Sustainability of the banking system and the role of monetary policy: Financial liberation in Iraq

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Abstract

The Iraqi economy is rentier and heavily reliant on oil revenues because oil prices are volatile and subject to supply and demand on the global market, causing money supply instability. Inflation is thus one of the most important sustainable economic problems and a significant obstacle. A prudent monetary policy must be developed in the face of macroeconomic policies, even partial ones, in order to reduce inflationary pressures and achieve both internal and external monetary stability. Iraq also lacks a clear economic strategy and the country's economy is still susceptible to decision-makers' whims and the demands of international organizations. It is, therefore, essential to discuss monetary policy's fundamental and successful role in managing the sustainability of the economy through its solid and practical tools. Iraq's monetary authorities scrambled to ensure the nation's economic stability through the use of monetary tools as the country's economic system started to shift towards a market economy in 2003, depending on supply and demand forces to manage the economy. The Central Bank uses tools of monetary policy, which are based on keeping an eye on the money supply and pursuing long-term objectives, to achieve the policy objective of economic stability. The goals of economic stability, according to economist Nicolas Kaldor, are to boost economic growth, achieve full employment, establish external balance, and fight inflation. 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.

Keywords: Iraqi economy, GDP, Monetary policy, Economic sustainability, Statistical analysis

1. Introduction

With all of its different tools, monetary policy has become a necessary axiom to deal with things that upset the stability of the economy, whether old or new [1]. This is done through a package of measures that sometimes includes a strict monetary policy to deal with worsening inflation, and by using the interest rate, the exchange rate, and the nominal sustainability of money to keep public expectations in check. Indicators of economic stability, such as the gross domestic product, stable prices, economic growth, employment, etc., can be made to work better when monetary policy is in place. This helps the national economy grow at a good rate. Iraq's monetary policy has a small effect on economic activity and growth. This is because oil revenues make up most of the government's income, which means the Central Bank needs to be more independent.

The phenomenon of increased financial liberalization that prevailed in the modern global economy is due to the neo-liberal work that supports the reduction of administrative and supervisory control over the economy, which leads to the benefit of the private sector [2]. The quest for total reform measures will only be followed by the signs of liberalization of the economy if it agrees with the current global trends characterized by the generalization of capitalism at the worldwide level. The current economy does not need to know what financial liberation is, what its justifications are, what its services are, what its methods are, what conditions for its success are, and what is allowed to be discussed in this research. For the private sector in the global economy, in practice, economic development is based on relying on the immediate initiative [3], which does not necessarily require the mobilization of the required departments or the granting of credit in large quantities.

Along with other policies, and its power comes from its repressive impact on many economic tensions, any imbalance in the monetary system's performance will affect the economic system's performance in terms of external balance and internal stability. Monetary policy interferes with its various tools to adjust the money supply with sustainable economic activity, which leads to the thinning of the degree goals, represented by economic stability, which was summarized by Nicholas Kaldor, within what is known as the magic quadrant. The quadrant is represented by the thinning of the external balance, economic growth, price stability, and full employment. The Iraqi economy is a unique economy of its kind. From its negative point, this economy has been afflicted with a mixture of harmful elements that have pervaded all its supporting pillars, and the rise in the high level of prices, unemployment, and the internal and external structural imbalance represents these elements. The government used many decisions and measures aimed primarily at reducing the deficit in payments and economic growth and applying a deflationary monetary policy to limit the high inflation rates during the nineties of the twentieth century. Twenty years of isolation from international institutions did not produce likely results. Accordingly, after 2003, when Iraq adopted several programs for economic reform, with the assistance of the International Monetary Fund, intending to reduce the external debt owed, using monetary policy as a tool to achieve economic stability, appeared to be strengthening the Iraqi dinar and an increase in the rate of inflation.

1.1. Research problem

The economic blockade imposed on Iraq since 1990 had significant effects on various aspects of economic and social life, and the economic situation worsened after the government resorted to financing through cash issuance, which led to a rise in the general level of prices and reached its peak in December 1995, when the price exceeded the exchange for the US dollar against the Iraqi dinar in the ratio of 3000 dinars for one dollar [3]. The monetary policy witnessed a change towards integration with the global economy, through the Iraq agreement with the International Monetary Fund in order to achieve economic stability, correct the work of economic policies and confront challenges facing the Iraqi economy, as well as address structural imbalances, eliminating unemployment, and reducing inflationary pressures [6]. Based on what has been mentioned, the research problem is summarized in the following question: how do monetary policy tools affect economic stability in Iraq during the period from 1990 to 2020?

1.2. The significance of the study

The research is significant because it examines monetary policy and its contribution to Iraq's economic stability from 1990 to 2020 by analyzing how monetary policy affects vital economic indicators to achieve economic progress. Analysis and measurement of the role of monetary policy in achieving economic stability in Iraq for the time period under study are the goals of the research.

1.3. Research study

The study is based on the supposition that monetary policy affects achieving economic stability and that there is a link between monetary policy and the strength of the economy in Iraq during the time period from 1990 to 2020.

1.4. Research hypothesis

The analytical, quantitative approach was used to accomplish the goals of the research on the official data released by the World Bank, the International Monetary Fund, and the Iraqi Ministry of Planning and Central Statistical Organization to analyze the role of monetary policy tools in achieving economic stability using the variables of magic legislation.

1.5. Research method

In order to achieve the research objectives, the analytical, quantitative approach was relied upon. To analyze the role of monetary policy tools to achieve economic stability using the variables of magic legislation between monetary policies represented based on the official data published by the Ministry of Planning and the Central Statistical Organization in Iraq, the World Bank, and the International Monetary Fund. The scope of the research is spatial, using indicators of economic stability in Iraq and temporally the study covers the period from 1990 to 2020. This research will be divided into two sections. The first topic is an overview of monetary policy and economic stability in Iraq during the period from 1990 to 2020 and concludes with a set of findings and proposals obtained by the research.

2. Literature review

In previous studies, economic stability represents one of the major goals that the world has pursued according to the degree of its progress or backwardness, in all cases and for all countries, the current research focuses on the role of monetary policy in achieving economic stability; therefore, studies are highlighted to serve the research purpose. A study by Teixeira in 2014 focused on evaluating economic performance through the application of a square as the magic role of Brazil because of was inappropriate given the slowing of economic growth and the balance of payments deficit, Russia, China, the United States of America, the Eurozone, and the modern industrialized Asian economies (Hong Kong, Korea, Singapore, and Taiwan) during the period from 1997 to 2012 [7]. The use of each economic growth rate, inflation, unemployment, and balance of payments as determinants of economic performance in these countries. The results showed good performance for China, the newly industrialized Asian countries, and Russia. However, the economic performance in Brazil was not suitable due to the decline in the economic growth rate, a deficit in the balance of payments, and the high inflation rate. In addition, the Brazilian economic performance was similar to the United States of America and the Eurozone; it was much lower than the average indicator obtained by other countries. The random dynamic general equilibrium model was used to determine the impact of monetary policy on production and inflation in Pakistan during the period from 2001 to 2014). The study concluded that the monetary policy shock had a negligible effect on output and inflation in Pakistan in the model. In contrast, the impact of monetary policy harmed production and inflation. A study by John [8] focused on the effects of monetary policy on the Nigerian economy during the study period based on the ordinary least squares analysis, and the study found that there is a reproductive between monetary policy represented by money supply and economic growth and the balance of payments in Nigeria, while there is a negative relationship between monetary policy and the general level of prices.

In a 2017 study, Pick used a square as the magic role to examine the economic performance of eleven Eurozone members between 1961 and 2015. Regarding the Arab studies, there were several that examined the connection between economic stability and monetary policy in the period from 1990 to 2017. The studies relied on the exhaustion of vector autoregression and the use of a square as the magic role, and the study came to the conclusion that, by lowering the policy objectives, monetary policy did not significantly affect the balance. A survey by Rashaan on economic reform in Algeria using no magic square, showed that the division of economic performance according to the economic reform program is strongly correlated with changes in oil prices, and according to oil prices the best. The study produced a number of results [12], one of which is how the government of Sudan's monetary policy has been very effective in achieving price stability in a way that improves economic stability, in addition to the fiscal and banking reforms during the Directorate of 1997-2003. Due to the financial dominance of monetary policy, which some groups have strained, it was not a good source of economic stability.

A study by Elhassan [10] extended the impact of monetary policy on some macroeconomic variables in Sudan during the period from 1997 to 2015 depending on the money supply as a variable of inflation, the domestic product, the unemployment rate, and the balance of payments. The study concluded that there is a positive relationship between monetary policy, GDP, and the unemployment rate, while there is a negative relationship between monetary policy, inflation, and balance of payments. As for the Iraqi studies, there is a group of studies that dealt with the relationship between monetary policy and economic stability, but the majority of these studies dealt with the relationship between monetary policy and one indicator of economic strength, based on a few studies. Omer [13] analyzed the relationship between monetary policy and the balance of payments and used inflation as an indicator of economic stability, while some authors focused on a relationship between monetary policy and the rate of economic growth. The study by Mohsin aimed at diagnosing a square-like role in the Iraqi economy and diagnosing the part of monetary policy in the case of a square-like role in Iraq during the period from 2009 to 2019 [14]. A study concluded that the Central Bank of Iraq succeeded in achieving stability in inflation rates and improving the exchange rate of the Iraqi dinar, but the Central Bank did not succeed in achieving financial stability as the credit granted to the private sector by commercial banks did not exceed the 10% of the gross domestic product. The study by Asam et al. [15] aimed to analyze the role of monetary policy in Iraq after 2003 and show its role in achieving internal and external stability during the period from 2003 to 2009 by relying on the quantitative descriptive approach. The study reached several results, including the conclusion that monetary policy in Iraq during the period from 2003 to 2009) was a relative success by increasing the real value of the Iraqi dinar by 39%, while the monetary policy could not curb inflation until 2006. The measures that the monetary authorities followed after the year 2006 contributed to containing the phenomenon of inflation through the use of operational tools. After what was presented in the previous studies, the current study differs from its predecessors in the following dimensions.

2.1. The applied dimension

Most previous studies were conducted in an environment different from Iraq after the Iraqi economy is one of the economies that depend on oil to finance the toxicological process to achieve economic policy objectives. The time dimension was summarized for a period from 1990 to 2020, and the development process faltered during that stage because of the obstacles it faced represented by bringing the economy After what was presented from the previous studies, the current study differs changing the political system in Iraq and economic openness after 2003 [13], as well as continued terrorist attacks and security issues. The study period includes shifts and changes in the majority of economic variables, and the current study used standard analysis and the application of Kaldor's magic square and the use of each of the GDP in tabular prices (unemployment rate, inflation rate, and net current account balance) as independent variables dependent on cluster cash (money supply in a broad sense) and foreign reserves in Iraq.

Thus, monetary policy can be defined as a set of measures taken by the Central Bank in order to control the amount of money in circulation and provide the economy with the required amount of money so that the money supply is in line with economic growth in the country and achieving economic stability.

2.2. Monetary policy tools

Quantitative tools and means used by the monetary authorities to control monetary conditions, affect the size of the total cash reserves available in the banking system, as well as on credit and the number of loans that banks provide to their customers, including the discount rate, where legal cash reserve ratio and open market operations are 2.3%

2.3. Discount rate

Rediscount means the interest rate charged by the Central Bank in return for re-discounting commercial papers and government statements to commercial banks or in return for the assignments it provides directly to commercial banks when commercial banks face excessive demands, It is not expected its depositors withdraw their deposits, and it is unable, as its cash liquidity runs out, to meet these requests from commercial banks to the Central Bank when they need more cash liquidity in order to deduct the commercial papers and government treasury bills in their possession and obtain their cash value before their maturity date [15]. The rediscount rate is considered one of the oldest tools the Central Bank uses to influence the volume of credit provided by commercial banks to the money market.

2.4. Open market operations

Open market operations are one of the means used by the Central Bank to influence the liquidity volume of the banking sector banks to control their credit capacity through the sale or purchase of indices. The Central Bank buys or sells government bonds using this method and thus can affect the volume of money in circulation and the money supply in the economy [16]. It is considered one of the most important tools of monetary policy, as it is always initiated by the monetary authority, i.e. allowing cash flow or reducing its quantity from the monetary base to the appropriate extent and at the appropriate time. Buying government indices in open market operations is an innovation that facilitates control of the money supply and, in the short term, the pursuit of a stable economic policy by the Central Bank and, in the long term, anti-inflationary policy [17]. The Central Bank performs the sale process when it wants to reduce the money supply, so it follows a contractionary monetary policy and the purchase process; when it wants to expand the money supply, it follows an expansionary monetary policy. Thus, open market operations could affect the investment activity in index securities by controlling the supply of money and credit by being affected by the reserves of cash in commercial banks and its effectiveness depends on the presence of developed monetary and financial markets with a sufficient supply of negotiable securities, which are in high demand by investors [16].

2.5. Statutory reserve ratio

It is one of the tools used to control the money supply. Commercial banks deposit a certain percentage of their customers' deposits with the Central Bank, and the percentage of reserves is in the form of balances or liquid money. Banks have, therefore, the ability to grant credit and create deposits. When the Central Bank wants to increase the volume of exchange credit, it takes the initiative to raise the legal reserve ratio. It thus excludes some of the surplus reserves of commercial banks and without using them as a basis for expanding grants credit and creating deposits. It may lead to an increase in non-performing loans, and this is evident when inflationary currents appear in the economy of any country, as the Central Bank raises the compulsory cash reserve ratio, which seems to affect the money creation process and the small amount of credit [18].

Qualitative tools mean those direct tools or methods used by the Central Bank to influence its credit, not its total volume, as is the case in the use of quantitative tools. In the case of using qualitative tools, they can achieve certain economic goals by influencing the economic activities that the state wants to encourage or limit, which includes selective qualitative methods [16].

2.6. Economic stability and the Kaldor square

It is agreed that the general goals of any economy are limited to the pursuit of economic stability. That is, it is confined to carbonated an acceptable level of economic growth, employment, and ensuring a high level of prices, as well as the carbonated external balance, it considers economic stability as the final goal of economic policies in general, and monetary policy in particular, and it was able [16]. Putting the main objectives in the economy, within a square that he called the magic square of Kaldor and the sister recognized this as a four-headed baptismal drawing including the discount rate containing the main objectives of economic policy, which achieved the four objectives of the economic policy of a country in a certain period of time.

Reaching the requirements and corners of the quadrant is difficult even for developed countries, as these contradicting goals will always be incompatible with each other. Because of the difficulty of attaching the four objectives to optimal values at the same time, it is called the magic square. The four objectives of economic policy, according to Kaldor [19] are as follows.

2.6.1. Achieving economic growth

All governments worldwide seek to raise the standard of living for the members of society, and the gross domestic product (GDP) per capita growth is the most important indicator that expresses the economic growth in a country according to the quarter and turns. If the economic growth rate reaches 10%, and of course, if it is not this rate is higher than the population growth rate for the same period then the unemployment rate will be high.

2.6.2. Achieving full utilization

Until the unemployment rate in a country becomes zero, and that full utilization means increasing the volume of employment and the enslavement of the maximum level of employment and working on the slavery of the smallest size of unemployment or eliminating it, but the slavery of that is difficult even in Developed countries, and according to this parameter, the highest unemployment rate was determined as 12 and the lowest level at zero [13].

2.6.3. Achieving external balance (balance of payments balance)

It is expressed as the role of import and export as a percentage of the gross domestic product. The imbalance of the balance of payments, which often expresses a state of deficit, leads to the economy's indebtedness, which is reflected negatively in the internal balances of the economy and on economic exchanges. It should be in a surplus within the limits of -4% and the deficit rate does not exceed 2% [14].

2.6.4. Controlling inflation

Inflation control expresses the continuous and continuous rise of prices. Kaldor believes it is better to obtain a non-existent rate of inflation (0%), as not controlling it leads to distortion of the economic indicators approved for making economic decisions. It is important to point out that economists have agreed that the main objective of monetary policy should be maintaining price stability and the purchasing power of the local currency. This means that inflation remains low and does not exceed (10%) annually. Notably, monetary policy aims at the light of development and economic stability, as stability is one of the most important goals of basic economic policy and is achieved by reaching the level of full employment while maintaining an appropriate degree of stability in the high level of prices. These four parameters complete the magic square, giving us an image of the goals of economic policy and the state of economic stability.

3. Measuring and analyzing the impact of monetary policy on Iraqi economic stability over the period from 1990 to 2020

3.1. The evolution of monetary policy trends in Iraq from 1990 to 2020

The money supply of the Iraqi economy sustainability during the nineties took a sharp turn as a result of the almost complete cessation of oil exports as the oil revenues decreased from the growth of 102 billion dollars to about 305 million dollars only during the year 1990/1991. This was coupled with the almost total disruption of the existing productive and colonial institutions and the exacerbation of the trade balance deficit as a result of the economic blockade due to the critical economic situation, and the lack of independence of the bank. The Central Bank of Iraq has been subject to many government procedures and decisions, so the government has resorted to covering its needs by issuing new cash without adhering to any legal or banking controls, As for 1996, it continued to rise, forming from 1,084,00 dinars to reach 3,852,241 dinars in the year 2002 and the compound annual growth rate reached 23% from 1990 to 1995 the application of the Memorandum of Understanding (oil-for-food) and the organization of the issuance of currency according to specific payments, but after 2003, the volatility policy witnessed a change towards the scientific economy and openness to the market economy, merging with and that is through legislation or amending several laws, The most important of these changes is issuing the Central Bank of Iraq Law No. 56 for the year, according to Paragraph 2 of Article 2, granted the bank complete independence from the government in conducting its central banking operations. Control of the money supply has become one of the first concerns of the Central Bank. It is noted in Figure 1 that the money supply in the broad sense continued to rise, reaching 11,498,200 dinars in 2004, and the highest rate was recorded at 186% in 2003 (Central Bank Al-Iraqi, 2004). This is attributed to several factors, the most important of which is the increase in government spending current, investment.
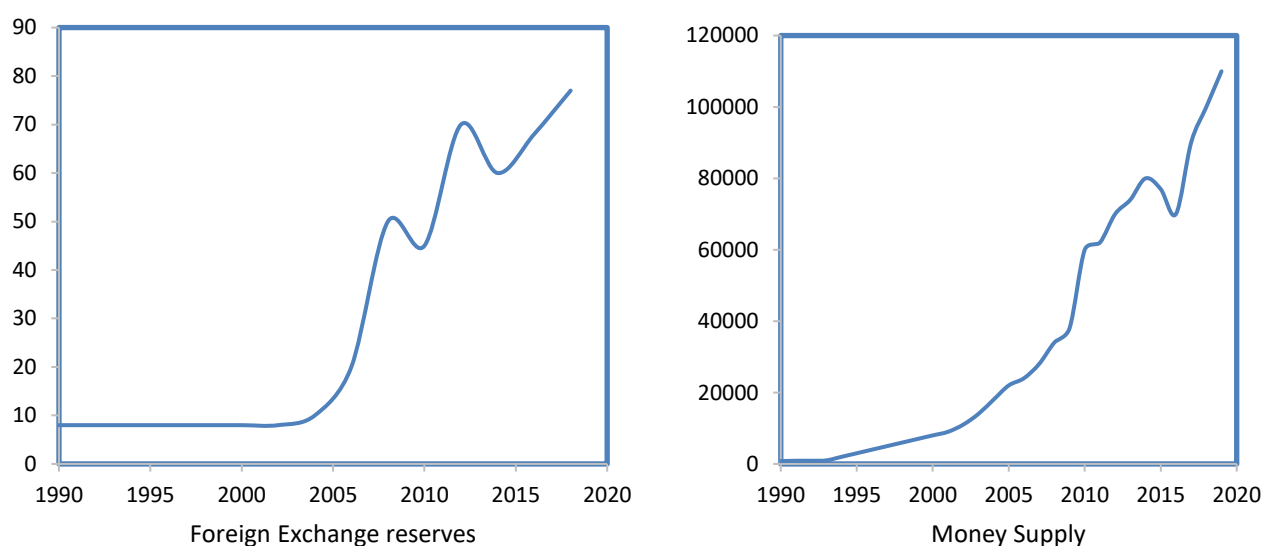

Figure 1. Evolution of money supply and foreign exchange reserves in Iraq during the period 1990-2020

3.2. Total foreign reserves

Iraq's conditions during the 1990s had a negative impact on the total foreign reserves, for the period from 1990 to 2003, total cash reserves (including gold) were stable and did not exceed 6.75 billion dollars. After 2003, total cash reserves increased significantly, reaching 77.75 billion dollars in 2013 at an annual growth rate of composite 289% for the period 2004-2013 with stagnation in 2009. This increase is attributed to an increase in oil revenues, representing the only foreign currency source. Iraq entered a new phase and experienced a double shock after 2013 due to the ISIS attacks. The drop in oil prices caused a drop in Iraq's international reserves (including the Development Fund for Iraq) from 77.7 billion dollars at the end of 2013 to 45.3 billion dollars in 2016.

4.   Analysis of economic stability in Iraq between 1990-2020

The study used the economic stability index by calculating square variables and the magic period during the study period from 1990 to 2003. According to the shapes of the magic square of Kaldor, Iraq has not achieved

optimal economic stability, and what it achieved during the period between 1990-2003 could have been better because the GDP witnessed a decline. Except for the year 1991, which witnessed the Second Gulf War, the total had positive growth rates and reached its highest level in 1998, when it recorded an average of 34.8% and continued to achieve this increase until 2000. This increase can be explained by the general level of prices rising continuously during this time period. As a result of the conditions that Iraqis faced during 2002 and 2003, a negative growth rate was recorded during these years, as Iraq's balance of payments was in a semi-permanent deficit as the deficit grew. Despite a gradual decrease in the percentage of deficit in the balance of payments from 2.418 billion dollars in 1990 to 7.076 billion dollars in 1992, this deficit continued until 2004 as a result of wrong policies that left Iraq isolated from the world for many years as a result of successive wars, international sanctions, and economic blockade.

The general level of prices rose continuously from 1991 to 1995, reaching its highest level (3873) in 1995, but then gradually declining to its lowest level (49) in 1997. The economic blockade and monetary issuance became a major cause of the rise in the general price level during the period from 1990 to 2003. The unemployment rate increased from 55% in 1990 to 1999, with a compound annual growth rate. It reached 13.72% for the period of 1990-1999, and this rate continued to rise to its record high at 28% in 2003. This was a result of economic, political, and security instability. Life gradually returned to the Iraqi economy following the establishment of signatory governments, the resumption of oil exports, and economic openness. With the assistance of the International Monetary Fund, Iraq implemented several economic reform programs to achieve stability, as indicated by the magic square shapes. According to Kaldor, Iraq's economic stability did not achieve its goals to the best of its ability, but it has done well overall.

Inflation during the period from 2004 to 2007 reached its peak in 2006 when it reached 53.2%. The Central Bank of Iraq used monetary policy tools to achieve economic stability after 2007, which contributed to the strengthening of the Iraqi dinar and the increase in the inflation rate in that time. With these measures, inflation rates fell to 0.3% in 2020. Even though reconstruction projects after 2004 employed several female workers and employed many female workers in service projects, contributing to a drop in unemployment rates to 12.8%, the official unemployment rate remains high.

During the period from 2004 to 2020, after the establishment of the temporary governments in Iraq, and the resumption of oil exports and economic openness, life gradually returned to the Iraqi economy Iraq adopted several economic reform programs with the assistance of the International Monetary Fund, aimed at achieving stability, as it is through the magic square forms. According to Kaldor, economic stability in Iraq did not reach the optimum of its objectives, but it achieved several results:

- The rate of GDP growth at current prices recorded positive and mixed rates, as it recorded the highest average rate.
- GDP growth at current prices recorded positive and mixed rates, with the highest rate in the year 2004 reaching 4.15% at current prices, and the rise continued. This increase was accompanied by a growth rate between increase and decrease (2004-2020), but this rate decreased in 2017-2018 due to a decrease in both annual crude oil production and daily rate of production. Except for the years 2000 and 2015, the balance of payments in Iraq has been in a semi-permanent surplus throughout the period from 2005 to 2020. However, this world has alternated between rising and declining oil prices and not at the same rate, confirming that the state of the balance of payments in Iraq is dependent on oil and changes in its prices.
- Just as the balance of payments in Iraq witnessed a state of semi-permanent surplus throughout the period from 2005 to 2020 with the exception of the years 2009 and 2015, this surplus alternated between rising once and declining again and not once time The data used is annual for the period from 1990 to 2020, and this does not confirm the state of the balance of payments. In Iraq, oil is dependent, and its prices have changed.
- Inflation during the period from 2004 to 2007 reached its peak of 53.2% in 2006, but the use of monetary policy tools as a tool to achieve economic stability by the Central Bank of Iraq after 2007 helped

strengthen the Iraqi dinar and increase the inflation rate. As a result of these measures, the inflation rate decreased to reach 0.3% in 2020.
- Although the reconstruction projects after 2004 employed a number of female workers and employed large numbers of female workers in service projects and contributed to the low unemployment rate reaching 12.8%, the official figures for the unemployment rate are still high.

5. Identification of the rates used in the current study

5.1. Approach and typical descriptions

This research aims to explain the impact of human capital on economic growth in Iraq. The data used is annual for the period from 1990 to 2020, and Table 1 shows the countries used in the standard study and their data sources[1].

Table 1. Definition of the data used in the study

Variable	Data sources used
Economic growth (GDP)	The reliance was on the gross domestic product at constant prices for 2014, and it was obtained from the World Bank
External equilibrium (BCR)	Net current account balance in the balance of payments using data from the International Monetary Fund and the Central Bank of Iraq
Inflation rate (INF)	The general consumer price index was obtained from the World Bank
Unemployment rate (UN)	The unemployment rate was obtained from data published by the Central Agency for Statistics and Technology
Monetary mass growth rate (M2)	Circulating money, in addition to the volume of money kept in banks in the form of current accounts, demand deposits, fuel accounts, or time deposits; Obtained through the Iraqi Central Bank
Foreign Reserves (TRS)	Total cash reserves are in US dollars and were obtained through the World Bank

In order to clarify this goal and reflect the relationship between the two data, the models were expressed as follows:

Sample 1: $----GDP = F(M_2t, TRS_t)$

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[1] The process of selecting the variables of the study, the research relied on (square and role), i.e. the variables that were used as indicators of economic stability (gross domestic product at constant prices, the current account balance and the commercial account balance as an indicator of external stability, the unemployment rate and labour force participation rate as an indicator of employment, and finally the level of employment for prices as an indicator of price stability), so the researchers relied on four dependent variables within four equations. As for the values of independence, the research relied on foreign reserves and the money supply broadly by referring to previous studies.

Sample 2: $----BCR = F(M_2t, TRS_t)$

Sample 3: $----INF = F(M_2t, TRS_t)$

Sample 4: $----UN = F(M_2t, TRS_t)$

The logarithmic function of the form and its formula are used:

Sample 1 $Ln\ (GDP)\ = B_0\ +\ B_1 LM_2 t\ +\ B_2 LTRS_t\ +\ U_t$

Sample 2 $Ln\ (BCR)\ = B_0\ +\ B_1 LM_2 t\ +\ B_2 LTRS_t\ +\ U_t$

Sample 3 $Ln\ (INF)\ = B_0\ +\ B_1 LM_2 t\ +\ B_2 LTRS_t\ +\ U_t$

Sample 4 $UN = B_0\ +\ B_1 LM_2 t\ +\ B_2 LTRS_t\ +\ U_t$

Where:

LM2t	Money supply (money supply in broad terms) (t)
ln (GDPt)	Gross domestic product at constant prices during the year (t)
ln (CBRt)	Net current account balance (t)
Unt	Unemployment rate (t)
ln (INF)	Inflation rate (t)
ln (TRSt)	Iraqi foreign reserves (t)
B0,B1,B2,	Data gate parameters in the equation

It is noted that the models are a probabilistic system, so an error limit (Ut) was included, which represents some of the factors that could not affect economic growth and were not included in the research.

5.2. Interpretation of the results

By using the model for estimating and measuring the impact of monetary policy tools on the sparkle of economic growth in Iraq for the period (1990-2020), the results of the assessment are as follows in Table 2.

A (Stationary test/unit root test): There are many methods used in testing time series, and we relied on the unit roots test, as this test indicates that the series is sustainable in the absence of unit roots in the time series of change. Likewise, it is not stable if it contains large roots of the unit, and depending on the test, we obtained the results presented in Table 2.

Table 2. The unit root test results for all the data entered in the model

		Variable	GDP	BCR	INF	UN	M2	TRS
ADF: Augmented Dickey-Fuller	Level	Intercept	0.967	0.481	0.116	0.399	0.105	0.788
		Trend	0.003*	0.113	0.172	0 .415	0.999	0.143
	First Variation	Intercept	0*	0.0001*	0.0005*	0 .003*	0*	0.16*
		Trend	0*	0.007*	0.004*	0.007*	0*	0 668***

Note: The level of propaganda is at (1% *), (5% **), and (11% ***), respectively.
Note 2: The researchers prepared the data based on the annual data for the period (1990-2020) and using the e-views program.

It appears that all variables in GDP, monetary mass, inflation, external balance, foreign reserves, the money supply in its broadest sense, and unemployment are constant and stable in the first variation at the level of significance (1%, 5%, and 10%, respectively)[2]. Thus, it allows for integration between model variables.

B (Johannsen test-integration analysis): After completing the testing process to detect stability and stability in user data, we mention that since there are two-time series with the same degree of integration and there is a possibility of integration between the variables of the study. This is an important test to show the existence of the long-term relationship between the variables of the study, and in order to allow an estimate of the model, it is necessary to have at least one relationship between one of the independent variables and the dependent variable, and the results of this test are shown in Table 3.

Table 3. Integration test for research models

Sample Variable 1	GDP	Cash offer	Foreign precautions
null hypothesis	nothing*	at least 1	at least 4
Trace Statistic value	41.44355	14.31307	3.629584
critical value	29.79707	15.49471	3.841466
Prob**	0.0015	0 .0747	0.0568
Test results: the presence of one integrated vector, Rejection of the null hypothesis at the level of propaganda (%)			
Sample Variable 2	Current account balance	Cash offer	Foreign precautions
Null hypothesis	nothing*	at least 1	at least 4
Trace Statistic value	33.97585	13.6421	44,47,791
critical value	29.79707	15.49471	3.841466
Prob**	0.0156	0.0933	0.0349
Test results: the presence of one integrated vector, *rejection of the null hypothesis at the level of propaganda (5%)			
Sample Variable 3	Inflation	Cash offer	Foreign precautions
Null hypothesis	nothing*	at least 1	at least 4
Trace Statistic value	32.01106	13.03451	35,63,725
Critical value	29.79707	15.49471	3.841466
Prob**	0.0274	0.1136	0.059
Test results: the existence of the one vector, *rejection of the null hypothesis at the level of propaganda (5)			
Sample Variable 4	Unemployment	Cash offer	Foreign Precautions
Null hypothesis	nothing*	at least 1	at least 4
Trace Statistic value	41.91856	15.24639	5.40725
Critical value	29.79707	15.49471	3.841466
Prob**	0.0013	0.0545	0.02
Test results: the presence of (2) complementary vectors, *rejection of the null hypothesis at the level of propaganda (5%)			

Note 1: The researchers prepared the data based on the annual data for the period (1990-2020) and using the e-views program.

It is decided from the results presented in Table 3 that the results of the impact test reject the counting hypothesis, which means that there is no relationship for the random integration because the value of the effect statistic is greater than the critical value at the level of propensity (5%). There is at least one integrated vector in the model (first, second, third) and there are two complementary orders in the sister model.

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[2] † It is worth mentioning here that the data was stable at the level of (the intersection with its opposite) only; that is, this data was not stable in the case of the presence of (the intersection, after the presence of the interruption and its opposite), so this data is not considered stable in the level, so we took the first difference

A (Standard models estimate): When the statistical integration relationship is obtained, the next step in the test comes, which is designing and estimating the model to demonstrate the role of monetary policy in the spark of economic stability in Iraq.

For the period from 1990 to 2020, there are several appropriate models according to the previous test, and during several experiments, the study discovered the appropriate models according to the requirements of economic and econometric theory. The method of cointegrating regression is to estimate the models through the two models DOLS (Dynamic OLS) and FMOLS (Fully Modified Ordinary Least Square) [22]. Because the variables of the study were stabilized after taking the first difference by thinning the sustainability of the residuals at the levels by the ADF test, these models give us more accurate results and are more consistent with economic reasoning in terms of volume, value, and signal. Table 4 contains the estimated information.

Table 4. Estimating the benefits through the use of the FMOLS model - during the period 1990-2020

Sample	Model 1 of the GDP growth rate		From 1 of the current account balance (Balance of payment)	
Independent variables	Rated Parameters (Cof)	Moral level	Rated Parameters (Cof)	Moral level
M2 money supply	0.2	0	0.41	0.055
Foreign precautions	0.05	0.57	1.06	0.035
Hard limit	0.1012	0.018	-32.4	0.001
Sample	Model 3 of the rate of inflation		Model 2 of the unemployment rate	
Independent variables	Estimated Parameters (Cof)	Moral level	Estimated Parameters (Cof)	Moral level
M2 money supply	2.79	0.39	0.25	0
Foreign precautions	1.04	0.21	-0.61	0
Hard limit	1.32	0.029	13.19	0.004

The two researchers prepared the source based on the annual data for the period (1990-2019) and using the 9 e-views program DOLS was used for models 1-2 related to external balance and economic growth and for models 3-4 related to inflation and slowdown FMOLS which is the integrating regression) method. It is clear from Table 4 that the coefficient of money supply in the broad sense indicates a positive effect (directive and significant) on the real GDP by 0.1, and it contributes to an increase in the GDP by 0.20%.

The foreign reserves positively impacted the economic growth in Iraq during the study period, as the foreign reserves contributed by 0.05 to the GDP increase. This result is consistent with the reality of the Iraqi economy as it increases. Foreign reserves in Iraq and according to the reports of the Central Bank of Iraq (2018) contributed to maximizing the purchasing power of the Iraqi dinar and curbing inflation and making it within reasonable limits, which amounted to 2% in 2019. This has a positive impact on the growing economy and GDP. Evaluation of the second estimated model for the current account balance is shown in Table 4.

Since the calculated elasticity indicates that a change in the money supply ratio of 1% causes an improvement in the current account balance, the money supply ratio, in its broadest sense, had a favorable impact on the current account balance in Iraq during the study period, Except that the increase in the money supply through the tools and means of monetary policy in Iraq did not effectively contribute to improving the balance of payments and the balance of charity, the monetary mass does not contribute to improving the current account balance in Iraq, and this result declines with the operative economic theory, Perhaps the reason for this is that foreign trade in Iraq suffers from a major structural imbalance represented in the dominance of crude oil as a raw material in more than 95% of its exports. This means the absence of commodity diversity for exports and the weakness of the production base. The foreign reserves positively affected the current account balance in

Iraq during the study period, as the foreign reserves contributed 1.06% to the increase in the current account balance. This is a result of movement with the reality of the Iraqi economy because these foreign currency reserves are a balance to meet the deficit in the balance of payments, and the percentage of reserves changes according to the deficit rates. In the face of the deficit that occurs in the balance of payments withdrawing from them to avoid the occurrence of inflation that occurs as a result of reducing imports, which leads to a rise in prices as a result of the devaluation of the currency external.

The money supply in the broad market contributed to the high rate of inflation during the study period, as the coefficient of the money supply in the broad market was positive, and this means a change in the money supply (M2) by 1%, leading to a rise in the rate of inflation in Iraq by 79%. This means that the change in the money supply due to the wide demand contributes to explaining a large percentage of the price rise. This may be due to the increase in the money supply or the monetary mass linked to government spending.

The foreign exchange reserves contributed to the low inflation rate in Iraq during the study period, as the increase in foreign exchange reserves contributed to the low inflation rate by 9% negatively in the process of economic growth in Iraq, as the coefficient of foreign exchange reserves was negative. This means the increase in foreign exchange reserves by 1% contributes to the low inflation rate of 9%. This result is consistent with the reality of the Iraqi economy because the increase in the volume of foreign reserves contributes to the stability of the exchange rate of the US and dinar and, thus, the stability of the high level of prices. Evaluation of the fourth economically estimated model is shown in Table 4.

The money supply contributed to the high unemployment rate because the money supply coefficient indicates the negative effect of the money supply in broad terms on the unemployment rate, as the value of the elasticity of the money supply reached 5% which means that an increase in the money supply ratio by 0.1% contributes to an increase in the unemployment rate. Unemployment at a rate of 5% and it should be noted here that this is a result of a predecessor to the scope of economic theory. However, this negative effect of the money supply in the broad sense on unemployment is explained by the inconsistency of the monetary and real sectors, i.e. the separation of these two sectors, because of the existence of a productive apparatus. The bank cannot absorb the amount of pent-up money in Iraq. As for the foreign exchange reserves, its effect was significant on the unemployment rate, as the number of foreign exchange reserves of 2% constituted 16%, and the increase in foreign exchange reserves by 1 led to a decrease in the unemployment rate by 16%. This result is consistent with the economic theory.

6. Conclusions and recommendations

In light of the above analysis, we conclude the following:

1. The Iraqi economy is rentier, meaning that it depends on oil income to meet economic objectives represented by economic stability, according to reports from the Central Bank of Iraq. The findings of the study showed that, while the monetary mass used (presentation of Money in Broad Demand) was not a commodity in Brest Indicators of economic sustainability through foreign exchange reserves, Iraq's monetary policy was good for economic stability.

2. The typical findings demonstrated a favorable correlation between the money supply and economic expansion as measured by GDP and the effect of foreign forest reserves on GDP.

3. It was found, through the standard indicator, that the money supply in its broad form had a positive effect on the current account balance in Iraq during the study period. That is, the increase in the money supply through the tools and means of the monetary policy in Iraq contributed negatively to the balance of payments and the balance of the current account until now. Its contribution was not significant because foreign trade in Iraq suffers from a serious structural imbalance represented by the domination of private oil as a raw material on more than 95% of its exports, while the effect of foreign exchange reserves was to negate the balance of the current account

in Iraq during the study period, as the foreign reserves contributed by 7.7% to the increase in the current account balance.

4. Inflation is one of the sustainable economic problems that Iraq suffers from, which has social, political, and security repercussions. The results of the standard study showed that there is a significant negative relationship between the money supply with broad invitation and inflation; the increase in the money supply during the study period contributed to the high rate of inflation. As a result of the weakness of the productive apparatus, especially commodity production. And just as the effect of foreign exchange reserves on the inflation rate was negative, the increase in the percentage of cash reserves in Iraq contributes to the low inflation rate. This result is consistent with the reality of the Iraqi economy because the increase in foreign reserves contributed to maximizing the purchasing power of the Iraqi dinar and curbing inflation.

5. The results of the standard study showed that there is a direct relationship between the money supply with its broad debt and the unemployment rate, and investment; the increase in the money supply does not reflect the increase in the number of goods and services (production). As for foreign reserves, the impact was significant in the decrease in the unemployment rate.

6.1. Recommendations

In light of the above conclusions, the study recommends the following:

1. The Central Bank of Iraq must participate in the formulation, preparation, financing, and implementation of economic plans that work to achieve real economic reforms in the three main markets (the money market, the goods and services market, and the labor market. If these markets are considered among the most important main climates conducive to creating a large-scale economic movement. Economic stability is an incubator for the desired growth and economic development other than targeting inflation.

2. Payment put in place the design of payments and the smoothening of economic growth through the development of productive commodity sectors, especially industry, and agriculture, to provide products and reduce dependence on oil revenues, which negatively affects low unemployment and inflation. It is activating and diversifying the monetary policy tools in Iraq in order to achieve its objectives represented in economic stability through developing the stock market (stocks and bonds) and building an advanced banking system that contributes to the development of local money markets by enhancing competition in commercial banks and restoring the confidence of individuals in banks, commercial and specialized.

3. A serious review of all policies (monetary, fiscal, and commercial) pursued by this Iraqi government, which mainly require comprehensive administrative, economic, and political reforms and work to achieve harmony and consistency between the real and monetary sectors.

4. Total dependence on oil sector imports is considered one of the repressive problems that threaten the Iraqi economy because it increases the problem of economic openness and dependence on the outside.

5. Increasing the proportion of foreign exchange reserves in Iraq by increasing other non-oil revenues because foreign exchange reserves in Iraq depend on oil revenues; this means that the percentage of foreign reserves is exposed to fluctuation as a result of changes in oil prices and revenues.

6. The fact that the Iraqi economy suffers from structural imbalances in the economic infrastructure, and to address these imbalances, the efforts of macroeconomic policies must be combined with monetary policy in order to introduce sectoral economic reforms in the industry, agriculture, services, and extractive and manufacturing industries through a comprehensive economic plan.

7. The monetary authority must work seriously to maintain the exchange rate of the Iraqi dinar high against the exchange rates of foreign currencies through auctions of currency sales since the stability of the exchange rate represents one of the important foundations for attracting foreign investments and advancing economic growth and development, in the country.

8. Through its tools, the monetary authority must work to control the large monetary mass by achieving a balanced proportion between the monetary mass and the Iraqi GDP to reach the balance of the real and monetary sectors.

Through new and successful monetary policies, the monetary authorities must develop financial and monetary markets to implement and absorb their indirect measures to control the movement of economic variables, especially the general level of prices.

Declaration of competing interest

The authors declare that they have no conflicts of interest regarding the publication of this paper.

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