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MEASURING AND ANALYZING THE RELATIONSHIP BETWEEN THE INFLATION RATE AND THE UR IN IRAQ FOR THE PERIOD (2003-2023)

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Abstract:

The research is important as it examines unemployment, as the most important macroeconomic problems in Iraq, while its goal was to evaluate and analyze the inflation rate effect on the general Iraqi unemployment from 2003-2023. The study dealt with the fundamentals of both the inflation rate, the overall unemployment rate, and the relationship between these two variables by examining their economic and econometric situation. The study has been used descriptive approach in the analysis of the data of dependent variable- the total UR (UR), and the independent variable- inflation rate data (INF), and to the Phelps Perron test (PP). The study variable addition degree is a mixture of type I (0) and type I (1), and thus the model was evaluated based on the ARDL self-regression methodology. The boundary test for cointegration shows co-integration relationship for the model making the analysis short term, and the assessed model was successful in every standard quality test (autocorrelation, heterogeneity of variance, normal distribution of residues). In addition, it was stable according to the tests (CUSUM). The most important results of the research are, the inflation rate in Iraq decreased during the study in second half in reference to the success of the fiscal and monetary policies in controlling the inflation rate. The average unemployment in this work was higher than the universally accepted rates of (2%-5%) relative to the poor planning in Iraq and the absence of a plan for absorbing the rising labor forces. The relationship between the inflation and the unemployment rates in Iraq was negative and mean. Yet the size of the impact was very weak, and the research came out with recommendations, the most important of which are, the Central Bank of Iraq must address the negative effects of the decision to raise the exchange rate to avoid the continuous rise in inflation rates. Iraq needs future plans for the reduction of the general unemployment, absorbing the rise in the labor force, and paying attention to develop education and technology. The private sector should be given more opportunities and improve economic activities for providing more jobs and take in more workforce, and to raise investment in all sectors and enlarge the government investment spending for reducing the UR and prevent it.

Keywords: Inflation Rate, Public Spending, Unemployment Rate, Iraq.

INTRODUCTION:

Unemployment is a serious problem facing the Iraqi economy because of its effect on the economy, society and politics, as well as it is a waste of the human elements. It can be a defect in the social and political systems, as it indicates that

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the state is not performing its duties towards its citizens because of the weak structure threatening sovereignty. It encourages terrorism and extremism, as the state's policy in absorbing workers in state agencies, such as security. It fails in absorbing the increasing labor with negative results as unemployment emerged in the public sector. Its combat is difficult as it is greater than before because it generates more negative returns, reducing unemployment and then it addresses its needs exceptional efforts and an integrated policies to reform the labor market and the sectors that absorb employment, in the productive sectors, industry and agriculture, with the private sector reform of. The three wars and the subsequent war and terrorist acts after the change in April 2003 destroyed the Iraqi economy, and the policy of uncontrolled openness significantly increased its imports, missed the domestic supply and the cessation of production almost completely and to the reduction of exports (except oil) and with the growth in oil exports in the so-called Dutch disease. So, agricultural commodities lost their competitiveness with imported goods and the country became completely dependent on abroad. The economic crisis helped in the spread of the phenomenon of unemployment, in addition to the deterioration in the security file, the heavy legacy left by the previous regimes, the high population growth rates and the deterioration of the educational system. Also, Iraq significantly grew unemployment rates, as the global unemployment is (2%-5%), while the in Iraq it is more than (16%) in 2022 .

First. The problem of the study:

The problems come from the following main question: What is the inflation rate effect on the UR in Iraq?

Second. The study importance:

The study is important as unemployment is one of the most important macroeconomic obstacles in Iraq, as it is the biggest challenge facing societies and studying it and identifying its effects help support the development for preventing poverty.

III. The Objectives:

The study measures the inflation rate impact on the unemployment rates, tests the relationship between changers in the Iraq for the period (2003-2023) and makes some recommendations for decision-makers.

IV. The hypotheses:

The increase in the inflation rate negatively affects the unemployment rates in the study sample as follows:

H0: No statistically significant inflation effect was found on the UR in Iraq.

An alternative hypothesis:

H1: Inflation significantly affects the UR in Iraq.

Fifth. The Methodology:

Three main methods are followed:

1. Descriptive method: on which the theories of unemployment, GDP and public spending is based and clarifying the relationship between them.
2. Analytical method: through which the reality of the UR and the inflation rate were analyzed.
3. Standard method: modern standard methods were used by the statistical program (E-views 12) between the independent and dependent variables.

Sixth. Limitations:

The field of study included:

1. Spatial limits: The Iraqi economy.
2. Time limits: duration (2003-2023).

The first part: the concepts of the inflation and the unemployment rates

First. What is inflation:

1. Concept of inflation:

Inflation is the continuous rise in the general prices, which means the rise in the average prices of goods and services during a time. The general level of prices during a given year is equal to the average prices in that year(Baali & Nayli, 2021).

The general level of prices has been the subject of controversy and discussion between different economic schools, foremost of which is the classical theory, as changes in income and employment were attributed to the money supply. Therefore, these shifts lead to a shift in prices, while the Keynesian theory attributed the change in prices to the change

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in the interest rate. However, monetary theory has shown that monetary policy has a long term influence on the prices, while the neoclassicists have pointed out that the change in prices is due to unexpected monetary actions due to lack of sufficient information(Bahlol et al., 2019).

Inflation is one of the most prominent contemporary economic problems, which the state, institutions and individuals are interested in, because it affects their consumer and investment economic behavior. The emergence of the problem of inflation coincided with the emergence of paper money and the expansion of credit, and the accompanying failure to cover that money with precious metals or foreign currencies. So inflation has become one of the main economic problems that developing countries suffer from and has become one of the phenomena associated with them(Azri, 2020).

The general price is defined as "the weighted average of the prices used or consumed in a country. It is determined in the market for goods and services by the confluence of supply with demand. The shifts in the prices are measured in price indices by tracking developments in the prices during a certain period of time using the base year for comparison". Inflation deteriorates the purchasing power of the local currency (Younesi and Madoukh, 2019, 199).

Inflation is a common economic term in explaining the general level of prices with no clear economists' definition because of the division of opinions on defining inflation, as it describes several different cases, including(Al-Wandawi, 2010):

A. Extreme rise in the prices.
B. High cash incomes: wages or profits.
C. High costs.
D. Overly-creating cash balances.

It is not essential for those diverse phenomena to go in one direction and simultaneously.

The CPI is used to measure the rate of inflation, and the CPI represents the prices that consumers spend for living purposes (Al-Jaridi, 2020, 14).

One of the most common definitions of inflation is "general and continuous rise in prices over time"(Zhao, 2021).

It is also defined as "the rise in the money amount causing higher prices whether this rise is in the money supply and demand, cash balances or the expansion of credit creation(Bahlol & Al-Dahash, 2019).

It is also defined as a self-escalating and continuous movement of the prices, due to the imbalance between the aggregate demand surplus in aggregate supply excess, and structural imbalances in the national economy, deteriorating the purchasing power of money"(Azri, 2020).

3. Causes of inflation:

There are three main explanations of the inflation causes (Baali & Nayli, 2021):

A. Demand pressure theory: It is also called the theory of traditional inflation, as this theory assumes that the reason for the growth in the prices is the rise in demand more than the supply. That is, the rise in demand for goods and services entails an increase in consumer and investment spending in a way that exceeds the productive capacity of the economy. This increase will lead to an increase in prices.
B. The theory of increasing costs: This theory focuses on the supply side, as the increase in wages at rates that exceed the rates of increase in workers' productive efficiency, due to the demands and pressures of trade unions, and thus leads to more production costs, and then a growth in the prices of goods produced due to the maintenance of producers at the level of their profits.
C. Structural change theory: This theory focuses on the demand side, as the continuous changes in the structure of the economy due to shifts in aggregate demand due to economic and social development, which leads to an increase in demand in excess of supply. Most economists believe that this type of inflation has spread in developing countries that were aiming to implement economic and social development programs.

3. Types of inflation:

Inflation is classified into several criteria(Munir & Mansur, 2009; Švigir & Miloš, 2017) and (Alissa, 2018, 294):

A. Inflationary pressure unit standard:
   - Creeping inflation: It means the continuous rise of prices gradually over a long time.

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- Hyperinflation: It means the continuous rise in prices at high rates over a short time, which may reach 100% annually, and is generated by the excessive expansion of the money supply or as a result of a significant drop in the supply of services and goods.

B. Standard of state intervention in prices:
   - Inflation: It represents the apparent rise in prices without the intervention of government authorities, which makes prices uncontrollable.
   - Repressed inflation: It is the opposite of free inflation, in which government authorities intervene to mitigate it through certain measures, including fixing prices, roofing them, or controlling exchange.

C. Inflation source criterion:
   - Domestic inflation: It represents the continuous rise in prices resulting from a rise in total request for goods and services or as a result of high production costs such as wages.
   - Imported inflation: It is the high prices of goods and services imported from foreign markets, whether consumer goods or inputs involved in production processes. This type of inflation appears in small economies that are open to the outside world, especially those whose productive system is weak.

Second. What is unemployment?

1. Concept of unemployment:

It can be defined as the disruption of part of the labor force in society, that is, the inability to use the entire labor force, in other words, not benefiting from the human element. This results in the loss of part of the outputs of the national product that could have been obtained if this number of unemployed were employed. Thus, this leads to a decrease in the national income of individuals as well as a decrease in the standard of living (Saleh, 2023, 184).

It is also defined as the number of individuals who do not have a job that helps them get money. So the size of unemployment is the size of the gap between the amount of work supplied and the amount required of it in the market, (labor market) at a certain level of wages(Mohsen, 2021).

The World Bank defined it as the part of the workforce that has no job but is there to look for a job (Amer and Masri, 2017, 13).

Unemployment is defined as the difference between the amount of work provided at prevailing wage levels and the amount of work employed at those levels over a given period of time. This means that the volume of work reflects the big difference between the labor and the demand supply in the labor market (unemployment gap) (Hussein, 2012, 82).

It is also a complex economic and social phenomenon that has emerged with the existence of man, particularly in modern societies. Unemployment is a word that corresponds to employment and its opposite at the same time, and it means an employee who has lost his job and source of income and cannot work, and also means the absence of work for those who want it(Al-Shabili & Al-Ubaidi, 2012).

From the above, it can be said that unemployment represents (the imbalance between the labor force available in a particular society and the available job opportunities that result in the failure of part of the labor force to work in whole or in part despite its ability and desire to work).

2. Causes of unemployment:

The concept of unemployment is defined by the International Labor Organization as an unemployed person who can and wants to work, seeks and proves it at the salary level, not availing, and the reasons for the increase in unemployment are as follows(Al-Brifkani, 2010)(Abed and Bidaa, 2021, 199-200):

A. States abandon their obligation to recruit graduates and freeze public sector employment.
B. The low growth rate of public spending on essential social services such as education, health, social housing, and others has led to a decline in government demand for labor in these services.
C. The reduction of the state's role in economic activity has reduced state investments in creating new productive capacities to absorb the unemployed, with the exception of investments in infrastructure projects whose implementation has become dependent on a capital.
D. Tech-intensive and temporary workers, meaning they will be laid off immediately after the completion of the project.

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E. Economic crises, which in turn lead to the accumulation of production and are not accompanied by an increase in consumption, as on the other hand these products are sufficient and saturated inside the country and difficult to export outside the country, and on the other hand, businessmen and factory owners dismissing many workers under the pretext of this crisis.
F. Intense and strong competition between owners of co-production companies on the basis of quality and price. It prompted a large group of owners of the above-mentioned companies to close their companies because they are unable to withstand this competition due to production costs, market, and pricing costs. This leads to the dismissal many workers from the companies to become unemployed.
G. The significant increase in indirect taxes such as sales tax, the removal of subsidies and the rise in prices in the public sector, and this led to a significant decrease in household income disposable for spending, which affected domestic demand and then led to a significant decline in the domestic market and its accumulation, the accumulation of unwanted assets in the public and private sectors leads to bankruptcy and heavy losses, which in turn leads to the dismissal of part of the labor force.
H. The rise in the prices of energy, transport and supply of domestic and imported goods has led to high production costs in several sectors, at a time when these sectors have not been able to increase their productivity levels to absorb the burden of this increase. The result has been a significant reduction in the economic surplus.
I. Liberalization of import trade and reduction of tariffs have exposed local industries to unequal competition that cannot withstand imported products, leading to the closure and layoff of many of these industries.
J. The privatization of public sector projects has led to a widespread wave of layoffs of workers who worked in them, especially those with high salaries, or reduced salaries of workers who remained in their jobs, and thus the privatization process became the largest source of unemployment growth.

3. Calculation of unemployment

The calculation of the unemployment is the first problem faced by the concerned planners when determining solutions to this phenomenon. These figures vary according to the sources of different institutions. Censuses and household surveys are the key calculating sources for the unemployment because they provide data on the gross unemployed and the labor force in the country, besides the census is officially carried out every decade or more. The automated processing of survey data takes a relatively long time, there is another thing that limits the accuracy of the data on the UR received from employment offices shows a significant deficiency in registration, and the percentage of unemployed registered in these offices does not exceed 20% at most, and in order to determine how big is the unemployment issue. Calculating UR (calculate the unemployed to the current labor force) is essential despite the simplicity of this ratio. Its calculation faces a number of difficulties, including those related to the new definition of unemployment. The measurement of UR is according to the unemployed able to work to the gross labor (Al-Maksousi, 2023).

The second part: the reality of the inflation rate and the UR in the Iraq

First. Analysis of the inflation rate in Iraq:

The inflation rate is represented in the annual growth of the price index for the base year 2012. Table (3) shows the consumer price index was increasing during the period (2003-2018), as it was (28.7) in 2003. Then, it continued to increase until it became (149) in 2018, but in 2019, the consumer price index decreased to become (148.7), but during the period (2020-2023) it returned to increase continuously, as after it became by (149.6) in 2020, after which it continued to increase until it became (172.7) in 2023.

As for the inflation rate in Iraq, we note that despite the continuous increase in the consumer price index, it was generally decreasing, as it was increasing and at a high level during the period (2003-2006), as it was (34%) in 2003. It continued to increase until it became (53.1%) in 2006, which is the highest rate, due to the rise in the prices of commodities, especially fuel.

During the period (2007-2010), inflation rates witnessed a continuous decline, as it became (31%) in 2007. Then, it continued to decrease until it became (2.4%) in 2010, after the government and the Central Bank of Iraq takes action, as interest rates, rediscount rate, legal reserve and foreign reserves were raised to reduce the supplication of money, keeping the exchange rate stable, especially after the global mortgage crisis consequences.

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In 2011 and 2012, inflation rates increased slightly to (5.6%) and (6%) respectively, after the increase in the consumer price index because of the rise in the prices of several commodities from the contents of the consumer basket. In 2013 and 2014, inflation rates in Iraq recorded low rates by (2.4%) and (-0.8) respectively, after a slight increase in the consumer price index, and the increase in foreign exchange reserves, thanks to the rise in crude oil prices to more than ($ 100 every barrel). It is worth noting that the Iraq in 2014 witnessed an inflation rate below zero percent for the first time during the study period, while in 2015 the inflation rate rose slightly to become (2.4%) because of the ninth of June of 2014.

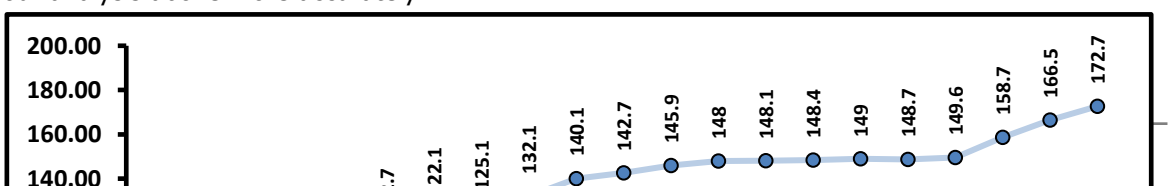
Table (1): Developments in the inflation rate in Iraq for 2003-2023

Annual growth rate (Inflation rate)* (%)	Consumer Price Index	Sunnah
34	28.7	2003
26.8	36.4	2004
37.1	49.9	2005
53.1	76.4	2006
30.9	100	2007
12.7	112.7	2008
8.3	122.1	2009
2.5	125.1	2010
5.6	132.1	2011
6.1	140.1	2012
1.9	142.7	2013
2.2	145.9	2014
1.4	148	2015
0.07	148.1	2016
0.2	148.4	2017
0.4	149	2018
-0.2	148.7	2019
0.6	149.6	2020
6.1	158.7	2021
4.9	166.5	2022
3.7	172.7	2023

This table is from Ministry of Planning, Central Bureau of Statistics, Index Section, Consumer Price Index and Inflation Rate Report.

*** Inflation rate is calculated based on the consumer price index for the year 2002 (21.5)**

During the period (2016-2020), inflation rates in Iraq were almost constant and at sub-healthy levels, reaching a second negative value in 2019 by (-0.2%), after the austerity measures taken by the government due to fluctuating global oil prices. Yet, in 2021, the inflation rate rose to (6.1%), according to a decision by the Central Bank of Iraq to raise exchange rates in order to enhance government expenditures. It led to the devaluation of the Iraqi dinar. In 2022 and 2023, the inflation rate decreased to (4.9%) and (3.7%) respectively. After the Central Bank of Iraq reduced the official exchange rate, the increase in oil revenues was from the rise of global oil prices and reaching the level of ($ 100 per barrel) and thus increasing foreign exchange reserves and the appreciation of the local currency, and figures (1) and (2) show our analysis above more accurately:



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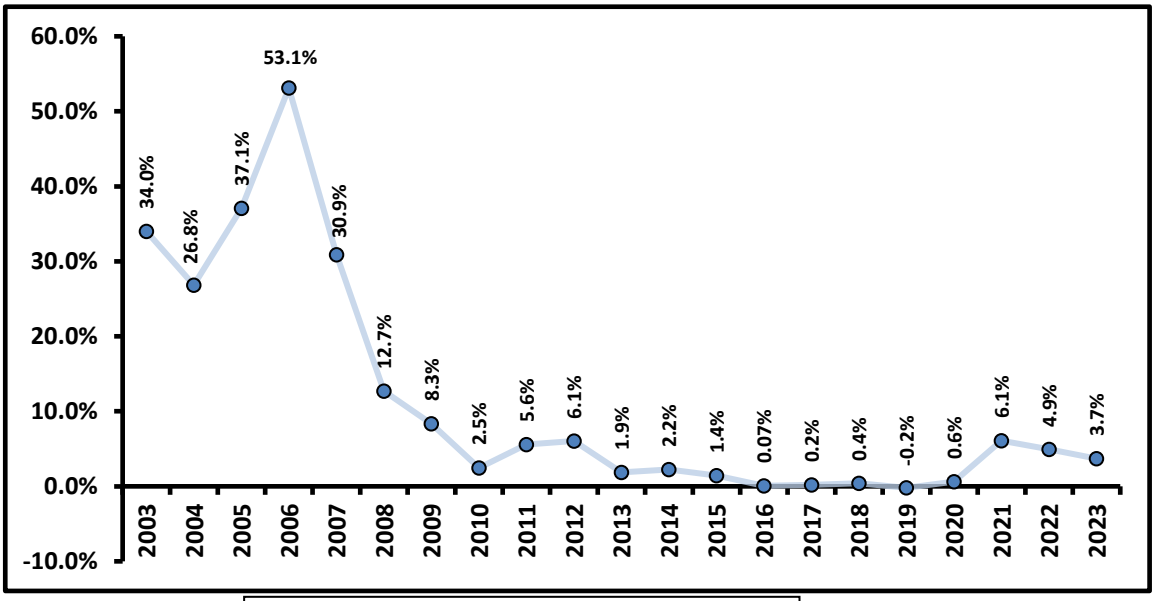
Developments in the Consumer Price Index in Iraq

Figure 1: Developments in the consumer price index in Iraq for the period (2003-2023)



Inflation rate developments in Iraq

Figure 2: Developments in the Iraq inflation rate for the period (2003-2023)

The researchers prepared these tables based on the data of Table (1)

Second. Developing the general Iraqi unemployment rates:

The following table (2) includes an analysis of the reality of unemployment rates for males and females as well as the total UR in Iraq during the period (2003-2023). The UR for males was generally decreasing during the period (2003-2012). It was (8.74%) in 2004 and it became (7.18%) in 2012, noting some slight variations in 2005, as it increased slightly by (0.15%) and in 2007, it increased very slightly by (0.03%), and the reason for. This continuous decline leads to the gradual expansion of economic activity after the end of international sanctions, the lifting of the economic blockade, the recovery of the construction and reconstruction movement, as well as the continuous increase in job grades and in the number of new government institutions.

Table (2): Developing Iraqi Unemployment Rates (2003-2023)

Overall UR (%)	Female UR (%)	Male UR (%)	Sunnah

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8.85	**7.99**	**8.98**	**2003**
8.61	**7.72**	**8.74**	**2004**
8.72	**7.69**	**8.89**	**2005**
8.65	**7.55**	**8.84**	**2006**
8.65	**7.44**	**8.87**	**2007**
8.48	**8.42**	**8.49**	**2008**
8.40	**9.46**	**8.21**	**2009**
8.25	**10.45**	**7.87**	**2010**
8.13	**11.45**	**7.54**	**2011**
7.96	**12.41**	**7.18**	**2012**
9.26	**17.14**	**7.81**	**2013**
10.59	**21.81**	**8.40**	**2014**
10.73	**22.01**	**8.45**	**2015**
10.82	**22.13**	**8.45**	**2016**
13.02	**30.74**	**10.19**	**2017**
14.07	**28.74**	**11.72**	**2018**
15.11	**26.71**	**13.25**	**2019**
16.23	**27.90**	**14.36**	**2020**
16.17	**28.19**	**14.22**	**2021**
15.55	**28.46**	**13.38**	**2022**
15.19	**28.73**	**13.54**	**2023**

This table is taken from the World Bank data published on the Bank's website on 1/3/2024

From 2013-2020, the UR for males was generally increasing, as after it became (7.81%) in 2013, it continued to increase until it became (14.36%) in 2020, noting its stability in 2016 by (8.45%). This consistent rise is because of the fluctuation of economic activity in Iraq due to the repercussions of the events of the ninth of June of 2014 and the great fluctuation in global oil prices. The Iraqi government took austerity measures under which it reduced public spending with the aim of controlling the money supply and reducing inflation rates, which led to high unemployment rates. The UR in 2020 was the highest during the study because of the almost total cessation of economic activity because of Corona virus. Still, in 2021 and 2022, the UR for males witnessed a continuous decrease to become (14.22%) and (13.38%) respectively, after the gradual disappearance of the threat of the Corona virus and the recovery of global oil prices, but in 2023 increased to (13.54%).

The researcher believes that the UR for males in the Iraq is high, as the internationally accepted rate is (5%-8%) while in Iraq it was average for the entire period (9.87%). This may be due to the large number of males in particular or the large number of those of working age, or perhaps the reason for the low investment, the lack of factories and the inability of public productive institutions to absorb the large number of unemployed.

Table (2) is the developments of the UR for females (2003-2023). It has been decreasing during the period (2003-2007), as it was (7.72%) in 2004. Then, it continued to decline until it became (7.44%) in 2007, and the reason for this is the gradual economic activity increase after the end of international sanctions and the lifting of the economic blockade, and the recovery of the construction and reconstruction movement, as well as the continuous increase in job grades and in the number of new government institutions, but during 2008-2017. The UR for females has witnessed a continuous increase to reach very high levels, after it became (8.42%) in 2008, after which it continued to increase until it became (30.74%) in 2017. It the highest rate during the study period, and the reason for this continuous increase is due to the continuous increase in foreign labor from females, especially in hospitals and hotels, in addition to the worsening of the problem of unemployment for females after the events of June of 2014. However, in 2018 and 2019 the UR for females decreased to (28.74%) and (26.71%) respectively, but it witnessed a continuous increase during

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the period (2020-2022), as it became (27.90%) in 2020, after which it continued to increase until it became (28.46%) in 2022.

The researcher believes that the UR for females in Iraq is also high. It exceeds the internationally accepted rate (5%-8%), as it reached an average for the entire period (17.77%). This may be due to the large male population in particular or the large number of those of working age, or perhaps due to low investment, lack of factories and the inability of public productive institutions to absorb the large number of unemployed.

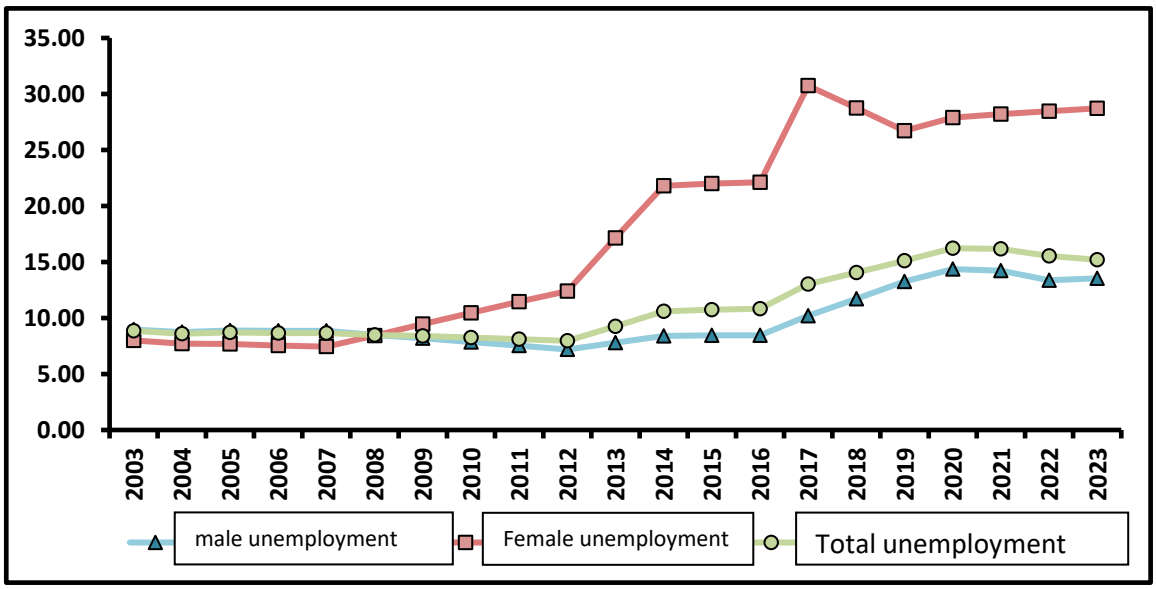

Figure 3: Developments in Iraq unemployment rates for (2003-2023)

This table is the researcher's work based on the data of Table (2)

Table (2) also shows the total unemployment rate, and we note that it has decreased in 2004, as it was (8.85%) in 2003, it became in 2004 by (8.61%), while in 2005, it rose (8.72%), but it was decreasing during the period (2006-2012), noting its stability in 2007, after it became (8.65%) in 2006, after it continued to decline until it became (7.96%) in In 2012, the reason for this continuous decrease is because of the growth in the economic activity, as well as the continuous increase in the number of employees and the number of new institutions. From 2013-2020, UR has been increasing, as after it became (9.26%) in 2013, it continued to increase until it became (16.23%) in 2020 because of the fluctuation of economic activity in Iraq due to the repercussions of the events of the ninth of June of 2014 and the large fluctuation in the prices of Global oil, in addition to the almost complete cessation of all economic activities due to the repercussions of the spread of the Corona virus in 2020. Yet, in 2021 and 2022, the overall UR in Iraq witnessed a continuous decrease to become (16.17%) and (15.55%) respectively, after the gradual disappearance of the threat of the Corona virus and the recovery of global oil prices, and Figure (3) shows our analysis above more accurately:

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Table (3) is the total population of Iraq (2003-2023), the population growth rate, and the number of working-age population and their percentage of the total population, as follows:

Table 3: Developing the total population in Iraq (2003-2023)

Proportion of working-age population/population (Total)	Number of working-age population (Total)	Annual growth rate (%)	Population (Total)	Sunnah
54.0	14605076		27068822	2003
54.2	15085903	2.9	27858949	2004
54.4	15605018	3.0	28698685	2005
54.6	15792549	0.7	28905607	2006
54.9	15738850	-0.8	28660887	2007
55.2	16130344	1.9	29218381	2008
55.5	16807862	3.7	30289040	2009
55.7	17425807	3.2	31264875	2010
55.9	18103210	3.6	32378061	2011
56.1	18987329	4.6	33864447	2012
56.2	19954180	4.8	35481800	2013
56.4	20732966	3.6	36746488	2014
56.7	21389834	2.8	37757813	2015
56.9	22022860	2.5	38697943	2016
57.2	22655699	2.4	39621161	2017
57.5	23326515	2.4	40590699	2018
57.8	24012914	2.4	41563521	2019
58.1	24730458	2.4	42556983	2020
58.5	25453771	2.3	43533593	2021
58.9	26190212	2.2	44496121	2022
59.4	27009265	2.2	45458652	2023

This table is based World Bank data published on the Bank's website on 23/3/2024

The total population in Iraq was growing continuously from 2003-2023. It was at the beginning of the period (13588897 people) in 2003, and then continued to increase until it became at the end of the period by (22675321 people) in 2023 and a positive annual growth (2.1%), noting its slight decrease in 2007 to become (14407413 people) and a negative annual growth rate of (-0.8%). This is the lowest annual growth rate during the study period, due to the deterioration of the security situation, and the highest annual growth rate reached (4.7%) in 2013. So, the females population able to work in Iraq were rising continuously 2003-2023, as it was at the beginning of the period by (7405997 people), the lowest value, and then continued to increase until it became at the end of the period by (13548162 people). This is its highest value during the study period, noting its slight decrease in 2007 to become 7998079. The ratio of the female working age (15-64 years) to the female population increased throughout the study period, after it was (54.5%) in 2003, which is the lowest percentage during the study period. It then continued to increase until it became (59.7%) in 2023, which is the highest percentage during the study period.

Third Theme: Measurement and analysis of the GDP growth effect and public expenditure on the UR

First: The model:

The variables in logarithm and the dependent variable of the assessed model were:

1. Time series of the gross UR.

The independent estimated model variable:

2. Time series of the inflation rate (INF).

Secondly. Sleep test results:

Table (4) is the Philips Perron tests for dormancy (stability) as follows:

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Table 4: Phelps Perron Sleep Test Results

Variables		Level			First difference		
		Constant With fixed limit	Constant & Trend with constant term and vector	Without Constant & Trend Without constant and vector	Constant With fixed limit	Constant & Trend with constant term and vector	Without Constant & Trend Without constant and vector
1	UR	0.951	0.631	0.975	0.104	0.336	0.018
2	INF	0.491	0.905	0.029	0.122	0.096	0.002

This table is the Author's work based on the outputs of the E-Views12 program

The level indicate that the time series of the UR as not stable at any equation, while the time series of the inflation rate (INF) was stable at the equation that does not contain the limit of the constant or the vector and at the level of significance (5%). Yet in the first difference, the time series of the two variables were stable. So, the time series of the total UR was stable at the equation that does not contain the fixed limit or the vector and at a significant level (5%). In the same equation, the time series of the inflation rate (INF) was also stable but with a significant level (1%). So, the model was measured based on self-regression methodology of distributed deceleration (ARDL).

Third. Standard test results for the model:

1. Tests of standard problems and model quality:

Table (5) is the probability value of the chi-square for the autocorrelation issue has reached (0.1522), so this problem disappeared because it is greater than (0.05), while the p-value of the chi-square for the variance heterogeneity was (0.8204), which is greater than (0.05). This means that the model does not suffer from this problem, while the p-value of the (Jarque-Bera) statistic has It reached (0.6691). So, what is left of the research model was the normal distribution, and the value of the coefficient of determination (R2) has risen (0.9963), and the value of the corrected coefficient of determination (R-2) (0.9884), representing the explanatory power of the model, that is, the independent variables is (98%) of the changes in the dependent variable, and it is also clear Durbin Watson's statistic of (2.2110).

Table (5): Standard Problem Tests and Model Quality

Breusch-Godfrey Serial Correlation LM Test (Autocorrelation Test)	
Prob. F (1,19)	**0.4850**
Prob. Chi-Square (1)	**0.3193**
Heteroskedasticity Test: ARCH Contrast Heterogeneity Test	
Prob. F(1,61)	**0.4428**
Prob. Chi-Square(1)	**0.4353**
Normal Distribution (Histogram-Normality test) Normal distribution of residues	
Jarque-Bera	**0.2818**
Model quality tests Model Quality Tests	
R-squared (R2)	**0.9999**
Adjusted R-squared ($^{R-2}$)	**0.9999**
Durbin-Watson stat (DW)	**2.0963**

This is the researcher's work based on the outputs of the E-Views12 program

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Figure 4: Model remainder of normal distribution

The table is taken from E-Views12 Outputs

2. Co-integration test (Bounds test):

Table (6) shows that the research model does not have a co-integration relationship, and that our analysis will be limited to the short term only, because the value of the Fisher statistic (F) was (1.0008) smaller than all the upper and lower limits.

Table (6): F- Bound test

Test Statistic	Value	K
F-statistic	1.0008	1
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
10%	4.05	4.49
5%	4.68	5.15
2.5%	5.30	5.83
1%	6.10	6.73

This table is based on the outputs of the E-Views12 program

3. Analysis of model results in the short term:

Table (7) shows the results of short-term flexibility, as follows:

Table 7: Short-term elasticities

Short term				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(INF)	- 0.0505	0.0133	- 3.780	0.000

This table is based on the outputs of the E-Views12 program

The time series of the inflation rate (INF) has been inversely related to the gross UR i.e. an increase in the inflation rate by (1%). This decreases the overall UR by (0).05%), and that this relationship was significantly high at the level of (1%) and by (0.000), which is a result identical to economic theory as the Phillips curve shows that the high inflation rate leads to a decrease in the UR and vice versa, and that countries that seek to reduce the UR must accept high rates of inflation.

5. Model Stability Test:

Figure (5) is the cumulative total test for the remnants of the model, as the content of stability is that the cumulative series does not exit outside the critical limits, so the research model was stable

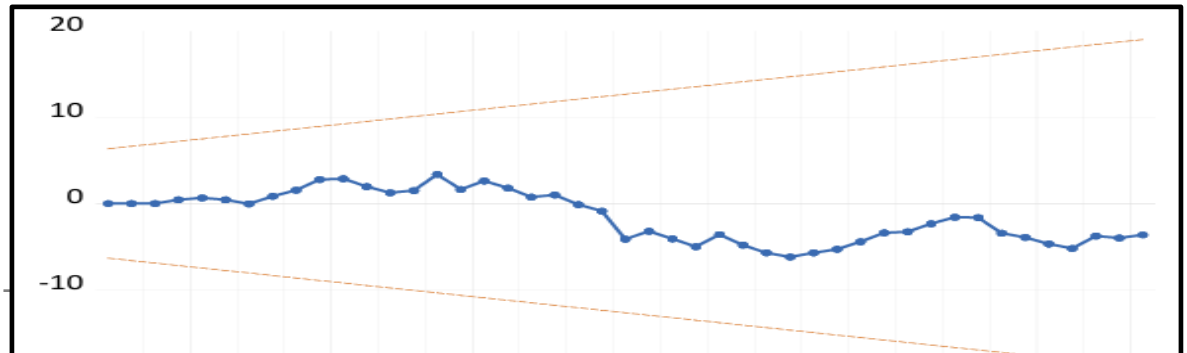

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Figure 5: Cusum cumulative sum test

Source: E-Views12 Outputs

Figure (6) is the stability of the model according to the cumulative total test of the remainders, and it is clear that the model was stable.

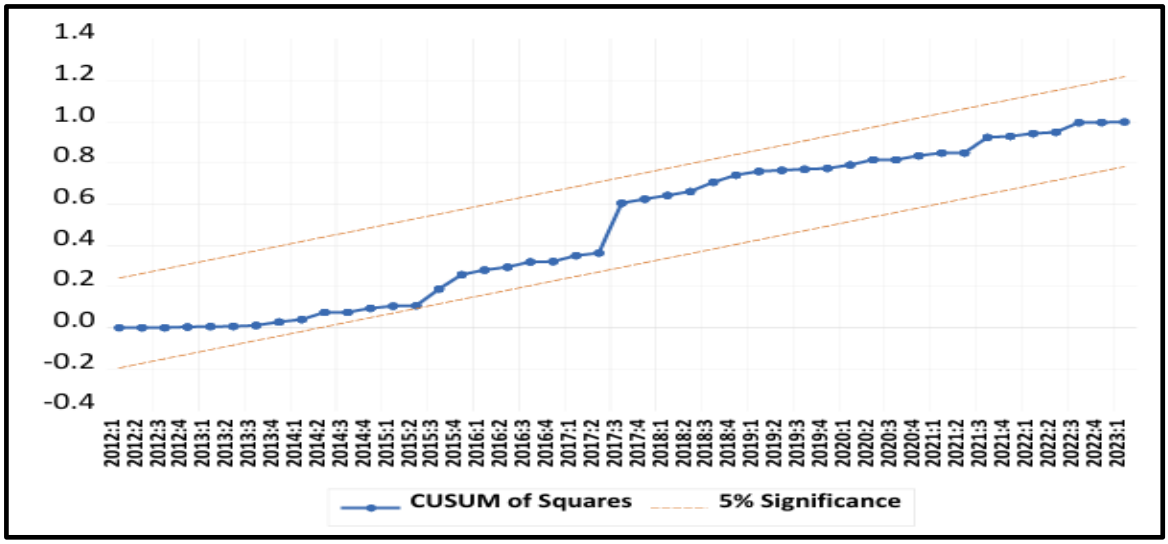

Figure 6: Cusum of Square cumulative sum test

This table is prepared by E-Views12 Outputs

Conclusions:

This works has reached a number of results:

1. The inflation rate in Iraq was very high during the first half of the study period, as it averaged (20%), while during the second half of the study period, it averaged (1.8%). It reached levels close to zero during the third quarter of the study period, and this reflects the success of the fiscal and monetary policies in controlling the inflation rate, but the Central Bank's decision to raise the exchange rate has contributed to raising inflation rates during the last quarter of the study period.
2. The average total UR during the study period was (11.2%), and exceeded the internationally accepted rates (2%-5%). It was during the first half of the study period by (8.54%), but in the second half it became (13.75%) in reference to poor planning in Iraq and a successful plan did not exist to absorb the growing labor force.
3. The relationship between the inflation rate and the UR in Iraq was negative and significant, but the magnitude of the impact was very weak, a relationship that is identical to economic theory, as the Phelps curve indicates the negative relationship between the two rates.

Recommendations:

1. The Central Bank of Iraq must address the negative effects of the decision to raise the exchange rate and work to reduce the parallel exchange rate to avoid the continuous rise in inflation rates.
2. Iraq needs plans for the reduction overall unemployment, absorbing the increase in the labor force, and paying attention to education and technology.

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3. Iraq should give the private sector more opportunities and increase its contribution to economic activity to create more jobs and absorb more of the workforce.
4. Work to raise the level of investment in all sectors and increase the percentage of government investments spending to reduce the UR and hinder its development and the development of its repercussions.

REFERENCES

1. Al-Brifkani, A. M. I. (2010). The phenomenon of unemployment among graduates of Duhok University colleges (causes and treatments), published research. *Rafidain Development Journal*, *32*(100).
2. Al-Maksousi, S. (2023). *The impact of unemployment on sustainable development indicators in Iraq for the period 2004-2020* American University of Science and Technology-Lebanon].
3. Al-Shabili, A. J. M., & Al-Ubaidi, S. F. A. (2012). (2012), Unemployment and its Relationship to the Rise in Crime Rates, A Theoretical Analytical Study, Published Research. *Journal of Humanities and Social Sciences*(1).
4. Al-Wandawi, N. M. H. (2010). Measuring the impact of the general price level and money supply on the exchange rate of the Iraqi dinar for the period (1980-2002) using the partial adjustment model. *Journal of Administration and Economics*(82).
5. Azri, H. (2020). *The impact of public expenditures on inflation, an econometric study of the case of Algeria during the period (1990-2017)* University of Mohamed Khider-Biskra]. Faculty of Economics.
6. Baali, M., & Nayli, A. (2021). *A quantitative study of the impact of exchange rate changes on the general price level in Algeria for the period (2014-2018)* University of May 8]. Faculty of Economics, Commerce and Management Sciences.
7. Bahlol, L., Hamad, A., & Al-Dahash, A. M. (2019). An econometric study of the effects of monetary policy on inflation rates in the Libyan economy during (2010-2014), published research. *Journal of the Institute of Economic Sciences*, *22*(2).
8. Bahlol, L. a. H., & Al-Dahash, A. M. A. a. (2019). An econometric study of the effects of monetary policy on inflation rates in the Libyan economy during (2010-2014), published research. *Journal of the Institute of Economic Sciences*, *22*(2).
9. Saleh, Ahmed Najib, (2023), Analysis of the role of business incubators in reducing the problem of unemployment in Iraq for the period (2011-2021) while presenting a strategic vision using SWOT environmental analysis, published research, Journal of Business Economics, Volume 4, Issue 5, Iraq, Baghdad.
10. Mohsen, B. D. (2021). Geographical Analysis of Economic Activity and Unemployment Indicators in Iraq, Published Research. *Journal of Al-Isra University College for Social and Human Sciences*, *3*(6).
11. Munir, Q., & Mansur, K. (2009). Non-linearity between inflation rate and GDP growth in Malaysia. *Economics bulletin*, *29*(3), 1555-1569.
12. Švigir, M., & Miloš, J. (2017). Relationship between inflation and economic growth; comparative experience of Italy and Austria. *FIP-Financije i pravo*, *5*(2), 91-101.
13. Zhao, H. (2021). Is there a stable relationship between money supply and price level? arguments on quantity theory of money. Granite Journal: a Postgraduate Interdisciplinary Journal, 5(1), 13-18.
14. Younesi, Hoda Hazbaa and Maddoukh, Majda, (2019), The role of the credit channel in the development of the general level of prices in Algeria (2000-2017), published research, Al-Bahith Magazine, Ammar Thilighi University-Laghouat, Volume 19, Issue 1, Algeria, Laghouat.