

Coordination between monetary and fiscal policies and its impact on unemployment in Iraq

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Abstract

In this study, The 216-page report investigates how better communication between Iraq's central bank and government has affected the country's high unemployment rate. The traditional modeling of the association between the unemployment rate and monetary policy variables represented by the money supply, as well as the Johansen model of joint integration, were used to test the study's hypothesis. Long-term correlations were identified between fiscal policy, real public expenditures, real public revenues, and unemployment. The unemployment rate cannot be influenced by short-term monetary and financial policies. Our plan calls for domestic and international investment mechanisms to be activated through better coordination of monetary and financial policies as well as increased efficiency in these areas. the aims of the two policies.

Keywords *monetary policy; fiscal policy; coordination; unemployment.*

1. Introduction

Monetary and fiscal policies aim for sustained economic progress and price stability. so that fluctuations in employment, production, prices and potential growth in real output are kept to a minimum, relying on an economic policy alone, whether monetary or financial, is not sufficient to achieve the target mix of economic growth and stability in the general level of prices and full employment. To achieve these goals requires more than one tool. Central Bank uses monetary tools, while Finance uses financial tools. The two authorities' policy aims and methods contradict, hence a coordinating mechanism is needed to enhance macroeconomic productivity.

Scientific methodology of article

1.1. article Problems

Absence of coordination and insufficient integration between monetary and financial policies may diminish their efficacy, reducing their impact. The following question can be used to formulate the problem: (Does coordination between fiscal and monetary policies have an impact on unemployment in Iraq?).

1.2. The importance of the article

The study takes its significance from its subject and the problem that it is trying to find solutions to, as well as the importance of coordination and integration between the monetary and financial policies to achieve their goals, as the use of one of the policies does not guarantee the full achievement of economic goals, including the achievement of full employment, as the importance of the research becomes clear through a statement The tools necessary for

economic policy in order to achieve alignment between priority economic objectives that are compatible with the prevailing economic conditions and in a way that contributes to the development of the national economy.

1.3. article Objectives

The study aims to:

- Clarify the basic concepts about monetary policy, fiscal policy, unemployment and the relationship between them.
- Identifying the existence of coordination or not between the monetary and financial policies in the Iraqi economy.
- Statement of the impact of coordination between the monetary and fiscal policies on unemployment in Iraq.

1.4. article hypothesis

This study imposes (Iraq's unemployment rate is not correlated with the government's use of monetary or fiscal policy tools)

1.5. article scope

The spatial boundaries were represented about the impact of coordination between the monetary and financial policies on unemployment in Iraq, due to the presence of unemployment in Iraq, in which economic policies seek to combat unemployment, Time limits, the research was applied using monthly data for the period (January 2004 - December 2021) due to the importance of this period, as Iraq has gone through a transitional phase with regard to economic policies in general .

2. Literature review

2.1. . The concept of coordination between monetary and fiscal policy

Coordination between fiscal and monetary policies is “the common understanding between those in charge of managing public debt, public financial policy advisors and central bank officials in order to achieve economic goals,” and this is due to the interdependence between what they use of different policy tools [1]. Coordination is also known as the mechanism through which negotiation takes place between the monetary and financial authorities, as each enjoys its independence from the other, in order to achieve the best desired results from both and create the appropriate framework to activate the performance of both authorities. From the definitions mentioned, coordination and combination of the two policies becomes necessary and urgent to avoid conflict With each other in a way that weakens them and at the same time prevents the government authority from achieving its set goals [2] , and among the reasons that contributed and stressed the need for the two policies to overlap and integrate: [3,4]

- Criticizing monetary policy when it over-finances public sector expenditures by borrowing from the banking system, and blames the government when it resorts to financing its expenditures through taxes, and this means not focusing on one policy without the other.
- When consultants do not work towards one-way, economic disorders are likely to harm economic activity.
- The monetary policy cannot bear damage and shocks in combating inflation, with fiscal policy to be integrated using its tools to influence overall demand.

Practical experiences have shown that when depression prevailed in the seventies in the major industrial countries, the economic authorities in these countries resorted to using both policies together to get out of this crisis, and experiences also showed that expansionary monetary policy alone can lead to achieving a kind of recovery. In the economy, however, it reaches the point of inability in other cases, and this is why governments have realized the need to follow a combination of monetary and fiscal policies [5].

2.2. Coordination requirements between monetary and fiscal policies

The requirements and institutional arrangements necessary for the coordination process between monetary and fiscal policies can be detailed in the following: [6,7,8,9]

- **Central Bank Independence:** The independence of the Central Bank guarantees the existence of an effective monetary policy to control inflation in the short and long terms. If the financial authorities face an independent central bank aimed at combating inflation, the expectations of these authorities or the government that the deficit in the general budget will not be financed by the Central Bank. It will limit its realization of this deficit, as the greater the independence, the lower the proportion of the budget deficit that is financed by the central bank.
- **Limiting direct credit to the government** is one of the most significant legislative frameworks for coordination, especially in the early stages of cash management. Even though debt ceilings are legal, this affects the central bank's independence. Traditional public or government overdrafts have proven ineffectual since they may be avoided.
- **Reducing the conflict between the two policies:** The importance of heading towards reducing the conflict between the objectives of the fiscal and monetary policies appears due to the fear that this conflict will lead to the loss of the effectiveness of the two policies together in influencing economic growth and inflation, which usually results in the economy suffering from the phenomenon of depression. Inflationary in which the rise in the rates of inflation and unemployment coincides.
- **Create a debt-management office:** Government debt is a country's largest and most complex financial portfolio. Poorly handled debt portfolios heighten economic and financial shocks and generate economic crises. Since public debt management is so crucial, the World Bank and the International Monetary Fund (IMF) came up with some rules to follow. Its purpose is to help policymakers control public debt and reduce domestic and international financial shocks.
- **Coordination Committees:** Coordination is implemented in many countries through the establishment of coordination committees that help reach consensus on how to manage debt and cash management. Members of the Ministry of Finance, the Debt Office, and the Central Bank all sit on these panels. It gets together at regular intervals to deliberate on how best to handle public debt and cash flow, discuss the government's financial needs, and assess liquidity and market developments [10].

2.3. The concept of unemployment and its types

Unemployment is defined as the situation in which society does not fully use the labor force available to it, which is reflected in the actual output, which is less than the potential output, which negatively affects the welfare of the community[11], and it is defined as the gap between the quantity supplied and the required quantity of work[12], or it can be defined as all individuals Those who have the desire and ability to work while they are unemployed [13]. As a percentage, the unemployment rate is calculated by taking the total number of unemployed people and dividing it by the total number of people actively seeking employment. The several categories of unemployment are as follows: [14,15,16]

- **Monopolistic unemployment:** It is short-term and occurs as a result of the nature of the economy and workers who are forced to change their places of work, professions, or areas of residence and need time to get a new job, meaning that stopping work is a temporary halt due to factors outside the person's control.
- **Structural unemployment:** arises due to the disproportion between the skills required for work and the skills possessed by job seekers, and it results from an increase in untrained and unskilled labour. Working in other sectors, and it always occurs due to a change in the structure of demand, technological and technical progress, economic integration or mismatch in the labour market.

- Cyclical unemployment: It arises as a result of the economic cycles that economic activity is going through, as the demand for labour decreases during periods of economic stagnation, while demand rises during the stage of economic recovery.

2.4. The overall effects of unemployment

The high unemployment rate leads to the emergence of many negative effects that are reflected on the economic, social and psychological aspects of individuals. These effects can be clarified in the following points:

- Economic effects: The most important economic effects are the low level of output and national income as a result of the lack of optimal exploitation of production capacity, as well as the high rate of inflation [17], and unemployment may lead to the skilled worker losing part of his skill due to his failure to practice the profession, and the continuation of unemployment may lead to a further rise The unemployed because of the economic stagnation associated with the phenomenon of unemployment[18,19].
- Social and psychological effects: Unemployment leads to many manifestations of psychological and social incompatibility, which causes a lot of psychological and personal disorders among the unemployed, as most of them are characterized by unhappiness, dissatisfaction and a feeling of powerlessness, which causes mental health impairment, leading to a state of misery and powerlessness [20]. This is reflected in the high crime rates, as the longer the unemployment period, the more it is reflected in the use of smoking and drugs by some of the unemployed, and this may lead to the occurrence of some suicides and the spread of divorce, which causes the fragmentation of the social structure[21].
- Political and security effects: Prolonged unemployment could spark unemployed people's revolt, which would threaten the country's political and security stability [22]. Acting as being marginalized and governmental authorities do not care about it, as it will turn away from any democratic process such as elections, for example, which leads to weakness in belonging and citizenship, which leads to non-compliance with the rules of behaviour organizing the community [23].

2.5. The reality of monetary and fiscal policy in Iraq

Before 2003, monetary policy was dependent on financial policy, notably money-issuance policy, as the Central Bank of Iraq financed the national budget deficit, without restrictions. On this basis, the value of the currency began to decline and the rate of inflation increased. The Central Bank of Iraq has been granted independence in accordance with the Central Bank of Iraq Law No. (56) for the year (2004) and it can now apply a set of monetary tools to maintain monetary stability, and the Central Bank focused on targeting inflation by adopting monetary policy the exchange rate nominally fixed to contain the expectations of the public Inflationary, as well as using interest rate targeting and setting the short-term interest rate to influence inflation, output and increase employment. It has used new monetary policy tools represented by foreign currency auction and lending facilities.[24]

With regard to fiscal policy, after 2004 , Iraq witnessed a continuing deficit in the public budget and returns to the reality of the revenue structure in Iraq and its contribution and its importance, as oil revenues are the most important resource for the Iraqi economy and constitute an impact rate About 95% either non-oil revenues such as taxes, public wealth and public charts are small to total revenue, As for public expenditures, they started to rise after 2004, and the percentage of current expenditures increased compared to investment expenditures during the research period due to the political, security and health conditions that Iraq went through[25]

2.6. Analysis of unemployment in Iraq

Official estimates issued by the Ministry of Planning and Development Cooperation indicate that the unemployment rate in Iraq in 2004 amounted to 80.26% of the active population, which amounted to 50.48% of the total population of Iraq, and the unemployment rate continued to decline gradually and slowly until it reached in 2008 to 34.15% of the total population. The total active population of 60.52% in addition to the underemployment and during the period (2008-2015) the unemployment rate varied between high and low, as it recorded an increase for the years (2008-2010) by (15%) for the year (2010) and for the years (2011-2013) it recorded A decrease in

unemployment by (8%). The problem of unemployment in Iraq has exacerbated in recent years due to the absence of government plans that aim to provide job opportunities for the unemployed by activating the private sector, as the Central Bureau of Statistics of the Ministry of Planning announced in the 2018 stats that “the unemployment rate among young people for the age group between 15 and 29 year, it amounted to 22.6%, an increase from the national average of 74%,” noting that “the unemployment among males for this category amounted to 18.1%, while unemployment among females reached 56.3%.” According to the latest statistics issued by the World Bank, the unemployment level in Iraq reached 13.7 percent in 2021, which is the highest rate since 1991, as shown in Fig. 1.[26]

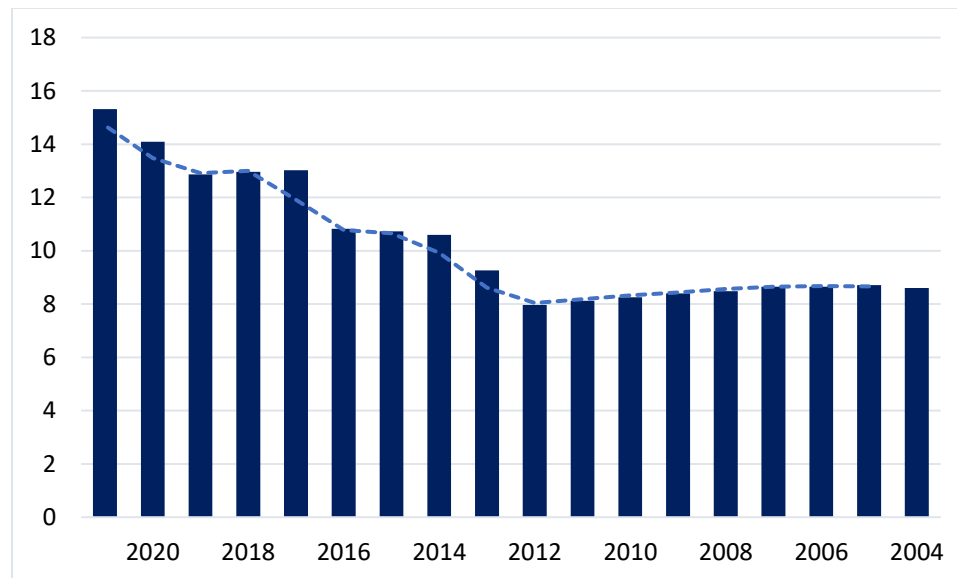


Fig. 1. evolution of the unemployment rate in Iraq

3. The data used in this study was compiled by the researchers using information from the Central Bank of Iraq and the Iraqi Ministry of Planning for the years (2004-2021).

4. statistics and data analysis

The study uses monthly data from January 2004 to December 2021 and 216 views obtained from the bulletins of the Central Bank, the Ministry of Finance, and the Ministry of Planning for many years to clarify the existence of the long-term equilibrium relationship between the variables of fiscal and monetary policies with the unemployment rate in Iraq using the cointegration test according to the Johansen model.

4.1. Characterization of the study model

Table 1. The independent and dependent variables of the research

independent variables				dependent variables	
monetary policy variables	Code	Fiscal Policy Variables	code	Economic variable	code
Inflation rate	INF	public expenditures	EXP	Unemployment rate	UN
money supply	M2	public revenue	REV		

Table.1 shows the independent and dependent variables included in the model, as the independent variables are represented by four variables that include two monetary policy variables (inflation rate and money supply in the broad sense) and two financial policy variables (real public expenditures and real public revenues), while the dependent variable is represented by rates The unemployment . Accordingly, we define the mathematical form of the model as follows:

$$UN = b_0 + b_1 INF_t + b_2 M2_t + b_3 EXP_t + b_4 REV_t + \epsilon_t \quad (1)$$

4.2. Descriptive Statistics

Table 2. Descriptive statistics results

Variable	INF	M2	EXP	REV	UN
Mean	9.47	0.01	1.48	1.370	2.872
Std. Dev.	16.57	0.030	0.858	0.750	0.445
Maximum	76.6	0.193	2.891	2.302	3.401
Minimum	-6.4	-0.150	0.129	0.20	2.219
Observations	216	216	216	216	216

Source: Data generated by the researchers themselves using EViews 11.

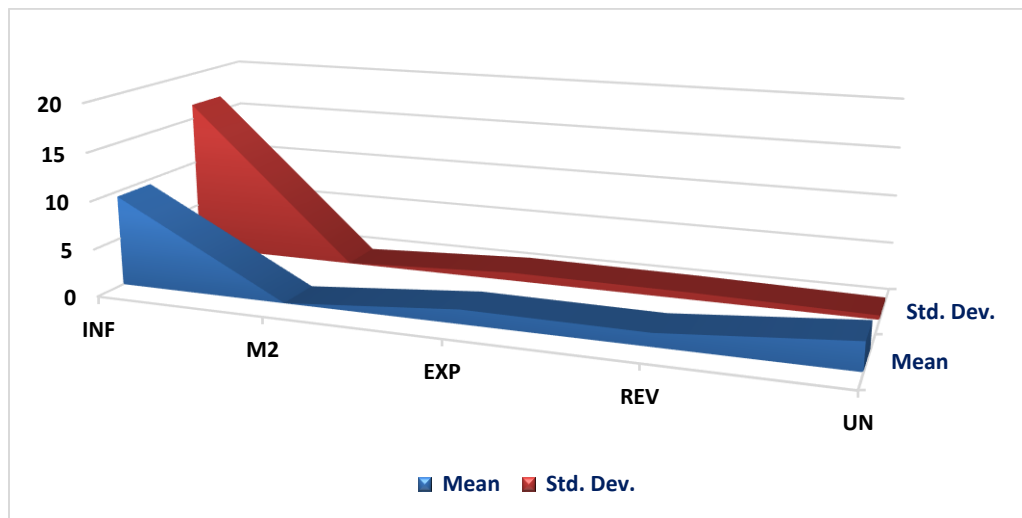


Fig 2. The mean and standard deviation of the research variables

Source: Prepared by the researchers

Table 2 and Figure 2 Describe the 216-strong sample's descriptive statistics, such as the inflation rate's arithmetic mean of (9.47) and its status as the study's highest-ranking variable in terms of arithmetic mean, while the sample's basic deviation reached (16.57), and its other values, 76.6 and (-6.4), were all statistically significant.

Unemployment then followed with a mean of 2.872 (3.401 being the highest) and a standard deviation of 0.445 (3.401 being the lowest) (2.219, respectively). And came in at number three in terms of government spending as measured by its geometric mean value of (1.48), with a standard deviation of (0.85). Revenues averaged 1.370 and money supply averaged 0.01 with standard deviations of 0.750 and 0.01. (0.030).

4.3. Unit Root test of the research variables

To test the long-term equilibrium relationship between the variables included in the model and analyze the short-term relationship according to the Johansen co-integration model, we first test the stability of the time series of the estimated model variables using the unit root test according to the Dickey-Fuller model as shown in Table 3.

Table 3. unit root test- Dickey Fuller

Variables	Level		1 st different			
	Trend& intercept	intercept	Trend& intercept		intercept	
INF	-2.519	-2.805	-4.652	Prob. 0.001	-4.536	Prob. 0.0002
M2	-0.691	1.0250	-13.225	Prob 0.00	-13.179	Prob 0.00
EXP	-2.662	-1.202	-4.236	Prob 0.0048	-4.2289	Prob 0.0008
REV	-2.8499	-2.599	-4.0246	Prob 0.0095	-4.0329	Prob 0.0016
UN	-2.854	-2.585	-4.679	Prob 0.002	-4.520	Prob 0.0005

Source: Data generated by the researchers themselves using EViews 11.

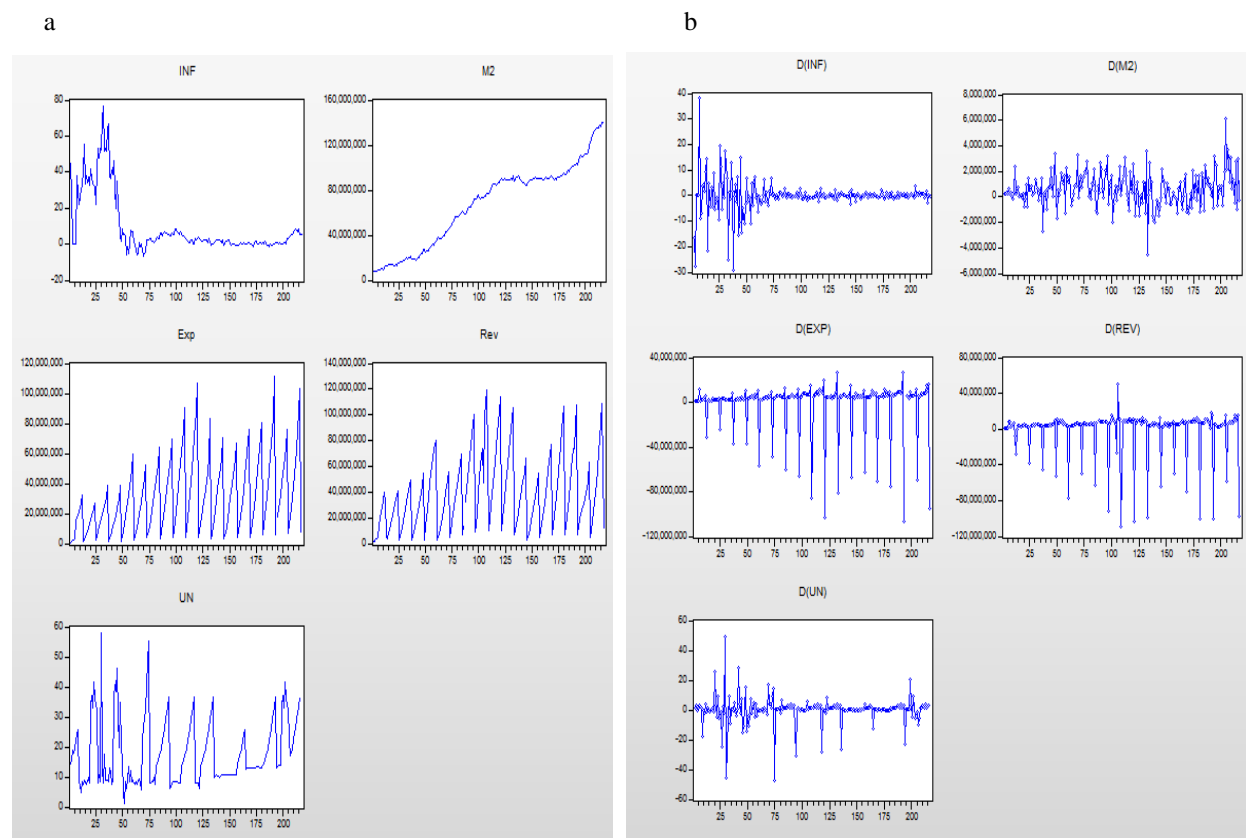


Fig .3. (a)unit root test at level; (b) unit root test at 1st different

Table 3. and Fig 3. As all of the estimated values of the t-Statistic test are less than the tabular values, this indicates that they are not statistically significant at a significant level (5%), and as a result, we do not reject the null hypothesis) $H_0: B=0$), which states that the time series are not stable at the level and contain a unit root. demonstrate that the time series of the research variables are unstable at their levels. As a result of the fact that the t-statistic values were higher than the tabular values, it was determined that the preliminary differences were statistically significant at the 5% level of significance, which suggests that the time series are integrated to the first degree I. (1). As a consequence of this,

we conclude that the variables in the first difference are not static and do not contain the unit root. This leads us to reject the null hypothesis.

3.5. Time lags of the search variables

Due to the sensitivity of the Johansen co-integration test for the time lag periods, we determine the optimal lag period for the model that depends on the unconstrained autocorrelation model (U Var), as shown in Table (4) that the optimal lag period is the first period (Lag = 1) as it is the lowest value. From the values of the information Criterion Akaike (AIC), Schwartz (SC) and Hannan – Quinn Criterion (HQ) as in Table 4.

Table 4. lags Length in the model

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-2123.76	NA	4708.075	22.64642	22.73249	22.68129
1	-1815.84	596.1837	232.1457*	19.63664*	20.15310*	19.84589*
2	-1800.94	28.06312	258.6135	19.74405	20.69088	20.12767
3	-1780.96	36.56028	273.1789	19.79745	21.17466	20.35544

Source: EViews 11 was used by the researchers in order to compile the source material.

where: LR: sequential modified LR test statistic (each test at 5% level) FPE: Final prediction error, AIC: Akaike information criterion SC: Schwarz information criterion, HQ: Hannan-Quinn information criterion

4.4. cointegration test - Johansen and Juselius

The Johansen test provides an estimate of the maximum possibilities of co-integration vectors that can exist between the variables. This is accomplished by the use of two co-integration tests: the Trace test, which compares the null hypothesis that the number of co-integration vectors is less than or equal to r ($r \leq n$) to the alternative hypothesis ($r > n$) and takes the following formula:

$$-\lambda_{\text{trace}}(r) = -T \sum_{i=r+1}^n \ln(1 - \lambda_i) \quad (2)$$

The second test is the Maximum Values Test that tests the null hypothesis that the number of co-integration vectors is equal to r ($r = n$) against the alternative hypothesis that ($n = r + 1$) and takes the following formula:

$$\lambda_{\max}(r, r + 1) = -T \ln(1 - \lambda_{r+1}) \quad (3)$$

Table 5. Unrestricted Cointegration Rank Test -Trace

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 critical Value	Prob.
None *	0.328	210.655	69.819	0.00
At most 1 *	0.271	129.845	47.856	0.00
At most 2 *	0.176	65.675	29.797	0.00
At most 3 *	0.108	26.295	15.495	0.0008
At most 4	0.0151	3.0912	3.841	0.0787

* indicates that the hypothesis was wrong at the 0.05 significance level

Source: EViews 11 was used by the researchers in order to compile the source material.

The effect test shown in Table 5. shows that there are 4 vectors of co-integration, as the calculated Trace Statistic values were greater than the tabular values at the 0.05 level of significance. Thus, we reject the null hypothesis ($H_0: r=0$), that shows the absence of co-integration between the variables and we accept the alternative hypothesis.

Table 6. Unrestricted Cointegration Rank Test -Maximum Eigenvalue

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 critical Value	Prob.
None *	0.328392	80.81043	33.87687	0
At most 1 *	0.271018	64.16946	27.58434	0
At most 2 *	0.176338	39.38105	21.13162	0.0001
At most 3 *	0.108012	23.20332	14.2646	0.0015
At most 4	0.015112	3.09122	3.841466	0.0787

* denotes rejection of the hypothesis at the 0.05 level

Source: Prepared by the researchers using EViews 11 software

4.5. The maximal co-integration test is displayed in table 6, below. At the 0.05 level of significance, the estimated values of the Max-Eigen Statistic were larger than the tabular values, which is evidence that there are four vectors of co-integration. As a consequence of this, we decide not to accept the null hypothesis ($H_0: r=0$), which asserts that there is no co-integration between the variables.

We conclude that there is a long-term equilibrium relationship between the unemployment rate and monetary and fiscal policy variables based on the effect and maximum value tests.

4.6. Estimation of the error correction vector model

Table 7. Estimation of long-term Coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.	R-squared	Adjusted R- squared
REV	-0.354	0.393	-0.773	0.0203	0.454	0.452
EXP	0.290	0.296	0.642	0.0315		
INF	0.005	0.0447	-0.111	0.9117		
M2	29.613	25.197	1.1752	0.2412		
C	17.623	0.929	18.965	0		

EViews 11 was used by the researchers in order to compile the source material.

Table 7. shows the results obtained by applying the method of least squares to the task of estimating long-term transactions. The model demonstrates that there is an inverse and significant relationship between fiscal policy and the unemployment rate, and this is consistent with the nature of the Iraqi economy. Additionally, the model demonstrates that there is a significant relationship between fiscal policy and inflation. When there is an increase of one unit in public expenditures, there is a corresponding drop of one unit in the unemployment rate. The same is true when there is an increase of one unit in public revenues; there is a corresponding decrease of one unit in the unemployment rate. The value of the R-squared coefficient of determination is 0.454, which means that the independent variables account for 45% of the change in the dependent variable, while the remaining 55% is attributed to other factors that are not included in the model. This explains why the relationship between the unemployment rate and monetary policy variables (money supply and inflation) is not significant. This can be explained by the fact that the value of the R-squared coefficient of determination is 0.454. As a consequence of this, we conclude that the research hypothesis that there is no statistically significant link between monetary and financial policy tools and unemployment in Iraq is not supported by the findings of this study.

The equation below shows that the short-term transactions of the estimated model are not significant in the fiscal policy variables (public expenditures and public revenues) and in the insignificance of monetary policy variables (inflation and money supply in the broad perspective), which means that there is no relationship in the short term, i.e.

the ineffectiveness of monetary and fiscal policy in its impact on The unemployment rate in the short term, which reflects the weak integration and interaction between monetary and fiscal policies in combating unemployment.

$$\begin{aligned} "D(UN) = & 6.92e-05*(EXP01(-1) + 5288.122*INF(-1) - 0.225*M2(-1) + 0.287*REV(-1) - 11975.39*UN(-1) - \\ & 24296795.27) - 0.0001*D(EXP01(-1)) - 0.0003*D(EXP01(-2)) - 6.64*D(INF(-1)) + 11.20*D(INF(-2)) - \\ & 0.0008*D(M2(-1)) + 0.00071*D(M2(-2)) + 6.770*D(REV(-1)) + 0.00015*D(REV(-2)) - 0.091*D(UN(-1)) - \\ & 0.022*D(UN(-2)) + 276.43" \end{aligned} \quad (4)$$

4.7. Evaluation of the estimated model

Table 8. Evaluation of the estimated model

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	0.055455	Prob. F (2,14)	0.9463
Obs*R-squared	0.141479	Prob. Chi-Square (2)	0.9317
Heteroskedasticity Test: Breusch-Pagan-Godfrey			
F-statistic	1.222499	Prob. F (1,16)	0.623
Obs*R-squared	1.429496	Prob. Chi-Square (1)	0.568

EViews 11 was used by the researchers in order to compile the source material.

The results of analyzing the estimated model to guarantee that it is free of standard problems are displayed in Table (8). The evaluation was carried out with diagnostic tests in accordance with the Correlation LM Test and the Heteroskedasticity Test, which are as follows:

- Since the value of (F) according to the serial correlation test is (0.05) at the level of significance (0.05), we do not reject the null hypothesis, which states that there is no serial autocorrelation problem for the residuals of the regression. The null hypothesis states that there is no serial autocorrelation problem for the residuals of the regression.
- With regard to the Heteroskedasticity Test, the results showed that the value of F (1.22), which was at the significant level (0.05), therefore we did not reject the null hypothesis that the model does not have an autocorrelation issue.

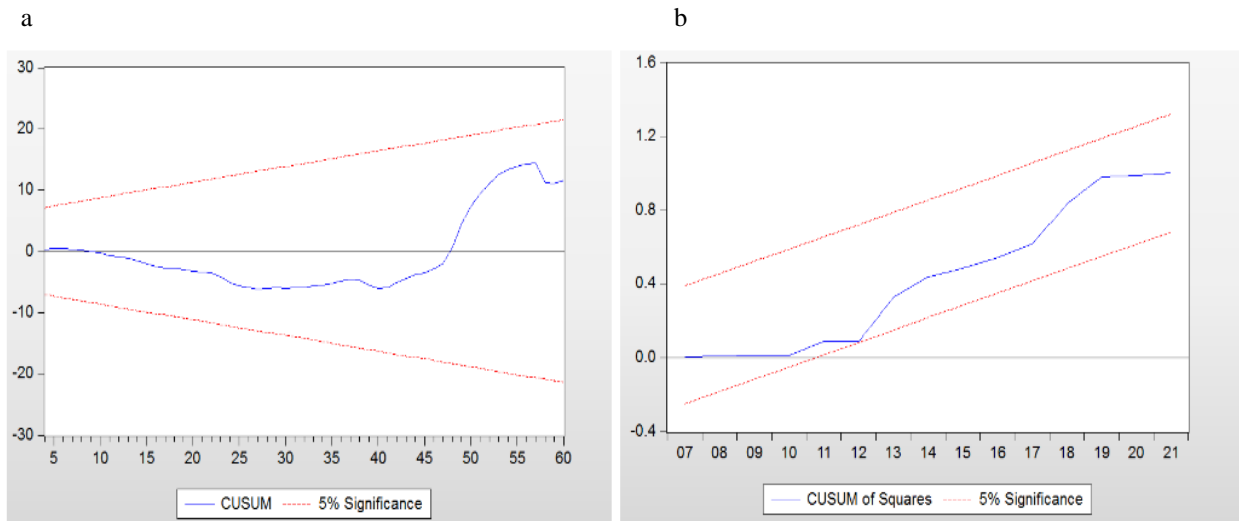


Fig.4. (a) Structural stability test- CUSUM test; (b) Structural stability test- CUSUM of SQUIRES test
Source: Prepared by the researchers using EViews 11 software

Figure (4) depicts the estimated model's structural stability test using the (CUSUM) and (CUSUM of SQUARES) tests. The graphic clearly shows that the model's estimated coefficients are structurally stable over time at the level of significance (0.05), confirming the presence of stability between the study variables and coherence in the model.

Conclusions

1 -The results of the Johansen test for joint integration demonstrated the existence of a long-term equilibrium relationship between fiscal policy variables (public revenues and public expenditures) and monetary policy variables (inflation and money supply in the broad sense), as well as the unequilibrium relationship between these three sets of variables. This was accomplished by obtaining four vectors of joint integration in accordance with the impact test and the maximum value test, as well as by estimating long-term coefficients in accordance with the least squares method

2 - The discovery of a weak but statistically significant association between fiscal policy elements and the unemployment rate lends credence to the idea that governmental expenditure and tax revenue do, in fact, have some effect on the labor market. Changes in the elements that influence monetary policy will have little effect on the unemployment rate in the long run. We found no correlation between the unemployment rate for the short term and any of the elements of monetary or financial policy that were taken into consideration in the investigation. The findings also brought to light the dissonance that exists between the monetary and financial strategies implemented by the Iraqi government.

Recommendations

1 - We recommend increasing the size of government investment spending in order to increase the employment rate and reduce the unemployment rate.

2 - We recommend the establishment of a joint committee or office between the Central Bank and the Ministry of Finance to undertake the task of coordinating between the fiscal and monetary policies.

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