ANALYZING AND MEASURING THE CAUSAL RELATIONSHIP BETWEEN INFLATION AND UNEMPLOYMENT THROUGH THE PHILLIPS CURVE - IRAQ, A CASE STUDY FOR THE PERIOD (2021 - 2004)

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Abstract

This study aims to analyze and measure the causal relationship between the inflation rate and the unemployment rate in Iraq for the period **2004-2021**, utilizing the Phillips curve methodology to analyze the causal relationship between inflation and unemployment rates.The study found a weak inverse relationship between the inflation and unemployment rates in Iraq during the period **2004-2021**, indicating a relative decoupling of the impact between changes in inflation and unemployment. Specifically, a decrease in the unemployment rate by an average of 0.013% is associated with a 10% increase in the inflation rate. Additionally, the correlation coefficient between the variables of the study was calculated, revealing a direct relationship. Consequently, the Phillips curve could not be established for the period **2004-2021**, and what is referred to as the stagflation phenomenon became apparent. This finding suggests a minor inverse relationship between the variables, which is not consistent across all the years studied, aligning with the theoretical framework of the Phillips curve and supported by the mathematical analysis of the study.

Keywords: Unemployment Rate, Inflation Rate, Phillips Curve, Stagflation Phenomenon.

INTRODUCTION

The **1970s** marked the emergence of a unique and unprecedented economic crisis characterized by a surge in overall price levels, accompanied by rising unemployment rates and a concomitant decline in economic growth and stability. This crisis, known as stagflation, swept through major industrial capitalist economies, originating in the United States of America.

This phenomenon has become one of the most complex economic occurrences faced by contemporary economies, both developed and developing, due to its profound impact on various economic, social, and political aspects. It has been a subject of debate and disagreement among different economic schools of thought, each seeking to explain its causes, identify its origins, and propose effective solutions.

At the time, most economic disputes centered on the validity of the inverse relationship between unemployment and inflation, as represented by the Phillips curve. This study aims to provide an explanation of stagflation in the Iraqi economy, focusing on structural imbalances and their role in leading to this phenomenon.

The practical significance of this study lies in assessing the extent to which these variables can explain the phenomenon in a manner consistent with the study's objectives. This understanding is crucial for identifying appropriate solutions, based on available data for an extended time series spanning from **2004** to **2021.**

Problem Statement

The Iraqi economy, similar to others, contends with high rates of inflation and unemployment, along with their myriad negative repercussions, both economically and socially. These two issues stem from a multitude of interrelated factors that have culminated in significant risks, impacting both individuals and the broader society, which has in turn led to the squandering of Iraq's economic and human capital. Thus, it is imperative to address these issues promptly to mitigate their long-term effects. Consequently, the question arises: Is the Phillips curve applicable to the economy?

Study Objective

The objective of this study is to investigate the causal relationship between the inflation rate and unemployment in Iraq during the period **2004-2021**.

Study Hypothesis

This study is based on the fundamental hypothesis that an inverse relationship exists between the unemployment rate and inflation in Iraq for the period **2004-2021**.

Significance of the Study

This study holds significant theoretical and practical implications:

- Identifying the Most Objective and Influential Causes: The study aims to identify the most objective and influential causes of the emergence and development of the phenomenon of unemployment and inflation in the Iraqi economy.

- Estimating and Illustrating Negative Effects: The study aims to estimate and illustrate the magnitude of the negative effects of unemployment and inflation on the Iraqi economy.

- Highlighting the Importance of Addressing Macroeconomic Problems: The study emphasizes the importance of addressing macroeconomic problems such as unemployment and inflation, which are of primary concern to all countries.

METHODOLOGY

The study employs a descriptive methodology to examine data and information obtained from the Ministry of Planning and Development Cooperation, the Central Statistical Organization, and Information Technology to investigate the causes of unemployment and inflation in Iraq. Additionally, the research analyzes the relationship between the variables in the study to determine their effects.

Study Plan

First Axis: The relationship between unemployment and inflation **Phillips Curve**

Second Axis: The evolution of inflation indicators in Iraq for the period **2004_2021**

Third Axis: The evolution of unemployment indicators in Iraq for the period **2004_2021**

Fourth Axis: Estimating the Phillips Curve in Iraq for the period **2004_2021**

Fifth Axis: Conclusions and recommendations.

LITERATURE REVIEW

1. A pivotal study by Boualkar (2017) sought to elucidate the dynamics between inflation and unemployment in Algeria from **1970** to **2015**, employing the Phillips Curve as a theoretical framework. The investigation revealed an inverse correlation between the inflation and unemployment rates over the study period. Notably, Boualkar's findings indicated a threshold for the unemployment rate at 18.75%, which persisted irrespective of inflation escalations. Additionally, the study delineated a specific interaction between these variables: for each average decrease in unemployment by 0.0412, there was a corresponding one percentage point increase in the inflation rate. Further analysis suggested that a 10% inflation rise was associated with a 0.177% average decrease in unemployment (Boualkar, 2017).

2. **The study by Patrick Nuh and Hyunjoo Kim (2013)** conducted an empirical analysis of the Phillips Curve by exploring a time series in Germany during the period **1970-2012**. The aim of this research was to investigate the relationship between inflation and unemployment in Germany using cointegration methods and an error correction model. The study found that there is no negative relationship in the short term between inflation and unemployment, suggesting that, in the short term, the Phillips Curve is not a suitable tool for making policy decisions in Germany. Furthermore, a negative relationship between inflation and unemployment does exist in the long term, which can be interpreted as being due to asymmetric nominal wage rigidities. This finding also explains the persistent rise in the inflation rate in Germany and the implications for inflation targeting policies.

3. **The study by Zdravko Sergo et al. (2012)** focused on the stability of the Phillips Curve in the context of Croatia during the period **1994-2010**. The objective of this study was to elucidate the stability of the relationship expectations for the Phillips Curve between unemployment and wages in Croatia. The research concluded that pegging the exchange rate is a precarious strategy for controlling long-term inflation and unemployment rates. Therefore, Croatian monetary policy should permit a depreciation of the Croatian currency rather than maintaining its exchange rate pegged to the Euro. Furthermore, the study revealed that the causes of unemployment in Croatia were structural rather than a result of decreased inflation rates. Consequently, the Phillips Curve is no longer applicable in the Croatian context. This finding casts doubt on the reliance on the stability of the Phillips Curve in setting monetary policy objectives in Croatia.

4. **The (2018) study by Dr. Mohammad Khalil Al-Bahsi** focused on the phenomenon of stagflation in advanced countries, bridging the gap between theory and practice. The primary goal of this research was to uncover the true causes of stagflation in these nations by examining the effects of trading operations in the foreign exchange market. This analysis utilized time series data from the American and British economies spanning from **1975** to **2016**. The researcher adopted a descriptive analytical approach, complemented by an econometric methodology, which involved analyzing **Panel Data** time series and developing a **Fixed Effect Model**. The study arrived at several key findings, including the identification of a direct relationship between interest rates, currency supply, and the net deficit and surplus in the general budget, all in relation to the rate of stagflation. Based on these findings, the study recommended imposing a set of restrictions and conditions on speculative activities in the currency market. It also suggested the creation of a new international monetary system that would stabilize the exchange rates of international currencies relative to each other, thereby limiting currency speculation.

5. **The study by Zahid Qasim Al-Saedi (2016)** focused on stagflation in Iraq during the period 1990-2013. The aim of the study was to derive a set of enlightening and explanatory results regarding the complex relationship between inflation and unemployment, and to identify the key variables that significantly influence this issue in the Iraqi economy. This could assist in the development of necessary measures by the relevant authorities in formulating economic policy and decision-making. The study found that certain imbalances in the Iraqi economy were responsible for causing inflation, while others led to unemployment.

6. **Another study, conducted by Lu Yanga and Shigeyuki Hamori in (2014),** analyzed the Phillips Curve in the American and Canadian economies using GARCH models over the period **1985-2012**. The empirical results indicated that the relationship between the inflation rate and the unemployment rate is negative during recession periods, but turns positive during boom periods. For instance, the information technology bubble in the United States during **1995-1999**, and the bubble in Canada from **1985-1989**, demonstrated a positive correlation between the inflation rate and the unemployment rate.

## THE THEORETICAL ASPECT OF THE STUDY

The First Axis of the Study, "The Relationship between Unemployment and Inflation (Phillips Curve)

Inflation, over many decades of the previous century, was a major concern for countries regardless of their economic and social systems or their level of economic development. This concern became prominent after these countries had experienced another critical issue, recession, which could potentially be more damaging than inflation if it led to a **downward spiral**.

After World War II, Western European countries, having economically recovered and rebuilt, began to face the problem of inflation, at a time when unemployment rates were already decreasing. This situation prompted numerous economists to study the relationship between

unemployment and inflation (Zaki, 1998:361). In this context, Professor A.W. Phillips of the London School of Economics published a significant study in **1958** in the "**Economical**" journal, titled "**The Relationship between Unemployment and the Rate of Change of Money Wage Rates in the United Kingdom, 1861-1957**". This study discovered a strong statistical relationship between the proportion of unemployed individuals relative to the total population and the rate of change in hourly wages for workers. In other words, there was an inverse relationship between the rate of unemployment and the rate of inflation, represented by the Phillips Curve, as explained by Snowdon & Vane (2005) and as illustrated in Figure 1.

Figure 1: The Relationship between the Phillips Curves, the Unemployment Rate
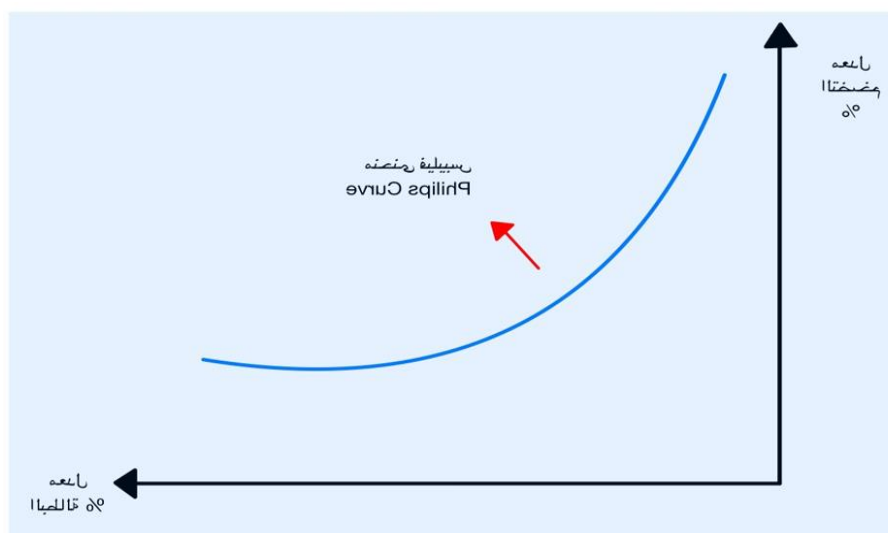
The interpretation of the scenario illustrated in the figure above elucidates that when there is a substantial increase in the total demand within the economy, organizations will endeavor to boost their production. This increase is achieved by recruiting more workers and offering them higher wages as an incentive. Subsequently, this leads to an elevation in production costs due to the increased wages. This increase in production costs is then reflected in the prices of goods and services, resulting in a rise in prices and consequently causing inflation. Hence, it is observed that when unemployment decreases, inflation rates tend to increase.

In the case of recession and depression, this indicates that the economic situation is in decline, with demand being either stagnant or contracting. This scenario typically results in prices remaining relatively stable or even decreasing. Consequently, this means that inflation is either diminishing or disappearing, and unemployment becomes more evident.

However, the inverse relationship between unemployment and inflation has not been conclusively proven. Many countries have notably experienced both states simultaneously, with significant rates of unemployment and inflation co-occurring.

This situation is referred to as "stagflation."

1- The concept of stagflation is a monetary phenomenon characterized by a continuous rise in the general level of prices accompanied by increasing unemployment and a decline in national output levels and growth rates over a specific time period (Al-Sisi, 2020: 429). Most theoretical ideas about fiscal and monetary policy are grounded in Keynesian thought, which emphasizes the need to increase the overall level of demand to maintain production levels, employment, and achieve economic and technological progress. Additionally, these policies are applied to ensure the achievement of objectives, focusing on the redistribution of national income between property income and labor income as a means to avoid crises of recession and unemployment, and to link distribution with employment and growth (Al-Doski, Nema, 31:2010). The use of expansionary policy leads to increased inflation, while contractionary policy results in higher unemployment rates. Therefore, economic policy has attempted to find a balance between combating unemployment and inflation, culminating in the decisions that led to the spiraling increase in both inflation and unemployment (Kanaan, 353:2012-354pp).

As depicted in Figure 2, the use of expansionary policies will lead to an increase in inflation and a reduction in unemployment, moving from position A1 to B1. When the economic policy shifts towards contraction, we observe the economy transitioning to position A2, where unemployment increases along with inflation, albeit at lower rates. Then, new trends emerge calling for expansion, moving the economy from position A2 to B2 and so on, through contractionary policies.

Figure 2: Unemployment and Inflation Rates
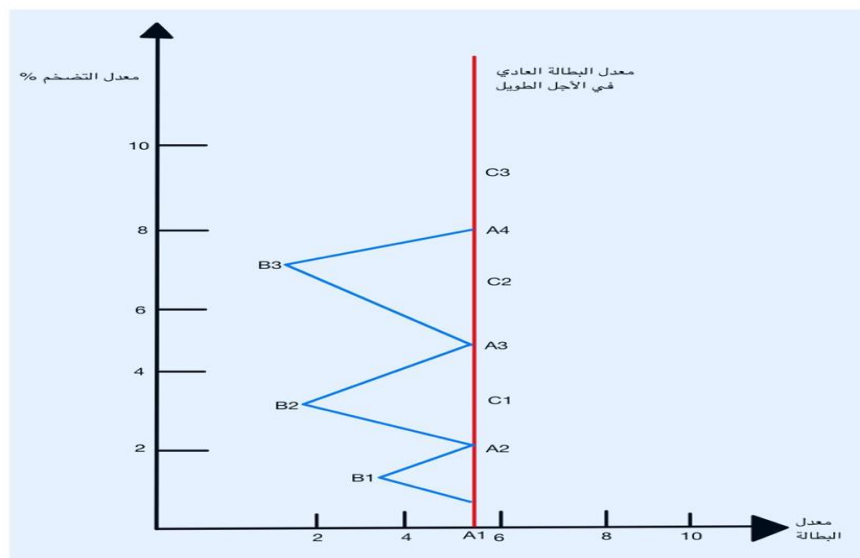
In response to these dynamics, Keynesians suggest a flexible integration of fiscal and monetary policies, with a recommendation for less aggressive expansion to control inflation. They are not opposed to implementing programs that rationalize wages and prices and oversee their

regulation. To address the issue of unemployment and facilitate the transition from recession to recovery, an increase in savings, accumulation, and productivity is necessary, along with the rehabilitation of the workforce through extensive training programs. In cases of rampant unemployment, they advocate a return to major public works policies, aimed at creating extensive employment and income opportunities.

2- Estimation of the Phillips Curve Function

The function assumes an inverse relationship between the unemployment rate and the inflation rate. Simple nonlinear regression is used to measure a nonlinear relationship between two variables, one dependent (Y) and the other independent (X). It is possible to use what is known as Box-Cox transformations to determine the various forms that the simple nonlinear relationship between Y and X can take. To illustrate this, let's assume that the general formula for the relationship between Y and X is as follows:

$$y^{\lambda_1} = a_0 + bx^{\lambda_2} + u$$

$$Y^{\lambda 1} = \begin{cases} \dfrac{Y^{\lambda 1} - 1}{\lambda 1} & for \ \lambda 1 \neq 0 \\ LnY & for \ \lambda 1 = 0 \end{cases}$$

$$X^{\lambda 2} = \begin{cases} \dfrac{X^{\lambda 2} - 1}{\lambda 2} & for \ \lambda 2 \neq 0 \\ LnX & for \ \lambda 2 = 0 \end{cases}$$

Consequently, there are numerous cases that describe the relationship between X and Y, according to the aforementioned transformers. In the case of a linear relationship, it occurs when A1 = A2 = 1. By substituting these values into the Box-Cox transformations We find that the relationship between X and Y takes the following form:

$$Y = a + Bx + u$$

However, if ◆1=1λ1=1 and ◆2=−1λ2=−1, by substituting these values into the Box-Cox transformations, we obtain the previous equation in a transformed form, known as the inverse transformation relationship:

$$Y = a + b \left(\frac{1}{x}\right) + u \quad \ldots\ldots\ldots\ldots (1)$$

With the omission of the random term u, it becomes apparent that the slope of this relationship is variable and not constant, hence it represents a non-linear relationship where...

$$\frac{dy}{dx} = -\frac{b}{x^2}$$

To estimate Equation (1), the first step involves obtaining the reciprocal of the values of the independent variable...

Where X* = 1\ X then, apply the following formula for the estimation $\hat{b} = \dfrac{\sum yx^*}{\sum x^{*2}}$

$$\hat{a} = y - \hat{b}X^*$$

Second Axis: The Evolution of Inflation Indicators in Iraq (2004-2021)

Inflation is one of the economic challenges that most economies **both Advanced and Developing** face, causing numerous structural imbalances since the **1970s** (Abu Shawir and Mahdi, 2011: p.272). It is characterized as a persistent and upward trend in the general price level. Inflation can be calculated using the following equation (Al-Hadi, 2013: p.196):

Inflation Rate=
(Prices in the previous yearPrices in the current year−Prices in the previous year) ×100

Within the context of the Iraqi economy, inflation, as a result of both monetary and fiscal policies, has experienced significant fluctuations. This is largely due to the rise in oil revenues stemming from increased crude oil prices in the global market. This has led to a rapid increase in the money supply compared to previous years, along with increases in salaries, wages, and openness to imports to bridge the demand gap. In **2004**, the inflation rate in the Iraqi economy reached 31.7%, a high level that leads to price increases and, consequently, a decrease in the real value of the local currency. This, in turn, raises production and import costs, negatively impacting economic activity. In **2006**, the state adopted an expansionary policy due to increased oil revenues. This policy led to a notable rise in inflation rates, peaking at 64.8%, driven by increased government spending, particularly in salaries and wages. This escalation in spending first amplified demand and then consumption, while the supply of goods remained unchanged. Consequently, the real sector was unable to meet the increasing demand and consumption resulting from the heightened expenditure. This imbalance caused economic disequilibrium due to the total demand exceeding the available supply of goods and services. As a result, the effectiveness of monetary policy in maintaining price levels was weakened, and it failed to curb the high inflation rates, culminating in a peak in **2006**.

Table 1: Estimates of the Phillips Curve Equation for the Iraqi Economy 2004-2021 in Million Dinars

Years	U	(INF)	inf*=1/inf	un=UN-av(UN)	inf*=INF*-av(INF*)	unxinf*	inf*^2
2004	26.8	31.70	0.032	10.37	-0.12	-1.21	0.01
2005	17.97	31.60	0.032	17.97	0.03	0.57	0.01
2006	17.5	64.80	0.015	17.50	0.02	0.27	0.02
2007	11.7	4.70	0.213	11.70	0.21	2.49	0.00
2008	15.34	6.80	0.147	15.34	0.15	2.26	0.00
2009	14	-4.40	-0.227	14.00	-0.23	-3.18	0.14
2010	12	3.30	0.303	-14.80	0.27	-4.02	0.02
2011	11.1	6.00	0.167	-6.87	0.14	-0.93	0.00
2012	11.9	3.60	0.278	-5.60	0.26	-1.47	0.02
2013	11.8	3.10	0.323	0.10	0.11	0.01	0.03
2014	10.6	1.60	0.625	-4.74	0.48	-2.27	0.23
2015	12.6	2.30	0.435	-1.40	0.66	-0.93	0.08
2016	10.8	-0.70	-1.429	-1.20	-1.73	2.08	2.49
2017	22.4	0.80	1.250	11.30	1.08	12.24	1.21
2018	22.6	-0.10	-10.000	10.70	-10.28	-109.97	102.98
2019	22.6	0.10	10.000	10.80	9.68	104.52	97.06
2020	21.1	3.20	0.313	10.50	-0.31	-3.28	0.03
2021	22.9	5.30	0.189	10.30	-0.25	-2.53	0.00
sum	295.71	163.70	2.664	279.28	2.52	49.38	204.34
avg	16.43	9.09	0.15	15.52	0.14	2.74	11.35

Reference: Columns (1) and (2) from the statistical site of the Central Bank of Iraq, data for multiple years from 2004-2021, Columns (3, 4, 5, 6, 7) are from the researcher's work.

In the context of analysing and measuring the causal relationship between inflation and unemployment, it is evident from Table (1) that the exchange rate value increased to 1170 in **2009** and continued to decrease until it reached 1166 in **2012**. This represented the strongest exchange rate value for the Iraqi dinar, which had the effect of restraining inflation. The Iraqi economy heavily relies on imports due to the lack of responsiveness of the production sector to the increased demand resulting from government expenditures. Consequently, the increase in the exchange rate value lowered the prices of imports, leading to a decrease in prices and resulting in inflation reaching a negative rate of (-4.4) in **2009**. Inflation rates continued at acceptable levels thereafter.

Figure 3: Depicts the Evolution of the Inflation Rate in Iraq for the Period (2004-2021).
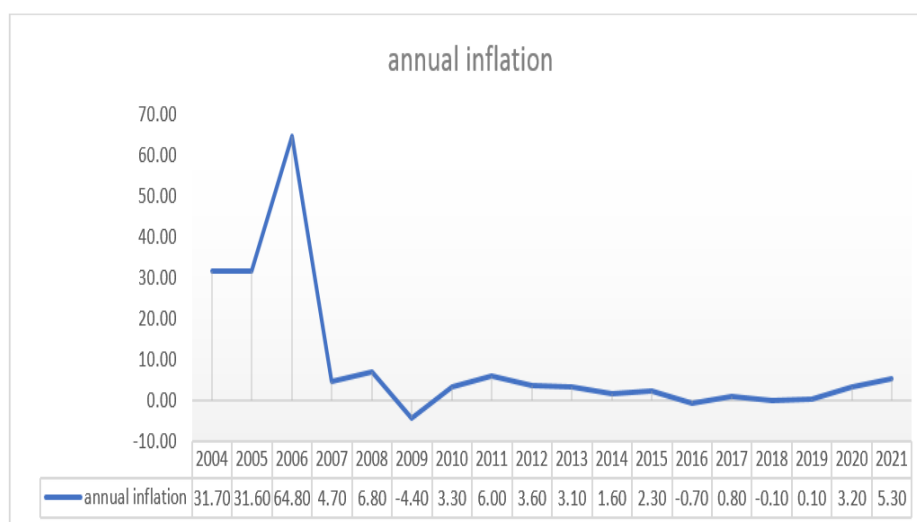
Reference: From the work of the researcher based on the data in Table (1).

According to Figure 3, in the year **2018**, there was a monetary stability achieved in the Iraqi economy due to a slight decrease in inflation by (-0.1%). This reflects the success of the Iraqi Central Bank in containing the inflation crisis and achieving a high level of stability. By relying on five commodity groups compared to the year **2017**, the five commodity groups used in the comparison declined, while one group remained stable in its growth. As for the remaining groups within the consumer basket, they experienced varying slight increases (Central Bank of Iraq, Annual Report, and 2018: 02). The monetary policy reverted to reducing the exchange rate of the Iraqi dinar during the years **2020** and **2021**, as follows: 1304, 1450, respectively. This decrease in the dinar's purchasing power resulted in lower value compared to what it previously was, leading to an increase in the prices of goods and services. Consequently, the inflation rate rose during the years **2020** and **2021**, reaching 3.20% and 5.30%, respectively, as illustrated in Table (3). The primary reason for this phenomenon is the consumer basket, which

heavily relies on external imports that are priced in dollars. Therefore, the decline in the value of the dinar against the dollar led to a proportional increase in prices of goods and services, given the depreciation of the local currency (the dinar) against the dollar. This, in turn, contributed to the rise in inflation rates.

Third Axis: Evolution of Unemployment Indicators in Iraq for the Period (2004-2021)

Unemployment is considered one of the most significant challenges threatening the stability of various developing and developed countries, as well as contributing to the advancement and economic development, particularly in developing nations (Al-Shammari and Ali, 2014: 186). The rise in the unemployment rate is attributed to the decline in the national output, leading to the loss of resources in the affected countries (Nasif, 2007: 276). It is natural that in many cases, when the natural rate does not exceed (5%), Iraq has been grappling with unemployment for decades, particularly in the 1980s, when it rose from approximately (3.5%) in **1987** to reach (11.1%) in **1997** and **2002** due to various reasons, including population growth and the demobilization of a significant number of armed forces personnel (Al-Badri, 2006: 189). Additionally, the limited capacity of economic activity and the weak role and performance of the local Iraqi private sector in generating new job opportunities have further exacerbated the issue (Journal of Economics and Business, 2004: 13).

According to the data presented in Table (1), it is evident that in **2004**, the unemployment rate was recorded at (26.8%), and it decreased to approximately (11.1%) in **2011**, due to the adoption of employment policies in the public sector and the focus on increasing employment rates to absorb the unemployed in various government departments. However, in the years **2018** and **2019**, unemployment rates gradually increased to (22.6%), as shown in Figure 4. This can be attributed to the decreasing level of employment, changing security conditions, an increase in the number of graduates, and the private sector's inability to absorb them (Obaid, 2017: 290).

Furthermore, there is a lack of coordination between the outputs of education and the Iraqi labor market, with poor planning leading to some specialties having an excess labor supply while others face a significant shortage. Administrative and financial corruption, among other factors, have exacerbated the unemployment problem. Unemployment rates in the Iraqi economy have fluctuated between increases and decreases, as depicted in Figure 6. Notably, unemployment rates increased during the years **2020** and **2021**, reaching (21.1%) and (22.9%) respectively. This can be attributed to Iraq's lack of financial institutions.

The availability of the required support for small projects in Iraq does not align with the vast resources the country possesses, nor does it align with the intended transformation of the Iraqi economy from a command economy to a market economy. This transformation should be subject to various prerequisites, including building the capabilities of the private sector at all levels. This entails creating a sound regulatory environment and enhancing the skills of entrepreneurs operating in the private sector. It also involves providing the necessary funding for small projects to diversify the Iraqi economy away from complete reliance on oil resources.

One ironic aspect is that Iraq does not have a single institution for financing small projects **In the Form of Personal Guarantees**, whereas in Bangladesh **One of The Poorest Countries Globally**, there are approximately 200 institutions offering microloans to nine million people, which is more than two-thirds of its impoverished households (Al-Marsomi, 2019: 70).

Figure 4: Evolution of the Unemployment Rate in Iraq for the Period (2004-2021)
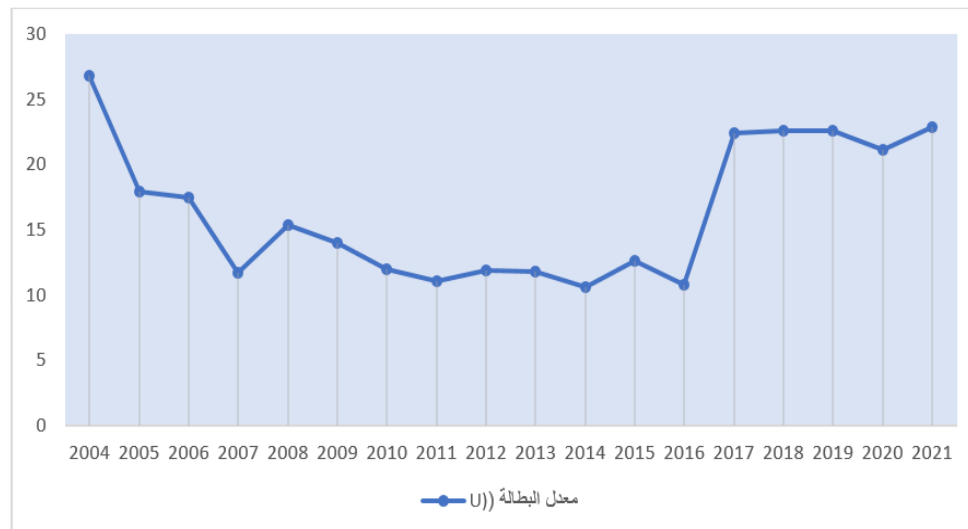
Reference: From the work of the researcher based on the data in Table.(1)

Fourth Axis: Estimating the Phillips Curve in Iraq for the Period (2021-2004)

The variables **Inflation and Unemployment** have been reviewed, and to continue the sequence of ideas, we will address their relationship through the Phillips Curve. The Phillips Curve is known to depict the relationship between unemployment and the inflation rate, illustrating the inverse relationship between them; higher unemployment rates imply lower inflation. Additionally, it has the capability to demonstrate the impact of fluctuations in the economic cycle and the subsequent variations in real production levels and utilization.

To elucidate the relationship between the unemployment rate and the inflation rate, it is essential to estimate the Phillips Curve, allowing us to analyze and determine whether the relationship is positive or inverse between them.

Estimation of the Phillips Curve in Iraq for the Period 2004-2021

Estimating the Phillips Curve in the Iraqi economy is associated with certain challenges, particularly regarding the availability of data required for its calculation. To estimate the Phillips Curve in the Iraqi economy, it is possible to use non-linear regression equations to measure the non-linear relationship between the dependent variable, which is the unemployment rate, and the independent variable, which is the inflation rate (Al-Araaf and Najwa, 2012, page 12).

In this context, the Phillips Curve equation can be estimated using non-linear regression as follows:

$$U = a + bINF + \mu \quad ….. (1)$$

Given that:

u: Unemployment rate

INF: Inflation rate

From equation (1), it is possible to derive the Phillips Curve after transforming the independent variable (INF) into its reciprocal form, which reflects the relationship between the inflation rate and the unemployment rate, resulting in the following equation:
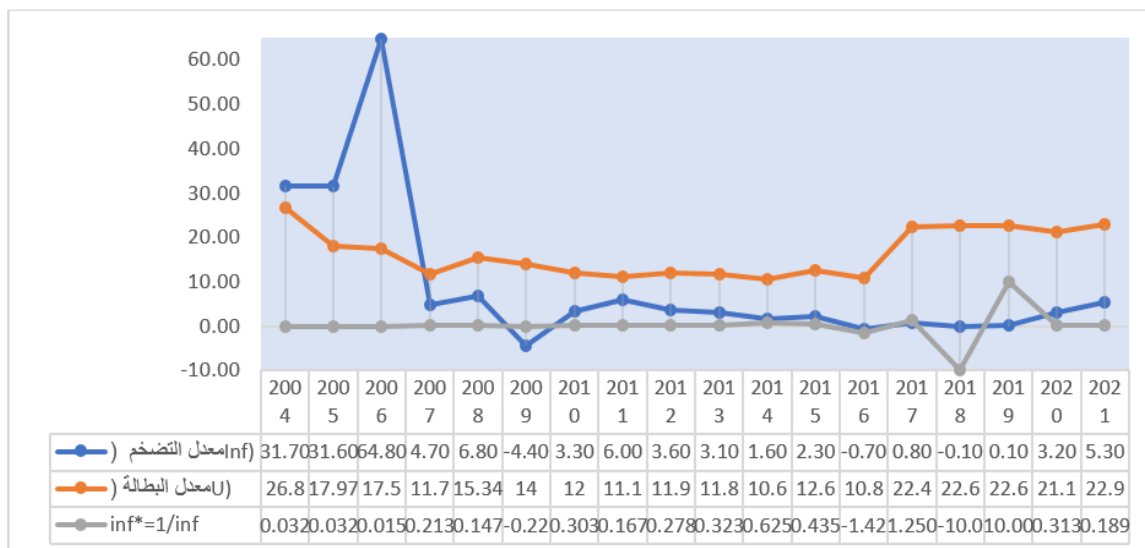
$$U = a + b \left(\frac{1}{INF}\right) + \mu \quad ……. (2)$$

Equation (2) Clarified The slope (b) is a variable, not a constant, representing a non-linear relationship, wherein:

$$\frac{du}{dinf} = -\frac{b}{INF^2}$$

For the purpose of estimating the Phillips Curve equation for the Iraqi economy for the period **2004-2021**, we would need to provide the variables from equation number (2). From Table (1), the estimated equation for the Phillips Curve for the Iraqi economy for the period **2004-2021** can be obtained using the following equation:

Figure 5: Phillips Curve for the Iraqi Economy for the Period(2021-2004)

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
معدل التضخم (Inf)	31.70	31.60	64.80	4.70	6.80	-4.40	3.30	6.00	3.60	3.10	1.60	2.30	-0.70	0.80	-0.10	0.10	3.20	5.30
معدل البطالة (U)	26.8	17.97	17.5	11.7	15.34	14	12	11.1	11.9	11.8	10.6	12.6	10.8	22.4	22.6	22.6	21.1	22.9
inf*=1/inf	0.032	0.032	0.015	0.213	0.147	-0.22	0.303	0.167	0.278	0.323	0.625	0.435	-1.42	1.250	-10.01	10.00	0.313	0.189

Reference: Derived from the researcher's work based on the data in Table.(1)

$$U = \alpha + b \left(\frac{1}{INF}\right) + \mu$$

$$U = (16.393) + (0.242) \left(\frac{1}{INF}\right) + \mu$$

$$\frac{du}{dinf} = -\frac{0.242}{11.35} = -0.02132$$

The elasticity of unemployment concerning the continuous rise in the overall price level is (-0.0013), meaning that, on average, a decrease in the unemployment rate of 0.013% is accompanied by a 10% increase in the general price level.

$$E_{U\frac{1}{INF^2}} = \frac{-b}{avUN * avINF^2} = \frac{-0.242}{16.43 * 11.35} = -0.0013$$

The elasticity of unemployment concerning the continuous rise in the overall price level is (-0.0013), meaning that, on average, a decrease in the unemployment rate of 0.013% is accompanied by a 10% increase in the general price level.

$$r^*_{\text{U*INF}} = 0.253$$

(* r) represents the correlation coefficient, which was extracted using the SPSS software through the Correlation application. This indicates that the relationship between the study variables is a weak positive correlation. Therefore, it may not be possible to apply the Phillips Curve for the specified period due to the issue of stagflation (recessionary inflation).The simultaneous occurrence of these phenomena with these elevated rates suggests that this economy is experiencing this phenomenon with relatively high rates at a time when commodity sectors are still suffering from reduced productivity, which is reflected in the decline in the overall supply of key sectors in the economy, indicating an imbalance between service sectors and other important productive sectors .The result that can be obtained from the above analysis is that the presence of a weak inverse relationship indicates a relatively weak impact of continuous changes in the overall price level on the unemployment variable. This weakness reflects the divergence between the real and monetary sectors. The equation shows that a 1% increase in the former may result in a decrease in the unemployment rate by.(0.02132)

FIFTH AXIS: CONCLUSIONS AND RECOMMENDATIONS

First: Conclusion

The researcher has arrived at the following conclusions:

1. The relationship between the continuous change rate in the overall price level and unemployment in Iraq during the period **2004-2021** is a weak inverse relationship, indicating a relative separation between the variables.

2. The continuous increase in the overall price level's effect on the unemployment rate is (0.0013), which means that a decrease in the unemployment rate by an average of 0.013% is accompanied by a 10% increase in the overall price level.

3. The Phillips Curve theory does not align with the Iraqi economy for the period **2004-2021** as the relationship between the study variables is an inverse relationship according to the correlation coefficient.

4. Inflation resulting from the stagflation phenomenon is not economic inflation but rather financial inflation, meaning it occurs through monetary trading operations and is not a result of economic expansion associated with economic cycles.

5. There is a structural imbalance in the economic sectors contributing to a deep problem consisting of unemployment arising from the inability of real sectors to absorb it or increase demand for them by increasing production. Additionally, the oil sector, due to its heavy reliance on capital-intensive technology, has not contributed to absorbing existing unemployment through the establishment of integrated hydrocarbon industries within it.

6. The impact of the Dutch disease on the economy, characterized by the emergence and dominance of a rentier economy, has rendered all economic sectors unproductive and reliant on funding their losses from the general budget.

Second: Recommendations

1. It is essential to take serious steps towards assisting the unemployed and providing them with a conducive environment to facilitate their return to work, thereby enhancing their productivity.

2. There should be a genuine focus on reviving the real sectors, particularly the government sector, to ensure high GDP growth rates, rather than relying on imports from abroad, which can lead to imported inflation. This approach can help reduce unemployment and utilize the domestic workforce effectively.

3. In the case of Iraq's rentier economy, attention should be given to addressing exchange rate fluctuations and reaching a formulation of a real exchange rate based on a standardized equation that takes into consideration all relevant variables, especially the development of international reserves, including gold, foreign currencies, and bonds, over a short and medium-term time frame. This should align with a long-term plan to eliminate structural imbalances in the composition and structure of GDP.

4. Establish independent research centers to monitor and study the global and regional economic conditions with the aim of predicting their impact on the Iraqi dinar exchange rate and consequently, the foreign exchange market.

5. It is imperative to keep up with global and regional developments, with a focus on transitioning from a primarily rentier economy to a knowledge-based economy, diversifying the economy, and adopting modern technological methods.

6. Implement an appropriate and scientific monetary policy, free from improvisation and interference in the independence of the central bank, ensuring the creation of a stable environment in coordination with fiscal policies to achieve this goal.

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