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-RESEARCH ARTICLE-

ANALYSIS OF THE FACTORS AFFECTING THE UNEMPLOYMENT RATE IN IRAQ

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─Abstract─

Unemployment is one of the main and important topics for the economic and social development of any society; its danger lies in increasing the number of unemployed, wasting the energies of the human element, and creating an environment conducive to poverty. Hence, the present study examines the impact of economic factors such as gross domestic product (GDP), inflation, population growth, and public expenditures on unemployment in Iraq. The study gathered secondary data from World Development Indicators (WDI) from 1991 to 2020. The article also used the Autoregressive Distributed Lag Model (ARDL) to test the association among the variables. The outcomes indicated that GDP and public expenditures are negative, while inflation and population growth positively affect unemployment. The study guides the policymakers in making the policies related to reduce unemployment by increasing GDP and public expenditures and by reducing inflation and population growth.

Keywords: Unemployment rate, gross domestic product, population growth, inflation, public expenditure

INTRODUCTION

The problem of unemployment is one of the economic phenomena that concern the economic planner, which suffers from most countries, especially the developing ones. Like other countries in the world, Iraq suffered from an exacerbation of unemployment,

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especially after 2003, as official data indicate a high unemployment rate, which constituted 28% in 2016 (Abid, 2019). This leads to the waste of human resources as well as the worsening of the phenomenon of poverty. Unemployment rates in Iraq are high, so it is necessary to econometric and analyze the effect of economic variables on unemployment. Unemployment and labor force employment are among the complex problems societies face today. Because of its serious economic, social, and political effects, represented in wasting society's energies, disrupting human resources, opportunities for growth and economic welfare, and creating an environment conducive to poverty, deprivation, and the commission of crime (HassanAl-Azzawi, 2020).

The economic literature has many definitions of unemployment as the opposite of employment (recruitment). Still, these definitions agree that unemployment is the state in which individuals are able and willing to work. Still, they do not find it, or they find partially incomplete work in a way that does not fit with their academic qualifications and abilities (Al-Rubay, 2021). This is a waste of productive power and human resources that produce useful material values, which constitute complete unemployment, incomplete, partial employment, and non-optimal use resulting from the lack of efficiency. It is also considered potential unemployment from losing investment opportunities, resulting in income formation, growth, and employment. Cyclical unemployment arises due to economic cycles of depression or economic recession. As a result of a decrease in the demand for goods and services produced due to a decrease in government expenditure. Visible unemployment results from workers' surplus to the needs of economic activity and the inability of the economy to absorb them (Al-Yasiri & Al-Yasiri, 2021). Structural unemployment results from the lack of consistency between technical qualifications and job opportunities available to the unemployed. Seasonal unemployment arises from employment's effect on changing seasons and climatic seasons. Usually, this type of unemployment appears in the agricultural, construction, and tourism sectors due to boom periods and economic depression (Mohammed, 2022).

The unemployment rate is one of the macroeconomic indicators in the formulation of economic policies. All countries calculate unemployment rates regularly, such as monthly, quarterly, or annually. Official authorities measure the unemployment rate as the ratio of the number of unemployed workers to the total number of workers contributing to the labor force during a certain period of time when these forces are economically active in society (Clark et al., 2020). It is extracted according to the following formula:

$$\text{Unemployment Rate} = \frac{\text{Unemployment Workers}}{\text{Economically active Labor Force}} \times 100$$

Where the economically active labor force means: individuals of working age who are able and willing to work, whether they work or not (working + unemployed).

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The unemployment problem in Iraq has worsened to become a dilemma that, for nearly four decades, successive governments have been unable to find solutions that reduce this problem because of wrong economic policies, wars, and international economic sanctions imposed since 1991 (Esmaee & Ibrahim, 2022). Multiple factors led to rising unemployment rates, including high population growth rates, inconsistency between the requirements of the labor market and the skills achieved from the outputs of the educational system, and the worsening of the structural imbalances that the Iraqi economy suffers from, as a result of its dependence on the oil sector to generate GDP. This led to an increase in unemployment rates in a way that Iraq had not been familiar with, at least since 1972 (Amiri, 2022).

Where the data in Table 1 indicate that the unemployment rate in 1990 reached 5.5%, then the rate rose to 8.5% in 1993, and to 13.9% in 1996. The unemployment rate continued to rise until it reached 26.7% in 2002. These rates did not consider the disguised unemployment rates and the level of inflation of the government's administrative apparatus.

Table 1: Unemployment Rate in Iraq for the period 1990-2016

Year	Rate (%)	Year	Rate (%)	Year	Rate (%)	Year	Rate (%)
1990	5.5	1997	15.4	2004	26.8	2011	11
1991	6.5	1998	17.4	2005	18	2012	11.9
1992	7.5	1999	20.2	2006	17.5	2013	12.2
1993	8.5	2000	22.4	2007	11.7	2014	12.8
1994	10.5	2001	24.6	2008	15.3	2015	13.2
1995	12.9	2002	26.7	2009	15	2016	10.8
1996	13.9	2003	28.1	2010	12	2017	10.9

Source: Ministry of Planning and Development Cooperation, Central Statistical Organization, Employment, and Unemployment Survey in Iraq 2003-2016.

Unemployment rates continued to rise after 2003, according to the results of the Employment and Unemployment Survey in Iraq issued by the Ministry of Planning and Development Cooperation. The unemployment rate among the economically active population reached 28.1% in 2003, then decreased to 18% in 2005, and then continued to decline in 2006, 2008, and 2009, with unemployment rates reaching 17.5%, 15.3%, and 15%, respectively. This is because many of the unemployed are included in state institutions, the army, the police, and so on (Blustein & Guarino, 2020). Unemployment rates rose to 12% in 2010, 12.8% in 2014, and 13.2% in 2015. After that, the rates decreased to 10.8% in 2016. These data are not considered a true expression of the Iraqi reality, as these data reflect Government political vision statements. As the unemployment rate ranged between 50% - 60% in 2016. The above can be clarified by the following Figure 1:

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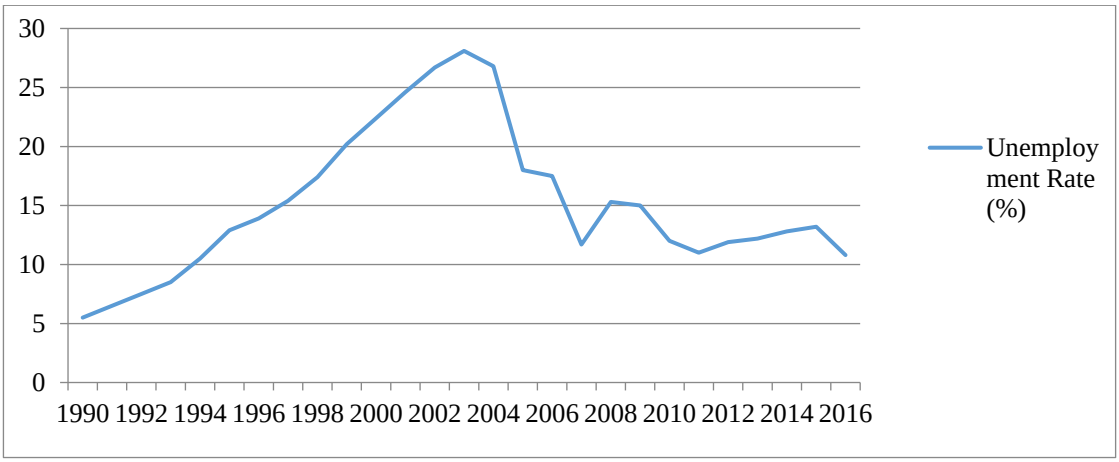

Figure 1: Unemployment Rate (%) in Iraq for the period (1990-2016)

LITERATURE REVIEW

The choice of economic variables depends mainly on economic theory. According to the logic of economic theory, unemployment rates are affected by several factors, the most important of which are: population size, gross domestic product GDP, inflation rates, public expenditure, and other factors that cannot be mentioned in this research. Therefore, we will address the economic analysis of the effect of these variables and their relationship to the unemployment rate.

One of the important and influential variables in the unemployment rates of any society is the size of the population and population growth, as it affects the labor market. As the Iraqi economy has a high population growth (Ganong, Noel, & Vavra, 2020). The high fertility rates led to a doubling of the population, as fertility is the most effective factor in the growth and age structure of the population. This affects the size of the economically active population and the labor force trends. As we note that the rate of economic activity in Iraq witnessed a development during the period 1977-2008, reaching 84.7% in 1977, 45.2% in 1987, dropping to 43.6% in 1997, then rising to 50% in 2006, reaching 46.8% in 2008 (Achdut & Refaeli, 2020). The high economic activity rate indicates an increase in the number of entrants to the labor market. Thus, the increase in the supply of work, with the inability of the demand for work to cover the supply of the labor force, led to a rise in unemployment rates. For decades, successive governments in Iraq did not attach importance to population policies as other countries give it. This matter hindered economic and social development, despite the availability of material capabilities and natural resources. This is due to the absence of the authorities responsible for preparing population policies and plans that would create equilibrium relations between population growth and the labor market, leading to full employment and the absence of unemployed human resources (Kassem, Ali, & Audi, 2019).

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Certainly, this leads to the presence of great challenges in the Iraqi economy, where the economic system is inefficient in achieving the most abundant production, as well as its inability to sustain economic activity in production, distribution, and investment to provide economic resources to meet the many and different needs and requirements of these growing numbers of the population. With regard to unemployment rates in Iraq, they indicate a state of fluctuation in the rise and fall, but there has been a continuous decrease in unemployment rates in Iraq since 2003 (Dahliah & Nur, 2021). This matter is not a real indicator because the labor force was in the security institutions, not productive economic sectors. This led to a rise in employment rates in state institutions, as the preparation of data on unemployment rates does not reflect reality in reality but rather is data that reflects the government's political vision (Liotti, 2020).

In addition to the Iraqi economy's suffering from structural imbalances in its various economic sectors, resulting from the oil sector's dominance over large areas of economic activity, whose contribution to GDP exceeds 70%, which contributes to absorbing the labor force by no more than 2%, in contrast to the failure of the main productive sectors to contribute to economic growth (Dahliah & Nur, 2021). The agricultural sector contributes to the GDP by 6.5%, the service sector by 22%, and the industrial sector by 1.5%. This leads to a decline in economic performance and the ability of laws stimulating investment in generating job opportunities sufficiently to reflect negatively on the increase in unemployment rates (Wang & Li, 2021). Accordingly, it can be said that the relationship between the size of the population and unemployment rates is positive, as the larger population size leads to an increase in the size of the labor force so that the unemployment rates will increase. The GDP is one of the main variables that lead to reduced unemployment rates. The American economist Arther Okun pointed out in 1962 that there is an inverse relationship between economic growth rates and unemployment rates, as he called this relationship Okun's law after the name of its discoverer. Accordingly, according to the economic theory's logic, a higher economic growth rate leads to higher employment rates and, consequently, lower unemployment rates. As high growth rates indicate the economy's need for additional labor to be employed in the labor market (Uddin & Rahman, 2023).

One of the most important effects on the economy during this period was the imposition of economic sanctions on Iraq after the first Gulf War, which led to the suspension of oil exports and a decrease in the gross domestic product in Iraq. It reached 10682 million dinars, with a negative annual growth rate of 64%. It then increased after 1996 due to the implementing of the memorandum of understanding (Oil-for-Food) to return oil exports (Tenzin, 2019). The value of the gross domestic product in Iraq amounted to 26342.7 million dinars in 1997 and 35525.7 million dinars in 1998, with positive annual growth rates of 21% and 34.8%, respectively, for the mentioned years. Then, in 2002 and 2003, it declined to negative annual growth rates of 6.9% and 33.1% due to the regime change. Despite the decline in the GDP in some years, the compound annual

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growth rate from 1990-2002 reached 2.38%. After 2003, the gross domestic product in Iraq witnessed positive growth 2003-2016, with a compound annual growth rate of 7.95% (Louail & Riache, 2019). Because of the increase in oil revenues resulting from the increase in the average price of a barrel of crude oil and the quantity produced from it in global markets. The price of a barrel increased from 36.05 dollars in 2004 to 105.87 dollars in 2013, with a compound annual growth rate of 11.37%. Despite its decline in the global market in 2009, the price reached 61.06 dollars per barrel, down from 94.45 dollars in 2008, with a negative compound annual growth rate of 35.35%. Because of the financial crisis that the world faced in that year (Anderu, 2021). Because the Iraqi economy is a rentier economy, its performance is largely linked to fluctuations in global crude oil prices. Therefore, the rise or fall of oil prices will inevitably lead to a rise and fall in the gross domestic product in Iraq. We conclude from the above that the relationship appears weak between the two variables, as there are high unemployment rates, but at the same time, positive growth rates are achieved for some years. This is because Iraq is an oil-producing country where the growth achieved is caused by an increase or decrease in oil revenues that finance economic activity. It is not a real growth resulting from the high contribution of the productive economic sectors, especially agriculture, and industry, and their contribution to generating GDP (Şahin, Tasci, & Yan, 2020).

Inflation is defined as the continuous and tangible rise in prices due to increased money circulating over the commodity supply or increased national spending without this being accompanied by increased production (Tenzin, 2019). The inflation rate can be calculated using a criterion called the general level of prices. In contrast, the general level of prices is the weighted average of the prices of a group of goods and services consumed in a country. Economic studies indicate an inverse relationship between inflation and unemployment rates. As explained by Philips in 1908, this relationship has become widely known under the term Philips curve, which is one of the analytical tools for drawing and explaining macroeconomic policy objectives for a certain period of time. In an economic boom, the demand for goods and services increases, so prices rise, which leads to an increase in demand for work. Then, employment rates rise and unemployment rates decrease (Abu, 2019). The opposite happens in times of economic stagnation. This relationship later became a problem that led to its failure, especially in the long-term, as in the early seventies of the last century, a situation appeared in the Western capitalist countries in which high rates of unemployment and inflation coincide at the same time, leading to the emergence of the phenomenon of stagflation, as unemployment increases with high rates inflation. This is due to many price distortions and market imbalances, especially in the labor market, which is prevalent in many economies and countries. It can be said that the relationship between the rate of inflation and unemployment is not diagnosed in the direction of the relationship between these two variables (Selim & Hassan, 2019).

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It is possible to analyze the annual inflation rates in Iraq from 1990-2016, which are calculated according to the index of the general level of consumer prices. Since Iraq in the nineties increased prices unprecedentedly, it reached the highest inflation rates during that period, known as "Hyperinflation." Where these rates reached on average (111.4%) during the period 1990-2002, several factors helped in the rise in inflation rates, including the structural imbalances between supply and demand as a result of the inability of the local product to meet the increasing demand, which leads to a rise in imported goods, and the expansion of expenditure the government, and the absence of economic plans that would encourage investment, and extensive bank financing to bridge the deficit in the state's general budget, due to the conditions of the economic embargo imposed on Iraq in 1991 (Sasongko & Huruta, 2019). The period after 2003 is considered the beginning of the shift in the state's economic trends by integrating the Iraqi economy with the international economy, which led to a drop in prices, especially during the period 2003-2005. Where the inflation rate was almost constant at 32% annually, and in 2006 the inflation rate rose to 53.2%, which is mainly due to raising the prices of oil derivatives according to the policy of raising government support that Iraq followed, as recommended by the International Monetary Fund. After 2007, inflation rates decreased to 2.7% in 2008, reaching the lowest rate (-2.8%) in 2009, then increased to 2.5% in 2010, then decreased to 2.2% in 2014, and 1.4% in 2015, and 0.2% in 2016, due to the availability of oil derivatives and their low prices (Bildirici & Sonüstün, 2019). In addition to the improvement in the local currency exchange rate and the absence of customs duties to affect the prices of imported goods. Inflation and unemployment coincided in the Iraqi economy, as shown by the aforementioned statistical data, as it can be said that the Iraqi economy suffers from stagflation. Despite the decline in inflation rates after 2007 due to the policies and procedures followed by the government, especially the monetary policy in dealing with inflation, which achieved success in this. In addition to this, the high unemployment rates. When operating rates are increased, it helps to curb inflation by increasing production through various economic activities, leading to an increase in supply and a decrease in inflation rates (Sayeed, Islam, & Yasmin, 2019).

One of the factors affecting the performance of economic sectors is public expenditure. The efficiency of Expenditure allocation reflects a positive effect on providing the necessary financial resources to achieve economic and social objectives. There are several economic goals that the government seeks to achieve, including: increasing economic growth rates and providing new job opportunities for workers. The annual increase rate for some years reached (189.2%) in 1994 and (246.4%) in 1995 (Nepram, Singh, & Jaman, 2021). The reason for this is the conditions Iraq went through, which were the Gulf War and the imposition of the economic embargo. To lead to significant damage to the infrastructure, economic facilities, and other state facilities. As a result, oil exports will stop. Then the state will resort to issuing paper currency to meet the needs of the national economy due to the decrease in foreign currency revenues derived

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from oil exports, leading to a decrease in the value of money, which has a primary role in increasing public expenditures (Ali et al., 2022). This led to an increase in the annual growth rate of Expenditure from (23.4%) in 1991 to (189.2%) in 1994 and then to (246.%) in 1995. As for the years in which the rates were low, they were confined to 1996 and 2002 due to the UN's implementation of the Oil-for-Food and Drug Agreement so that the government's ability to dispose of oil revenues and reduce the money supply (the new monetary issuance) has been greatly reduced (Abouelfarag & Qutb, 2021).

After 2003, public expenditure continued to increase, despite the economic transformation from a centralized system to a free economy. This came to cover the obligations inherited from the former regime, correct the Iraqi economy's situation, increase military expenditures due to the deteriorating security situation, and adjust salaries and job allocations. Therefore, public expenditures rose from (3890445) million dinars in 2003 to about six times in 2004, and public expenditures amounted to (25017005) million dinars that year. International oil prices rose to exceed (137) dollars in 2008, according to the Arab Monetary Fund report for the year 2009 (Michaillat & Saez, 2019). Therefore, oil revenues in Iraq increased, followed by the expansion of public expenditure by more than (71%) compared to 2006 and 2007. Still, the global financial crisis occurred at the end of 2008, accompanied by an economic contraction and a scarcity of cash. It led to a decrease in the public expenditure ratio, so it recorded negative annual growth rates (17.4%). Expenditure returned to rise during the subsequent years to reach (84819841) million dinars in 2013, with a positive annual growth rate of (8.5%), to return expenditure to a decline in 2014 and 2016, where annual growth rates reached negative (12.7%) and (41.5%), respectively, due to the decline in oil prices once again (Mattei & Pistoresi, 2019).

The government was interested in increasing expenditure in favor of the operating budget represented by salaries, wages, aid, grants…etc., while not paying attention to financial allocations towards the investment budget (Cammeraat, 2020). It is known that the investment budget will create job opportunities, which will reduce the unemployment problem. In other words, an increase in public expenditure did not affect employment and unemployment because the public expenditure was directed towards operational paths with a consumption trend (Feriyanto, El Aiyubbi, & Nurdany, 2020). Therefore, the relationship between public expenditure and unemployment in Iraq is not an inverse relationship, according to the logic of economic theory.

RESEARCH METHODS

The study examines the impact of GDP, inflation, population growth, and public expenditures on unemployment in Iraq. The study gathered secondary data from WDI from 1991 to 2020. The study developed the equation given below:

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$$UE_t = \alpha_0 + \beta_1 GDP_t + \beta_2 PG_t + \beta_3 INF_t + \beta_4 PEX_t + e_t \quad \textbf{(1)}$$

Where;
UE = Unemployment
t = Time Period
GDP = Gross Domestic Product
PG = Population Growth
INF = Inflation
PEX = Public Expenditures

The study used unemployment as the main variable measured with Unemployment total (% of total labor force). In addition, the study also used four predictors such as GDP measured as GDP growth (annual percentage), population growth measured as population growth (annual percentage), inflation measured as consumer price (annual percentage), and public expenditures measured as government final consumption expenditures (% of GDP). These variables with proxies are given in Table 2.

Table 2: Variables with Measurements

S#	Variables	Measurement	Sources
01	Unemployment	Unemployment total (% of total labor force)	WDI
02	Gross Domestic Product	GDP growth (annual percentage)	WDI
03	Population Growth	Population growth (annual percentage)	WDI
04	Inflation	Consumer price (Annual percentage)	WDI
05	Public Expenditures	Government final consumption expenditures (% of GDP)	WDI

The study checks the details of the constructs using descriptive statistics. In addition, the study also checks the correlation among variables using the matrix of correlation. Moreover, the study also examines the stationarity of the variables using Augmented Dickey–Fuller (ADF) and Phillips-Peron (PP) tests. The equation is given as under:

$$d(Y_t) = \alpha_0 + \beta t + \Upsilon Y_{t-1} + d(Y_t(-1)) + \varepsilon_t \quad \textbf{(2)}$$

The factors affecting unemployment in Iraq will be estimated using the ARDL. This will be done after conducting basic tests to verify the integrity of the estimated model, such as unit root and co-integration tests. It is the best model when some constructs are stationary at I(0), and some are stationary at I(1). It also controls the effects of autocorrelation and heteroscedasticity (Sharif et al., 2020). It also provides long and short-run associations among variables. The A.RDL model equation is given as under:

$$\Delta UE_t = \alpha_0 + \sum\delta_1 \Delta UE_{t-1} + \sum\delta_2 \Delta GDP_{t-1} + \sum\delta_3 \Delta INF_{t-1} + \sum\delta_4 \Delta PG_{t-1} + \sum\delta_5 \Delta PEX_{t-1} + +\varphi_1 UE_{t-1} + \varphi_2 GDP_{t-1} + \varphi_3 INF_{t-1} + \varphi_4 PG_{t-1} + \varphi_5 PEX_{t-1} + \varepsilon_1 \quad \textbf{(3)}$$

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RESEARCH FINDINGS

The study checks the details of the constructs using descriptive statistics. The outcomes indicated that UE average value was 9.384 percent, GDP was 6.201 percent, and PG was 2.932 percent. In addition, the outcomes also indicated that INF average value was 52.168 percent, and PEX was 15.075 percent. These values are given in Table 3.

Table 3: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
UE	30	9.384	2.549	6.716	17.812
GDP	30	6.201	20.728	-64.047	53.382
PG	30	2.932	1.172	-0.850	4.832
INF	30	52.168	111.522	-16.117	448.500
PEX	30	15.075	6.099	2.332	25.564

In addition, the study also checks the correlation among variables using the matrix of correlation. The outcomes indicated that GDP and public expenditures have negative while inflation and population growth have positive associations with unemployment. This correlation is given in Table 4.

Table 4: Matrix of Correlations

Variables	UE	GDP	PG	INF	PEX
UE	1.000				
GDP	-0.151	1.000			
PG	0.220	0.311	1.000		
INF	0.269	-0.118	0.274	1.000	
PEX	-0.365	-0.071	-0.337	-0.629	1.000

The purpose of the unit root test is to ensure the variables' integrity in estimating the model. The stable test will be conducted by the ADF and PP tests. It can be seen in Table 5 that the UE is stable at the first difference of the formulas (Intercept, Trend & Intercept, and None). As for the GDP variable, it is stable at the level of the formula (Trend & Intercept), as well as stable at the first difference. And the variable (PG) is not stable at the level, so it becomes stable after taking the first difference. As for the variable (INF), it is stable at the level of the formulas (Intercept, None), and it is stable after taking the first difference. As for the variable (PEX), it is unstable at the level to become stable after taking the first difference. Because some variables are stable at the level that is, they are integral of degree zero I(0), and other variables are stable after taking the first difference, that is, they are integral of first degree I(1). Therefore, it is necessary to apply the ARDL model because it can estimate the relationship between the integrated variables of degree I(0) and I(1). The results of the two tests were as shown in the following Table 5.

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Table 5: Unit Root Test

Tests	Dickey – Fuller					Phillips – Peron		
Variables	At Level		First – Difference			At Level		First - Difference
	Intercept	Trend & Intercept	Intercept	Trend & Intercept	Intercept	Trend & Intercept	Intercept	Trend & Intercept
UE	0.480	0.861	0.007	0.012	0.413	0.832	0.006	0.011
GDP	0.952	0.010	0.000	0.001	0.965	0.000	0.000	0.000
PG	0.999	0.418	0.000	0.000	1.000	0.486	0.000	0.000
INF	0.070	0.123	0.000	0.004	0.152	0.136	0.000	0.000
PEX	0.964	0.664	0.000	0.000	0.798	0.453	0.000	0.000

The effect of factors affecting the rise or fall of unemployment rates in Iraq will be estimated after conducting the co-integration test by F- the bounds method, which is most suitable with Autoregressive models. The results of testing the limits shown in Table 6 reveal the existence of a long-term equilibrium relationship between unemployment and the factors affecting it: GDP, Population, Inflation, and Public Expenditure. The calculated F of (9.252) is greater than the upper and lower critical values at a significant level of 5%. This calls for the need to continue with the analysis.

Table 6: F-Bounds Test for Co-Integration

Test Statistic	Value	K
F-Statistic	**9.252**	**4**
Critical Value Bounds		
Significance	I0	I1
10%	2.2	3.09
5%	2.56	3.49
2.5%	2.88	3.87
1%	3.29	4.37

Table 7 shows a short-term relationship between the unemployment rate in the year and previous years, resulting when the state does not take the necessary measures to reduce unemployment, it makes it cumulative. The existence of a direct short-term relationship between population and unemployment is consistent with the logic of economic theory. The results also show an inverse relationship between government expenditure and unemployment. If government expenditure is directed to investment expenditures, this will inevitably contribute to the containment of the labor force. As in Iraq, most government expenditure is operating expenditures, so we note that the increase in public expenditure did not affect the reduction of the unemployment problem. The results also show that there is a long-term relationship between the study variables with significant significance, the error correction coefficient (CointEq(-1)), which indicates the presence of rapid adaptations, in other words, 68% of the short-term imbalances in the previous year were corrected in the current year towards the long-term equilibrium relationship.

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Table 7: ARDL model

Short-Term				
Variable	**Coefficient**	**Std.Error**	**t-Statistic**	**Prob**
D(UE(-1))	0.404496	0.139915	2.891017	0.0202
D(UE(-2))	0.493587	0.092418	5.340829	0.0007
D(GDP)	-0.000076	0.000039	-1.947436	0.0873
D(GDP(-1))	-0.000265	0.000051	-5.220587	0.0008
D(PG)	1.944449	0.753993	2.578868	0.0327
D(PG(-1))	3.258451	0.572991	5.686744	0.0005
D(PG(-2))	2.133885	0.890302	2.396809	0.0434
D(INF)	0.001959	0.001822	1.075162	0.3137
D(PEX)	-0.000000	0.000000	-2.539976	0.0347
D(PEX(-1))	-0.000000	0.000000	-2.354781	0.0463
D(PEX(-2))	0.000000	0.000000	-3.649678	0.0065
CointEq(-1)	-0.687009	0.073438	-9.355004	0.0000
Long-Term				
Variable	**Coefficient**	**Std.Error**	**t-Statistic**	**Prob**
GDP	-0.000444	0.000189	-2.352457	0.0465
PG	0.656292	1.138047	0.576683	0.5800
INF	0.003138	0.004680	0.670595	0.5214
PEX	-0.000000	0.000000	-4.927861	0.0012
C	-12.984543	19.938809	-0.651220	0.5332

DISCUSSIONS

The study results showed that GDP has a negative association with unemployment. These results are in line with Dahliah and Nur (2021), which states that in a country where the rate of GDP increases, the economy grows and expands. Many small and medium-scale firms in different industries have large-scale production and space for employing new workers. In such circumstances, people may have employment opportunities and get rid of the evils of unemployment. These results agree with Wang and Li (2021), which examines the GDP's role in reducing unemployment. The study implies that when the GDP growth rate gets higher over the years, the economic condition of the country is also getting better, and the country makes significant development. As a result, the economic practices increase, the need for more workers arises, and people are able to fight against unemployment.

The study results indicated that population growth has a positive association with unemployment. These results align with O'Sullivan (2020), which posits that in a country where the population growth rate is getting higher, basic human needs increase. The pressure on the economic sectors for employment increases while the firms do not

have enough space to adjust to new workers. In this situation, when the demand for sources of earning increases but there is a lack of space for job opportunities, the unemployment rate goes up. These results agree with Khajevand and Tehrani (2019), which states that when the population growth rate of a country is consistently increasing, more youth come to the list of those searching for jobs to earn, raise living standards and begin their separate family life. When the existing candidates fail to open the door to new candidates awaiting jobs, the unemployment level increases.

The study results also revealed that inflation has a positive association with unemployment. These results match with Tenzin (2019), which also claims that during inflation, individuals and small firms lack the potential to make investments. Thus, the employment opportunities are reduced. These results are in line with Selim and Hassan (2019), which highlights that in case the inflation rate gets higher, the firms have to face high prices for the material, resources, and services. The total cost of the firms keeps on increasing, and the level of profits getting down. In this situation, employers try to reduce the number of employees and adjust the costs. This causes a rise in unemployment.

The study results showed that public expenditures have a negative association with unemployment. These results are in line with Schuknecht and Zemanek (2021), which is about analyzing the impacts of public expenditures on the unemployment problem within the country. The study posits that when a country is developing, and the government is making public expenditures, there is a rise in construction activities, the development of energy infrastructure, and the increase in economic practices. This ultimately increases employment opportunities. These results are supported by Abouelfarag and Qutb (2021). In this previous article, the authors have the view that whenever government makes expenditures in medical, education, or public infrastructure, the need for experts, professionals, and labor increases, and many people are able to get employment.

CONCLUSION

The Iraqi economy is a rentier economy that depends on oil to generate the gross domestic product GDP, so growth in it is not considered real growth, which leads to the inability of the Iraqi economy to absorb the labor force entering the labor market annually. The absence of a reciprocal relationship between inflation and unemployment, and therefore they are not related to a relationship in the Iraqi economy during the period 1990-2016. Weak correlation between the rate of economic growth and unemployment due to the fact that the Iraqi economy is a rentier economy whose performance is largely related to fluctuations in global crude oil prices, which made the economy unable to absorb the increase in the labor force supply. Absence of the authorities responsible for drawing up and preparing population policies and plans that would create an equilibrium relationship between population growth and achieving optimal utilization of human resources. Despite the

increase in the volume of public expenditure in Iraq, especially after 2003, it did not reduce the unemployment problem due to directing financial allocations toward the operating budget. The standard analysis results indicate a short-term relationship between the unemployment rate in the year of study and the previous years, as well as a direct short-term relationship between the population and unemployment. In addition, the results indicate an inverse relationship between government expenditure and unemployment and a long-term relationship between the study variables.

RECOMMENDATIONS

Creating an attractive and suitable environment for investment to increase employment and reduce unemployment rates. Adopting economic plans that stimulate investment in the private sector, as well as enhancing its participation with the presence of the government sector, to generate new job opportunities commensurate with the population increase. Continuing to maintain appropriate inflation rates, by following economic policies in providing the necessary economic environment to create new investment opportunities that would increase fixed capital formation and the domestic supply of goods and services. Directing the largest proportion of public expenditure towards the investment budget, would affect the level of employment and unemployment.

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