Openness:**
Infrastructure elements such as roads, transportation, and communications are crucial for investment. In addition, a developed banking system and efficient financial markets enhance investment potential. Economic openness also encourages investment flows by facilitating economic transactions.

1.8 :Monetary Supply Shocks and Their Relationship with Investment:

There is a close relationship between money supply and investment through monetary policy channels. An increase in money supply leads to a decrease in interest rates, encouraging borrowing and investment, while a decrease in money supply causes interest rates to rise, reducing investment incentives. Increased money supply accompanied by positive expectations boosts confidence and investment, whereas reduced money supply combined with negative expectations lowers confidence and investment (Lypnytskyi & Lypnytska, 2022, pp. 89–102). Regarding the inflation channel, an increase in money supply causes higher inflation, increased uncertainty, and reduced long-term investment; conversely, a decrease leads to lower inflation or deflation, reduced profits, and diminished investment. According to Keynesian theory, changes in money supply affect interest rates and investment, especially during recessions. Monetarist theory (Friedman) also argues that money supply changes affect economic activity and investment but with varying time lags (Keynes, 1936, p. 107).

Chapter 2:

Analysis of Monetary Supply Shock Reality and Its Impact on Foreign Investment in Iraq (2004–2023)

2.1: Analysis of Monetary Supply in Iraq (2004–2023)

It is observed from Table (1) that the narrow money supply (M1) increased, reaching 10,148,000 million dinars in 2004 and rising to 11,399,000 million dinars in 2005. Simultaneously, broad money supply (M2) also increased from 12,254,000 to 14,659,000 million dinars. This upward trend continued gradually until 2013, with an annual growth rate of 16% for M1, while M2 grew at an annual rate of 16.2% during the same year. This growth was driven by the movement of cash between individuals and commercial banks.However, in 2014, the annual growth rate of M1 declined to -1.5%, and the growth rate of M2 also dropped to 3.5%. This decline was due to falling oil prices and deteriorating security conditions during that year. In both 2014 and 2015, M1 fell by -1.5% and -9.98%, respectively, while M2 decreased by -10% in 2015. The decrease in M2 was attributed to the decline in M1, resulting from reduced fixed, savings, postal, and insurance deposits(Central Bank of Iraq, 2014)
. In 2016, M1 rose by 8.1%, accompanied by a similar increase in M2 by 8.2%, due to an increase in narrow money supply and other deposits. M1 and M2 continued to grow from 2017 to 2020. Narrow money (M1) grew by 0.6%, 9.3%, 11.4%, and 19.1%, respectively, driven by the increase in demand deposits. Similarly, broad money (M2) also recorded growth rates of 2.6%, 2.7%, 8.4%, and 15.9%, respectively, due to the growth of its components—narrow money and other deposits.

In 2021, M1 recorded an increase of 16.1%, reaching 119,944,000 million dinars, attributed to the growth of currency outside the banking system. This was accompanied by an increase in M2 of 16.7%, reaching 139,886,000 million dinars, driven by the growth in M1 and an increase in other deposits (fixed, savings, postal, and insurance). This can be attributed to the public's improved trust in the banking sector, following higher localization rates and a 25.8% increase in foreign bank balances, despite the decline in the market value of gold and external assets. In 2022, M1 increased by 22.1%, reaching 146,488,000 million dinars, and M2 rose by 20.3%, reaching 168,291,000 million dinars. This growth was the result of the continued increase in M1 and other deposits (fixed, savings, postal, and insurance). However, the share of currency outside the banking system remained relatively high, indicating that banks were not effectively attracting deposits. This situation calls for the Central Bank to implement policies that encourage banks to attract deposits and draw monetary liquidity into the banking sector, in order to enhance the efficiency of the banking system during times of crisis.

In 2023, M1 increased by 9.6%, reaching 160,318,000 million dinars, attributed to the growth of currency outside the banks and the continued low level of other deposits. M2 also increased by 7.5%, reaching 1,809,760,000 million dinars, due to an increase in issued currency, resulting from higher public spending following the implementation of the general budget. This also reflects the nature of the Iraqi economy and societal behavior, which heavily relies on

cash in transactions. The changes in both broad money (M2) and narrow money (M1) over the research period are detailed in Table (1).

Table (1)
The development of money supply (M1, M2) in Iraq for the period (2004-2023)

%Growth rate	an offer Cash(M2)	%Growth rate	Money supply(m1)	years
_	12,254,000	-	10,148,000	2004
19.8	14,659,000	11.7	11399000	2005
43.6	21,050,000	35.6	15460000	2006
27.9	26,921,000	40.4	000 21722	2007
29.5	34,862,000	29.7	28190000	2008
30.1	45,355,000	32.3	37,300,000	2009
32.9	60,289,000	38.7	000 51743	2010
19.5	72,067,000	20.7	62474000	2011
4.5	75,336,000	2.0	63736000	2012
16.2	87,528,000	15.8	000 73832	2013
3.5	90,568,000	-1.5	72693000	2014
-6.7	84,527,000	-9.9	000 69613	2015
7.0	90,466,000	8.0	75524000	2016
2.6	92,857,000	0.6	76986000	2017
2.7	95,391,000	9.3	77829000	2018
8.4	103,441,000	11.4	000 86771	2019
15.9	119,906,000	19.1	000 103353	2020
16.7	139,886,000	16.1	119944000	2021
20.3	168,291,000	22.1	146488000	2022
7.5	180,976,000	9.4	000 160318	2023

Source: Central Bank of Iraq, General Directorate of Statistics and Research, Annual Bulletins for the period (2004-2023)

2.2: Analysis of the Development of Foreign Investment in Iraq (2004–2023)

Foreign Direct Investment (FDI) is considered one of the key factors supporting economic growth in developing countries due to the capital, advanced technology, and job opportunities it provides. FDI inflows into Iraq have gone through several stages, starting with the era of economic sanctions, which led to a sharp decline in incoming investment with negative rates. With the implementation of economic reforms and the issuance of Order No. (39 of 2003), which granted foreign investors (individuals or companies) the right to invest in all economic sectors in Iraq—excluding ownership of the country's natural resources—signs of improvement began to emerge.Since 2004, Iraq has undergone major economic transformations as a result of opening up to foreign investment after decades of isolation. However, the investment environment has been influenced by several factors, including security conditions, legislation, and corruption during the period 2004–2023. Table (2) shows the developments in investment inflows into Iraq during this period.

First Stage (2004–2010): The Reconstruction and Foundation Period

According to the 2004 World Investment Report issued by the United Nations Conference on Trade and Development (UNCTAD), FDI inflows to Iraq rose from $1 million in 2003 to $300 million in 2004, marking a growth rate of about 590%. These investments were heavily concentrated in partnership contracts with private Iraqi banks (Arab Investment Guarantee Corporation, 2005).

However, the Iraqi government was not able to attract sufficient foreign investment, prompting it to issue Investment Law No. (13 of 2006), which included a range of effective credit facilities and measures aimed at paving the way to transform Iraq's economy into a free-market system and integrate it into the global economy.

Table(2)

Net foreign direct investment flows into Iraq for the period (2004-2023) in million dinars

(%) Annual growth rate	(inward-Net foreign direct investment (outward	year
----	435900	2004
43.66	626234.7	2005
-81.73	114426	2006
957.18	1209694.5	2007
79.70	2173765.3	2008
-17.84	1785888	2009
-16.71	1487421	2010
19.27	1774071	2011
91.32	3394109.4	2012
68.47	5718064	2013
-7.44	5292474	2014
-26.79	3874440	2015
11.26	4310754	2016
40.36	6050476.8	2017
-0.22	6037465	2018

-27.02	**4405856**	**2019**
-69.49	**1344343**	**2020**
201.03	**4046974**	**2021**
-16.07	**3396690**	**2022**
119.56	**7457604**	**2023**

Source: The table was prepared by the researcher based on reports from the Central Bank of Iraq and World Bank data for the period (2004-2023).

This law granted many advantages to investors, such as tax exemptions and the right to own projects, which contributed to the increase in FDI inflows (Al-Husseini, n.d., p. 298).

First Stage (2004–2010): Reconstruction and Foundation

As shown in Table (2), foreign direct investment (FDI) inflows to Iraq began to emerge in 2004, reaching approximately 435,900 million dinars. In 2005, FDI increased significantly by 43.66%, attributed to improvements in the security and political situation, Iraq's economic openness to global markets, and the lifting of economic sanctions. The issuance of the Investment Law in 2006 further supported this growth.However, in 2006, FDI inflows declined sharply by 81.73%, due to the deteriorating security situation. FDI in Iraq has been closely tied to global oil consumption and global economic growth. Before 2008, FDI inflows increased significantly, reaching [missing value] million dinars in 2007, with an annual growth rate of 153.73% compared to the previous year, thanks to the activation of the Iraqi Investment Law. Nevertheless, these flows declined after 2008 due to the global financial crisis and the subprime mortgage crisis, which reduced demand for oil and slowed global economic growth. As a result, net FDI to Iraq gradually declined until 2010, with a decrease of 1,487,421 million dinars due to the collapse in oil prices. The most prominent investments during this period were in the **oil and energy sectors** and **infrastructure projects**. However, the investment environment remained unstable due to corruption, lack of security, complex bureaucracy, and unclear economic laws.

Second Stage (2011–2014): Relative Improvement and Diversification

This period witnessed a slight improvement in the investment environment, with FDI inflows reaching (1,774,071; 3,394,109.4; 5,718,064; and 5,292,474) million dinars, respectively. This was attributed to the withdrawal of U.S. forces and some degree of relative stability.The Iraqi government began encouraging non-oil investments, particularly in housing, telecommunications, and agriculture. Key investments during this period included oil field development contracts, housing projects (such as Bismayah project). Influencing factors included fragile political stability, slight improvement in legislation, and ongoing challenges of corruption.

Third Stage (2014–2017):

In 2014, FDI inflows recorded a negative growth rate of -6.82%.

In 2015 and 2016, FDI inflows declined sharply to (3,874,440 and 4,310,754) million dinars, with annual growth rates of -26.79% and 11.26%, respectively.

This decline was due to severe fluctuations in global oil prices and the deterioration of Iraq’s security situation.

Fourth Stage (2018–2019): Recovery and Investment Attraction

After the liberation of Iraq from ISIS, the government began reconstruction efforts and reforming the business environment through amendments to the Investment Law and the introduction of new incentives.Several investment agreements were signed during this period, particularly with China. Key investments included infrastructure projects, housing, and renewable energy.Main influencing factors: improved stability, government initiatives to attract investment, and persistent bureaucratic challenges.In 2019, FDI inflows reached 4,405,856 million dinars. However, investments declined significantly due to the aftermath of the war against ISIS. This drop was caused by ISIS controlling large parts of Iraq, leading to infrastructure destruction and suspension of investment projects in several areas.Investments were concentrated in the oil sector and relatively safe regions such as the Kurdistan Region.Notable investments: oil projects in the south and some in Kurdistan. Influencing factors: deteriorating security, halted projects, and population displacement.

In 2020

Net FDI in Iraq dropped significantly to 1,344,343 million dinars due to the dual impact of the COVID-19 pandemic and the sharp fall in oil prices, which lost nearly half their value in March 2020.These crises caused an immediate decline in FDI inflows due to the global economic lockdown, disruption in the movement of people and goods, and

delays or suspension of many investment projects.Additionally, the pandemic delayed the announcement of many new projects.

Fifth Stage (2020–2023): Pandemic Challenges and Recent Developments

The COVID-19 pandemic impacted the Iraqi economy and contributed to the decline in oil prices, which in turn affected FDI inflows.However, the government began implementing new investment projects, especially in energy and transportation, and continued partnerships with major countries such as China and the UAE.Key investments included the Development Road Project, solar energy projects, and natural gas sector expansion.Influencing factors: the pandemic's repercussions, oil price volatility, and ongoing attempts at economic reform.Nevertheless, the increase in terrorist attacks and the continued political and economic instability negatively affected FDI inflows in the following years.Furthermore, the pandemic caused waves of shocks to the global economy, resulting in the largest global economic crisis in decades.This crisis led to a significant decline in FDI, as noted by the World Development Report, which pointed to a drop in investment project numbers in the region during this period.Instead, investments shifted toward consumer-focused projects, such as the construction of shopping malls, which encouraged imports at the expense of local production, thereby increasing unemployment rates.It would have been more effective to direct investments toward strategic sectors that contribute to state development, such as industry, agriculture, and tourism, as these sectors have a major impact on increasing state revenues and creating job opportunities.Additionally, sovereign wealth fund investments could have been pursued as sustainable options benefiting future generations (Rzayej & Baheet, 2022, no page number provided).Figure (2) illustrates the development of FDI inflows to Iraq for the period (2004–2023).

Chapter 3:

Measuring and Analyzing the Impact of Money Supply Shocks on Foreign Investment in Iraq for the Period (2004–2023)

3.1: Model Specification

In order to understand the relationship between the model variables, it is necessary to specify the model, identifying which variables are dependent and which are independent, and explaining the economic logic that links them together. Each variable is symbolized accordingly based on the economic analysis. The following table illustrates this:

Table (3): Specification of the Econometric Model

Nature of the variable	The symbol	variable	T
independent	M2	Money supply	1
continued	NI	Net foreign direct investment	2

Source: Prepared by the researcher

3.2: Unit Root Test (ADF Test)

The Augmented Dickey-Fuller (ADF) test was applied to the time series data for the two variables: Money Supply (M2) and Net Foreign Direct Investment (NI).

As shown in Table (4), the results indicate that both series are non-stationary at level, implying the presence of a unit root. However, they become stationary at the first difference, as the p-values fall below the 0.05 significance level.This behavior suggests that the variables are influenced by various domestic and external economic factors, leading to long-term fluctuations. Nonetheless, once differenced, the series stabilize. These findings justify the use of cointegration tests to examine the existence of a long-run equilibrium relationship between the variables.

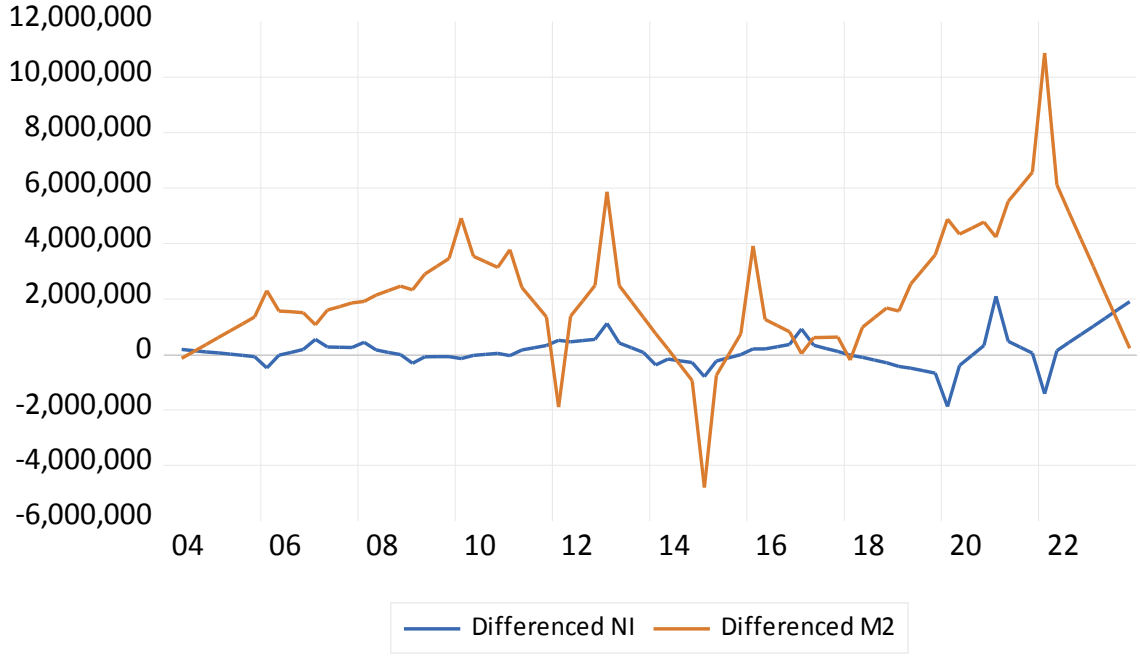
Table (4): Augmented Dickey-Fuller (ADF) Test for the Variables (M2) and (NI)

UNIT ROOT TEST TABLE (ADF)							
At first difference				At level			
D(M2)	NI) (D			M2	NI		
-2.2481	-1.4247	T-Statistic	With constant	1.70728	-1.2873	T-Statistic	With constant
0.1977	0.5422	P-Value		0.9992	0.6065	P-Value	
-4.6358	-5.2777	T-Statistic	With &Trend	-2.5135	0.79314	T-Statistic	With &Trend
0.0166	0.0035	P-Value		0.3174	0.9426	P-Value	

-1.1335	-1.5422	T-Statistic	Without &Trend	5.43106	-0.2336	T-Statistic	Without &Trend
0.22377	0.1121	P-Value		1.0000	0.5852	P-Value	

Source: Prepared by the researcher based on the estimated results from EViews 12

Figure (1): Shock in Money Supply and the Development of Net Foreign Direct Investment



Source: Prepared by the researcher based on the estimated results using EViews 12.

3.3: Measuring the Relationship Between the Money Supply Shock and Net Foreign Direct Investment Using the ARDL Test:

The ARDL test was selected as it is suitable for small samples, which is particularly common in time-series economic studies in developing countries. This test is also capable of handling data with different orders of integration, whether at level or first difference, without the need for prior transformation. It allows for both short- and long-term analysis through the Bound Test, and captures the impact of shocks via the Impulse Response Function (IRF) test.

3.3.1- Model Estimation Using the ARDL Test:

The ARDL (Autoregressive Distributed Lag) model is an econometric approach used to analyze the relationship between variables in both the short and long term. It estimates the dynamic relationship between a dependent variable and a group of independent variables (Pesaran, Shin, & Smith, 2001, pp. 289–326).The results show that the coefficient of determination (R-squared) is very high at **0.968550**, and the adjusted R-squared is **0.966335**. This indicates that the model explains approximately **96.6%** of the variation in the dependent variable, which is **Net Foreign Direct Investment**.Moreover, the **F-statistic** is significantly high (**437.3095**) with a **p-value = 0.000000**, indicating that the model is statistically significant. Since the probability value is less than 0.05, we reject the null hypothesis and accept the alternative hypothesis, meaning that the independent variables have a statistically significant effect on the dependent variable, Net Foreign Direct Investment.

Table (5) Model estimation

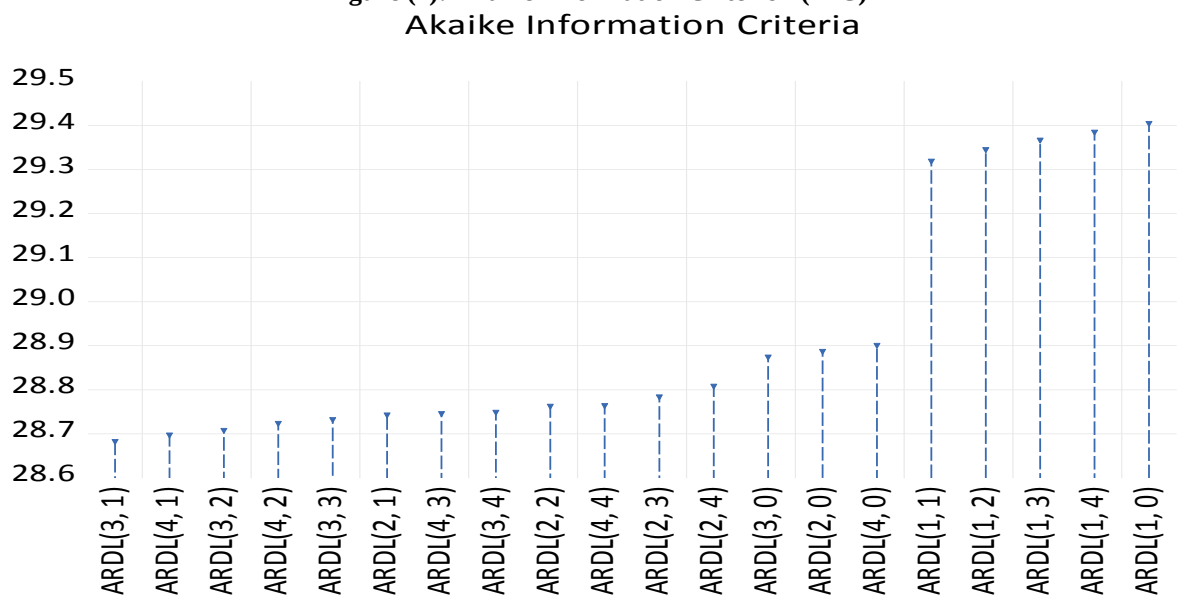
Dependent Variable: NI			
Selected Model: ARDL(3, 1)			
Note: final equation sample is larger than selection sample			
R-squared	0.968550	Mean dependent var	3358701.
Adjusted R-squared	0.966335	SD dependent var	2135245.
SE of regression	391774.3	Akaike info criterion	28.66948
Sum squared resid	1.09E+13	Schwarz criterion	28.85211

Log likelihood	-1097.775	Hannan -Quinn criter .	28.74253
F-statistic	437.3095	Durbin-Watson stat	2.021763
Prob (F-statistic)	0.000000		

Source: Prepared by the researcher based on the estimated results using EViews 12

Based on the Akaike Information Criterion (AIC) shown in Figure (2), the software identified the optimal lag lengths as (3, 1) for the dependent and independent variables, respectively. It was found that the dependent variable (Net Foreign Direct Investment) relies on a lag of three periods, while the independent variable (Money Supply Shock) is based on a lag of one period according to the AIC.

Figure (2): Akaike Information Criterion (AIC)



Source: Prepared by the researcher based on the estimated results using EViews 12.

3.3.2. Bound Test for the Dependent Variable (NI):

Based on Table (6), it is observed that the F-statistic value (**11.20707**) is greater than all the critical values, even at the 1% significance level. Accordingly, we reject the null hypothesis and accept the alternative hypothesis, which indicates the existence of a long-run equilibrium relationship between the independent variables and the dependent variable. The results are presented in the following table:

Table (6) Results of the bounds test for cointegration

F-Bounds Test		Null Hypothesis: No relationship levels		
Test Statistic	Value	Signif .	I(0)	I(1)
F-statistic	11.20707	10%	3.02	3.51
K	1	5%	3.62	4.16
		2.5%	4.18	4.79
		1%	4.94	5.58

Source: Prepared by the researcher based on the estimated results using EViews 12.

3.3.3- Cointegration Model for Short-Run ARDL Estimation and Error Correction Mechanism (ECM)

Table (7) confirms the existence of a long-run equilibrium relationship. This is demonstrated through the Error Correction Term (ECM) within the ARDL framework. The results show that the error correction coefficient is negative and statistically significant (**-0.185074**), indicating that approximately **18.5%** of the disequilibrium is corrected each period. The details are presented in the following table:

Table (7): Short-Run Coefficient Estimates and the Error Correction Term (ECM)

ECM Regression				
Case 2: Restricted Constant and No Trend				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(NI(-1))	0.520951	0.099840	5.217853	0.0000
D(NI(-2))	0.279119	0.107730	2.590908	0.0116
D(M2)	-0.101687	0.023073	-4.407143	0.0000

CointEq (-1)*	-0.185074	0.031478	-5.879479	0.0000

Source: Prepared by the researcher based on the estimated results using EViews 12.

3.3.4- Estimation of the Long-Run Relationship

From Table (8), it is observed that the coefficient of the money supply variable is positive (**0.047734**) and statistically significant (**p = 0.0000**). This indicates a positive and significant relationship between the independent variable (Money Supply) and the dependent variable (Net Foreign Direct Investment). Specifically, a 1% increase in **M2** leads to a 0.04% increase in **NI** (Net Foreign Direct Investment) in the long run, as shown in the following table:

Table (8): Estimation of the Long-Run Relationship

Levels Equation				
Case 2: Restricted Constant and No Trend				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
M2	0.047734	0.006416	7.440307	0.0000
C	828644.3	521391.6	1.589293	0.1164
EC = NI - (0.0477*M2 + 828644.2533)				

Source: Prepared by the researcher based on the estimated results using EViews 12

3.3.5- Breusch–Godfrey Serial Correlation Test

This test is used to verify the absence of autocorrelation in the model. According to the results in Table (33), both p-values (**0.8808** and **0.8681**) are greater than 0.05, which means we fail to reject the null hypothesis and reject the alternative hypothesis. This indicates that there is no serial correlation in the model, confirming that the model does not suffer from autocorrelation issues, as shown in the following table.

Table (9): Results of the Serial Correlation Test

Breusch -Godfrey Serial Correlation LM Test:			
Null hypothesis: No serial correlation at up to 2 lags			
F-statistic	0.127179	Prob. F(2,69)	0.8808
Obs *R-squared	0.282807	Prob. Chi-Square(2)	0.8681

Source: Prepared by the researcher based on the estimated results using EViews 12.

3.3.6- ARCH Test for Heteroskedasticity Problem

It is observed from Table (34) that both p-values (**0.5980** and **0.5922**) are greater than the significance level of 0.05. This indicates acceptance of the null hypothesis, which states the absence of heteroscedasticity problems, as shown in the following table.

Table (10): ARCH Test for Heteroskedasticity

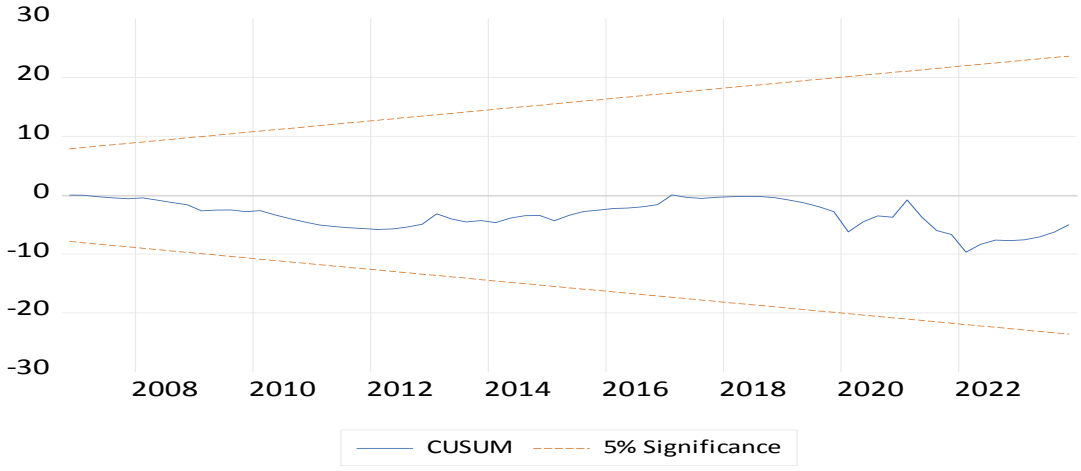
Heteroskedasticity Test: ARCH			
F-statistic	0.280422	Prob. F(1,74)	0.5980
Obs *R-squared	0.286914	Prob. Chi-Square(1)	0.5922

Source: Prepared by the researcher based on the estimated results using EViews 12.

3.3.7- Model Stability Test (CUSUM)

The CUSUM test is a statistical tool used to examine the stability of an economic model. As observed from Figure (23), the shock to the money supply fluctuates around zero, both in upward and downward directions. Meanwhile, the net foreign direct investment remains stable and convergent throughout the study period.

Figure (3): Model Stability Test (CUSUM)



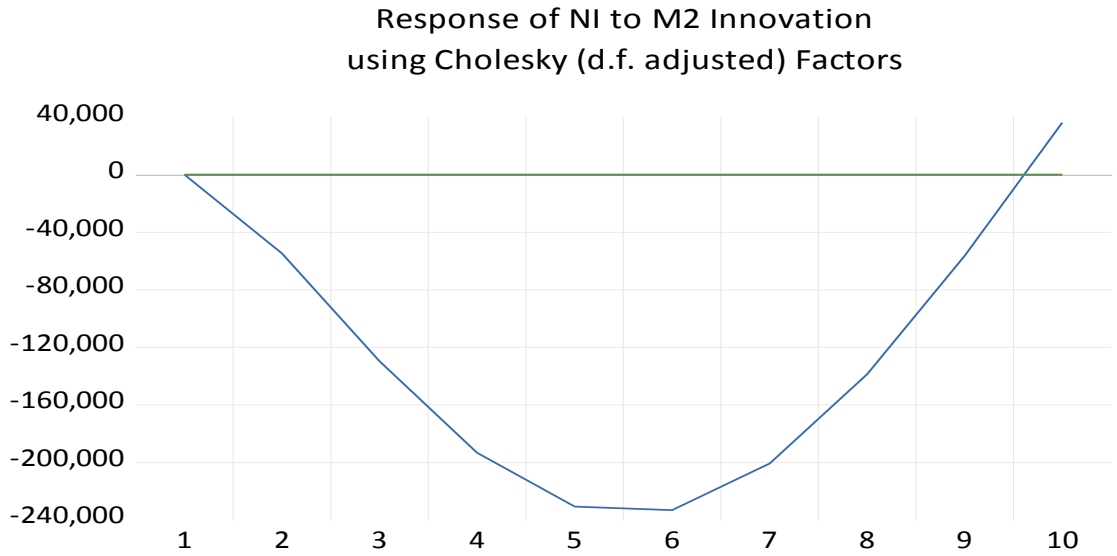
Source: Prepared by the researcher based on the estimated results using EViews 12.

3.4 : Impulse Response Function (IRF)

Analyzing the Response of (NI) to a Shock in (M2)

Figure (4) illustrates the impulse response function derived from the Vector Error Correction (VECM) model. Since the individual coefficients in the estimated VECM vector are often difficult to interpret on their own, the impulse response function shows how the dependent variable responds to a one-unit standard deviation shock in the error term. Figure (4) illustrates the impact of the money supply shock on net foreign direct investment (NI), showing a slow initial increase followed by a more rapid rise. This suggests that liquidity may gradually enhance investor confidence, leading to a progressive improvement in investment after the fourth period. The increase in money supply may stimulate economic activity, thereby encouraging foreign investment. Around the fifth period, the negative impact reaches its peak, after which it begins to decline gradually, approaching zero by the ninth period. This indicates that the effect of the shock on FDI is temporary rather than permanent. It reflects the gradual adjustment nature of the Iraqi economy to monetary shocks, where variables tend to return to their original paths after absorbing the shock.

Figure (4): Impulse Response Function (IRF) Showing the Response of Net Foreign Direct Investment to a Money Supply Shock



Source: Prepared by the researcher based on the estimated results using EViews 12.

Conclusions and Recommendations

Conclusions:

1. The results of the ARDL analysis showed a positive and significant relationship between money supply shocks (M2) and net foreign direct investment (NI). Specifically, a 1% increase in M2 leads to a 0.04% increase in NI in the long run. This indicates a gradual increase in NI over time, suggesting that higher liquidity may create a more attractive investment environment in the long term.
2. The response of investment to money supply shocks varies between the short and long run, as shown by the Impulse Response Function (IRF) test. Money supply shocks negatively affect net foreign direct investment in the short term due to monetary instability and exchange rate fluctuations. However, a relatively positive effect appears in the long run if monetary policy stabilizes.
3. The unstable economic environment has weakened the effectiveness of monetary policy. The results indicate that the effect of money supply was limited or ineffective during certain periods due to security and political fluctuations that adversely impacted the investment climate, thus weakening the monetary policy transmission channels.
4. There are indirect effects of money supply shocks, as money supply also influences foreign investment through its impact on inflation and the exchange rate—variables that play a crucial role in foreign investors' decisions.

Recommendations:

1. Monetary policymakers and decision-makers should pay close attention to monetary shocks and volatility due to their direct impact on macroeconomic variables, especially investment in both the short and long run. This can be achieved by developing tools and methods to detect such shocks and by enhancing the technical capacities of relevant staff.

2. Economic diversification is essential. Relying on a single sector, such as oil, exposes the economy to shocks. Therefore, supporting other sectors like industry, agriculture, and services is necessary to reduce dependence on the oil sector.
3. Encourage foreign investment by providing a stable investment environment, which includes relative exchange rate stability to avoid inflation spikes and reduce investment risks, ease of profit repatriation, and clear legal guarantees.
4. Enhance transparency and stability in monetary policy to reassure foreign investors and reduce the impact of currency shocks. Develop a strong monetary reserve to support the Iraqi dinar and build investor confidence. Additionally, focus on financing through productive investments rather than consumption-based spending.

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