

**PREPRINT**

*Author-formatted, not peer-reviewed document posted on 23/11/2023*

DOI: <https://doi.org/10.3897/arphapreprints.e116121>

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**Effect of Certain Economic variables on the Poverty Rate  
in Iraq from the perspective of economic development**

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## ***Effect of Certain Economic variables on the Poverty Rate in Iraq from the perspective of economic development***

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### **Abstract**

*Macroeconomic stability is a prerequisite for economic growth and development. Effective macroeconomic management is the key to achieve stability. The developments in the last decade have caused a change in the prevailing perceptions in the world about the nature of desirable macroeconomic policies. It also led to developing it within a coordinated framework, whereby the fiscal and monetary policies, the local currency exchange rate policies and the management of the capital account in the balance of payments are compatible with each other. It presents a framework that organizes macroeconomic strategies, public spending, stabilizing livelihoods, creating job opportunities, and reducing poverty levels. The problem of poverty is one of the most serious problems that could economically and socially affect building development, due to the serious economic and social consequences associated with it. The research problem is represented in the main question, namely "To what extent the economic variables represented by the unemployment rate, inflation, GDP, exchange rate, and money supply affect the poverty rate in Iraq?". The research problem can be determined in the light of the main questions, namely:*

- 1. Q1: What are the analytical bases for the relationship between economic variables and the poverty rate?*
- 2. Q2: What are the effects that economic changes can have on the poverty rate?*

The current research fall into three sections: The first section includes the theoretical rooting of macroeconomic variables and poverty (according to an analytical perspective). The second topic dealt with measuring the relationship among some economic variables and poverty rate in Iraq. The third topic dealt with visions and solutions to reduce poverty rates in Iraq. Conclusions and recommendations have been reached.

**Key words:** measuring the variables, analysis of variables, poverty rate, economic development perspective, Iraq.

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### **Introduction**

Ending poverty and cutting its rates is a key module in any development policy, where achieving it requires adopting balanced economic policies between achieving economic growth and redistribution of income together. The correlation among economic development and ending poverty is still a matter of debate in the economic literature. Some show that there is an inevitable relationship between them, in which achieving economic growth could lead to improving the well-being of individuals and reducing poverty rates. It was found that others indicated that this relationship was conditioned by the impact of this growth on income distribution. If economic growth is accompanied

by a change or improvement in the distribution of income, it will lead to a reduction in poverty rates, but if this does not happen, then the impact of growth on poverty will be limited.

The economic effects reflected by macroeconomic problems appear clearly in all sectors according to the level of the national economy and on most members of society. The reality also indicates that various macroeconomic policies have an influence on poverty indirectly since poverty is an approach with origins in a variety of political, economic, social, and cultural imbalances. The economic distortion is among the most important distortions, as the experiences of various states confirm that the presence and continuation of structural imbalances in any economy excludes the positive results arising from this economy. This, in turn, would have consequences as a slowdown in growth rates where it is reflected on the standard of living and the deepening of the phenomenon of poverty.

Since poverty is a reality that is strongly related to all macroeconomic sectors in the country, macroeconomic policies have an impact on and repercussions for poverty. Poverty is influenced by a number of factors, including a nation's gross domestic product, national income, consumption, investment, employment, general price level, monetary and financial policies, and the state's economic position, including inflation or affluence. Poverty is also affected by all the variables of these macroeconomic factors and policies and their role in reducing it. Based on the foregoing, we will review and analyze the relationship to some macroeconomic variables and poverty rates. The research reviews the relationship among poverty, unemployment, inflation, the exchange rate and gross domestic product, then the relationship between money supply and poverty. The importance of the research stems from highlighting one of the important topics by measuring and analyzing the effect of some macroeconomic variables on poverty rates in Iraq. The current research aims at finding ways, policies and visions to end poverty, which is one of the chief ways and because of its role in advancing economic development.

The problem of the study is to measure and analyze the effect of the economic variables represented by the unemployment rate, inflation, GDP, exchange rate, and money supply on the poverty rate in Iraq?).

The hypothesis of the research revolves around the use of the evaluation of the (ARDL) model to clarify the impact of economic variables on the poverty rate, and to indicate the extent of their impact on the poverty variable in addition to finding out which of these measures is more effective. It is to point out that the independent variables are (unemployment, inflation, rate of exchange, gross domestic product, and money supply) and the dependent variable is (poverty rate). The aim of the study is to measure and analyze the effect of some economic variables on the poverty rate in Iraq for the period 2004-2020. It also aims at developing visions and policies to end poverty. For the aim of fulfilling the objectives of the study and testing its hypothesis, three investigations have been adopted. The first topic is the theoretical rooting of macroeconomic variables and poverty (according to an analytical perspective). The second topic included the applied side by using the economic measurement approach, and the third topic included visions and treatments to cut poverty rates in Iraq.

Research problem: The problem is represented in the following questions: To what extent the economic variables affect the poverty rate in Iraq? To further clarify the features of this problem, we raise the following sub-questions:

- Q1: What are the analytical bases for the relationship between economic variables and the poverty rate?
- Q2: What are the effects that economic changes can reflect on the poverty rate?

The hypothesis of the study: The research is based on many hypotheses, which we will test whether or not they are valid, as well as by analyzing this topic. These hypotheses are:

- There is a long-term equilibrium correlation among the variables of the study.
- The explanatory variables (unemployment rate, GDP, inflation, exchange rate, money supply) affect the poverty rate.

#### **Research importance:**

The significance of the study lies in identifying the type of impact among the macroeconomic variables (unemployment, inflation, exchange rate, domestic product, and money supply) on the poverty rate, and searching for treatments for the negative effects to fulfill economic and social development that benefits all components of the national economy, institutions and individuals. This is in order to reduce inflation and unemployment and increase average per capita income. It also plays an active role in several countries in order to achieve economic stability and increase the rate of growth.

#### **Research objective:**

The key objectives set up through the research are: measuring and analyzing the effect of macroeconomic variables on the poverty rate in Iraq, as well as knowing the extent of the response of economic variables in affecting poverty. One of the most important objectives is also knowing the extent of the effectiveness of relying on treatments in light of the limited social awareness and the significant decline in the level of economic and social development and the weakness of the role of the banking system in economic activity. Furthermore, the limited experience in pursuing monetary policy and correcting it from the problems facing the Iraqi economy is considered one of the objectives that we seek.

#### **Research Methodology:**

The inductive approach was adopted by extrapolating previous studies, research, books and courses in Arabic and foreign languages, in addition to browsing websites that coped with the subject or part of it. The data containing the study problem were analyzed by using the standard method. In this context, we will rely on the data of the Ministry of Planning and Development Cooperation, the Central Statistical Organization in Iraq.

**Research Structure:** The study fall into three parts: The first section includes the theoretical rooting of macroeconomic variables and poverty (according to an analytical perspective). The second topic includes measuring the correlation among some economic variables and the poverty rate in Iraq. Lastly, the third topic dealt with visions and treatments to reduce poverty rates in Iraq.

## **1. Literature review**

- Hussein Ali Sultan: *The Role of Fiscal Policy in Reducing Inequality in Income Distribution: An applied study in Jordan and Yemen for the period 1990-1999*. A dissertation submitted to the College of Administration and Economics, Al-Mustansiriya University, 2006 as partial fulfillment for obtaining a master's degree in economic sciences.

Most countries in the world suffer from the problem of inequality in distributing income among their population. This is clearly noticed in developing countries particularly, due to absence of many planning policies, procedures and legislation, in which development gains are concentrated in the hands of a few and limited groups of the population. The issue of distributing income has become one of the most controversial issues in the field of economic and social development because of its vital importance in equal distribution among the members of society. The study is based on the hypothesis: that fiscal policy measures, including economic reform policies by structural stabilization, may contribute to alleviating the differences in income distribution in the two study models (Jordan and Yemen). The study aims at verifying the extent to which fiscal policy measures contribute to reducing the differences in income distribution through its use of public expenditure and public revenue tools in the two study models (Jordan and Yemen). Fiscal policy did not lead to achieving social justice due to its lack of tax justice, as the tax burden falls on the shoulders of low-income people. The financial policies aimed at improving the income distribution structure should focus on providing more job opportunities and developing the unskilled labor force to earn income. In this field, increasing investments and reallocating them between different uses represents the main tool for raising and improving the rate of economic growth and reducing inequality in income distribution.

- Nevin Hussein Mohamed: *(The Most Important Macroeconomic Determinants and their Effects on Poverty Rates in Egypt During the period from 2000-2020) (Using the Multiple Regression Model)*. The study aims at studying the macroeconomic variables affecting the poverty rate in Egypt. The variables of inflation rate, rate economic development, unemployment rate, rate of exchange, and net investment flows were taken into account. These variables are a time series from 2000 to 2020, to build an econometric model that explains the impact of these on the poverty rate in Egypt.

The study arrived at a set of results: The key finding is that poverty is a multifaceted phenomenon. There is a direct correlation among the rate of economic growth and reducing the rate of poverty. Social safety nets must be expanded to reduce poverty. Egypt, which achieved high economic growth rates, had a positive impact on reducing poverty rates. The results of the standard model were that the net foreign investment flows had the greatest effect on the poverty

rate, followed by the unemployment rate and the rate of exchange. Policy makers should formulate social welfare policies to protect the poorest families from the repercussions of inflation and unemployment. Policies should be put in place to reduce poverty at the national level.

### **Areas of benefit from previous studies**

- Identifying the problem of the study and enriching the researcher's knowledge about the variables of the study.
- Adopting extensive experience with which it was provided, which constituted a cornerstone in building a base on which this study was based and the formation of the path that was directed to it.

## **2. Methodology**

### **T Theoretical rooting of macroeconomic variables and poverty (according to an analytical perspective)**

#### **First: Poverty and unemployment**

The increase in poverty and unemployment rates poses a threat at the level of the national economy and a waste of economic resources. Poverty means the lack of basic standards of living, such as education, social services, and justice in distribution. Poverty and unemployment go hand in hand in the long run. The issue of unemployment and poverty does not lie in its wide scope, but rather in structure. The problems of unemployment and poverty are among the economic and social challenges, as they are considered a natural result of the ineffectiveness of the policies and strategies that have been followed with their coinciding with the succession of economic crises during the past years. The latest available official statistics indicate that the unemployment rate in Iraq forms (14%) of the labor force, as it increases among young people (15-24 years) to reach more than (34%). If we add to this percentage (7%) of underemployment, on the other hand, its rate rises to about (18%). As for poverty, it forms about (20%) of the total population. These indicators, along with the unequal distribution of income on the one hand, and the unequal distribution of job opportunities in the public sector, led to an imbalance in the general situation. (Al-Ibrahimi, 2020, 9)

#### **Second: Poverty and inflation**

The deviation of economic variables from their equilibrium levels is one of the key channels that contribute to passing the undesirable influence of inflation through its path to the economic and other components of society, in which the phenomenon of poverty is the most prominent effect. Inflation is one of the variables that explain poverty in global economies, especially those in which its rates have accelerated. It is a basic factor that increases poverty rates. The mechanisms of inflation and poverty are explained in the economic literature through two channels: (Al-Iraqi, 2008, p. 75)

- The channel of economic growth in containing the poverty rate:

Many international experiences point to the importance of sustainable economic growth in containing poverty. Reducing poverty requires economic resources capable of achieving continuous growth rates. As for the process of linking the importance of inflation in affecting poverty rates through its effects on economic growth rates. Despite the controversial relationship between inflation rates and economic growth, it points to the negative impact correlation among high inflation rates and economic development. However, there is another opinion that indicates the nature of the underlying positive correlation among low inflation and the rate of economic growth. In developing countries, including Iraq, we see varying mechanisms underlying the generation of low rates of inflation, due to the imbalances inherent in the economic structure, the issue of controlling low rates of inflation and investing them to achieve high levels of economic growth which becomes a worrying issue. Moreover, the poor are more sensitive to inflation, which could have repercussions in restricting investment. Inflation affects economic development and doubles its cost through losing the confidence in the local currency and increasing the marginal tendency to consume. This effect is also reflected on the economic efficiency, as the rise in inflation will lead to a decrease in the return on capital, leading to a decrease in production.

- The channel of income distribution and its relationship to the poverty rate

Inequality in distributing income plays a basic role in spreading the poverty, as economic studies indicate that poor income distribution is one of the driving factors in the emergence and deepening of poverty. Seeking to reduce inequality may lead to a reduction in poverty rates. Thus, the importance of inflation appears in the undesirable impact on poverty rates, due to the imbalance it causes in the internal conditions between the different groups. Hence, it can be indicated that inflation has a role in poverty rates through paths that are reflected in economic growth rates and push them to decline and on the nature of income distribution in favor of low-income groups.

Third: Poverty and the rate of exchange

The fluctuations of the local currency exchange rates against the US dollar are one of the economic challenges that the Iraqi economy is exposed to as a result of its dependence on the oil sector by a large percentage in collecting its revenues, which has negative repercussions on the one hand and positive ones on the other hand. The influence of these repercussions appear in most financial decisions, especially spending decisions on important economic sectors (industry, agriculture). In addition, the effects appear in the balance of payments, in which the path of these effects extends to the real GDP growth rates, and then affects spending on important service sectors, including health and education. The process of devaluing national currencies against the US dollar without being subject to the rules of supply and demand is an issue that has repercussions on social and living conditions. These policies are sometimes presented may be thought of as a process of reorganizing the total economy with the goal of boosting its competitiveness in order to decrease imports and promote exports. Yet historical evidence shows that structural adjustment measures, particularly when liberalizing the exchange rate, led to economic decline in the majority of the nations that adopted them. Without creating a productive base to safeguard the national currency,

reducing the exchange rate has major social and economic effects on all levels, including: (Omar 2003, 17)

- The effects of debt on aggregate demand. Economists agree that public debt has effects on aggregate demand in the short term, as it enables the government to increase public spending with what it borrows. However, in the long run it has effects of demand when the government borrows to pay off its previous debts which does not represent a demand.
- The effects of debt on saving and investment, as the public debt means crowding out the government in the capital markets, which deprives the private sector of resources. Therefore, it affects the implementation of the investment plan and the domestic product, respectively.
- The effects of debt on public finances. The public debt is used to finance the budget deficit, as the burdens of servicing the public debt represent additional expenditures in the general budget of the country. Due to the mismanagement of public finances, it follows that public spending increases from year to year at a growth rate greater than the growth rate of public revenues. Thus, the budget deficit is increasing and continuing and leads to boosting in public debt and its sustainability, which affects the public financial performance. On the other hand, the allocation of large amounts amounting to more than a quarter of expenditures, and about half of the revenues to debt service means depriving citizens of benefiting from these amounts allocated to service debt burdens.
- The impact of debt upon the balance of payments: If the external debt represents cash flows within it in the balance of payments, which contributes to reducing the total deficit in this balance. Servicing this debt in terms of interest and installments represents outflows that increase the deficit in the balance. This is what is happening in Iraq due to the increasing burdens of servicing the external debt and the reduction of foreign investments and loans.
- The effects of debt on justice among next generations: Borrowing is usually done at one time and repaid at another time that follows it. If the generation under which the borrowing took place benefits from the borrowed funds, then the next generation would be the one who bears the burdens of servicing these loans by deducting from the funds available to spend on the necessary services for it. If the loans are utilized to fund investment projects whose benefits last for years longer than the years of loan payback, it may be claimed that the following generation has profited from the loans. However, the situation differs, as the government borrows to finance the current deficit, i.e. to spend on services that benefit the current generation only. This is in addition to the fact that the government borrows and does not use what it borrows to finance its investments. This leads to inequality among generations, which oppresses subsequent ones.

#### **Fourth: Poverty and Gross Domestic Product**

The correlation among economic growth and change in the income distribution and poverty rates is formed for the first time in the writings of economists belonging to the modern school. According to this theory, economic growth is an interrelated and incorporated process. The development of a specific sector plays a vital role to push other economic sectors in the country to develop through the forward and backward

interdependencies among these sectors. This is what Marshall recognized it as external savings. As a result, as the economy grows, so do various income groups in various industries. Not only is the sector responsible for growth, but the Kuznetz hypothesis was the starting point for a thorough investigation of the link between economic growth and poverty. This hypothesis states that economic growth is associated with inequality in the distribution of income leading to poverty in a relationship in the form of an inverted letter (U), whereby the fairness of income distribution declines in the early stages of economic growth as a result of the concentration of savings in the higher-income groups. It gets improving when the growth rate rises, which is mainly due to two factors: The first: savings are initially concentrated with the upper income groups, which turn them into investable assets so that they can acquire the largest share of the income of those assets and properties compared to other groups. As for the second factor, it is represented in the structural change in the economy of countries with their development and transformation into an industrial economy, where labor moves from low-return and productivity sectors (agriculture) to higher-income sectors (industry). Thus, although the free market mechanisms initially tend to lead to inequality and the concentration of wealth, they soon correct this situation with the high rates of economic growth. (Al-Sayed, 2015, p. 17)

#### **Fifth: Poverty and money supply**

Monetary policy affects poverty and inequality in both of the short term and long term, as we find that the nature of short-term and long-term relationships go in opposite directions. Augmented monetary policy is associated with improving the conditions of the poor in the short term. As for the long term, it seeks to reduce inflation and stabilize the growth of aggregate demand, which is associated with improving the welfare of the poor. We conclude that monetary policy aimed at reducing inflation and stabilizing demand to improve the lives of the poor. (Al-Deen, 2020, p. 127)

One of the economic variables that perfectly reflects the state of the economy is the money supply, whose components show how far the banking system has developed, how well the public is informed, and how the monetary and financial markets have evolved. The money supply tool is one of the first concerns of central banks. This means maintaining local currency, its purchase, and the currency exchange rate against exchange rates and other currencies. In light of the correlation among money supply and GDP, there is an impact correlation. In the event of a change in the money supply through an augmented monetary policy, this makes a decrease in the interest rate, which will lead to an increase in investments as a result of the inverse relationship between investment and the interest rate. This generates an increase in income which in turn increases aggregate demand creating a stimulus in the increase in GDP. The opposite applies if the monetary authority follows a contractionary policy, investment will decrease, which leads to lower investment, which generates a decrease in output. This illustrates the inverse relationship between GDP and money supply. (Al-Maatouq, 2020, p. 7)

### **3. Research results**

## Measuring the impact of some economic variables on the poverty rate

The following is a description of the variables included in the model and includes the following: The independent variables are (unemployment, inflation, exchange rate, GDP, money supply). The variable (X1), which indicates (unemployment rate) has been introduced into the model and unemployment, is related to "the compulsory cessation of a part of the labor force in society from work despite the desire and ability to work and the prevailing wage. The variable (X2) indicates the (inflation rate), the variable (X3) indicates (the exchange rate variable), and the variable (X4) is the (GDP). The gross domestic product at constant prices was adopted as a measure of income to include the volume of transactions. It is the best way to determine the quantity of finished products and services. Therefore, it is expected that any modification in the money supply will be reflected in this variable, as a result of the positive relationship that binds them, as any increase in the money supply pushes down interest rates. This could encourage investors to increase their investments and will result in an increase in real output, where the situation is reversed when the money supply is reduced. It will push towards reducing output on the assumption that there are idle capacities or that the economy does not enjoy a full employment. Variable (X5) shows criticism and indicates the extent of its impact on each variable and finds out which of these measures is more influential. The dependent variables include: The variable (Y) is the poverty rate.

### First: Estimating the (ARDL) model

#### 1- Augmented Dickey – Fuller test

Fuller & Dickey developed a test for time series analysis in order to avoid the disadvantages of the simple Dickey-Fuller test”, that neglected (the problem of autocorrelation in the limit of random error). Given this problem, the ADF test can be used (to correct the autocorrelation problem in residuals) by including in the test function a certain number of differences of the lagging dependent variable. The Augmented Dickie Fuller (ADF) unit root test relies mainly on the estimation of models to test the stability of time series by determining the degree of their integration by making use of the Augmented Dickie Fuller (ADF) unit root test. It is one of the most famous tests used to test the stability of time series. This test relies on a formula to ensure the stability or instability of the time series by not containing the fixed limit and the time trend. (Hassan, 2013, p. 180)

$$1 \dots\dots\dots U_t + \Delta Y_t = \lambda Y_{t-1}$$

The time series is tested according to (ADF test at its level, if the P-Value) is greater than (5%). This indicates that the parameter is insignificant and the series is unstable at the level. Thus, the first variable of the series will be taken. If the series achieves rest, then the series becomes integrated at the first variable, but if it is unstable at the first variable, the differences will be taken from a higher degree, and so on until the series becomes stable. Here, the P-Value should be less than (5%) to judge the time series as stable.

The ADF test was employed for the variables of the study in order to recognize the stability of the time series of these variables in their possession of the unit root at the level and differences. Table (1) shows that the unit root test for the unemployment variable is stable, because the absolute value of the T-test is more than the absolute tabular value at 5%.

Table (1) The unit root test for the unemployment variable

Null Hypothesis: D(UNEMPLY) has a unit root Exogenous: Constant, Linear Trend Lag Length: 0 (Automatic - based on SIC, maxlag=3)	
	t-Statistic
Elliott-Rothenberg-Stock DF-GLS test statistic	-6.954114
Test critical values:	
1% level	-3.770000
5% level	-3.190000
10% level	-2.890000

Source: It was made by the researchers

The table shows that the unemployment variable is stable at the first variable in the presence of the linear trend, because the absolute T-test value is more than the absolute tabular value at 5%.

Table (2) The unit root test for the inflation rate variable

Null Hypothesis: D(INFLATION_RATE) has a unit root Exogenous: Constant, Linear Trend Lag Length: 3 (Automatic - based on SIC, maxlag=3)	
	t-Statistic
Elliott-Rothenberg-Stock DF-GLS test statistic	-7.275404
Test critical values:	
1% level	-3.770000
5% level	-3.190000
10% level	-2.890000

Source: It was made by the researchers

It shows that the variable of inflation rate is stable at the first variable, because the absolute value of the T-test is more than the absolute tabular value at (5%).

Table (3) The unit root test for the market exchange rate variable

Null Hypothesis: D(MARKET_EXCHANGE_RATE) has a unit root	
Exogenous: Constant, Linear Trend	
Lag Length: 0 (Automatic - based on SIC, maxlag=3)	
	t-Statistic
Elliott-Rothenberg-Stock DF-GLS test statistic	-3.400140
Test critical values:	
1% level	-3.770000
5% level	-3.190000
10% level	-2.890000

Source: It was made by the researchers

It shows that the variable of market exchange rate is stable at the first variable, because the absolute value of the T-test is more than the absolute tabular value at 5%.

Table (4) The unit root test for the variable of market exchange rate

Null Hypothesis: D(GPD) has a unit root	
Exogenous: Constant	
Lag Length: 0 (Automatic - based on SIC, maxlag=3)	
	t-Statistic
Elliott-Rothenberg-Stock DF-GLS test statistic	-4.489084
Test critical values:	
1% level	-2.728252
5% level	-1.966270
10% level	-1.605026

Source: It was made by the researchers

It shows that the market exchange rate variable is stable at the first variable, because the absolute value of the T-test is more than the absolute tabular value at (5%).

## 2- Cointegration Test

The concept of cointegration is defined as a kind of association between two or more time series, as the fluctuations in one of them lead to canceling the fluctuations in the other by loading their corresponding values over time. In order for the economic interpretation of the hypothesis that states there is a causal correlation (whatever its direction) among these variables to be acceptable, the data for these variables must be integrated of one degree. This means that the long-term correlation among these variables ( $X_t$ ,  $Y_t$ ) is significant in the case where the estimated error term (Error term) is static at zero (0) and does not have the unit root. After verifying the time series data for the basic variables are static by using the (Augmented Dickey Fuller test (ADF), this characterization of the long-term relationship requires a test of cointegration of the basic variables included in the model.

The most important tests of cointegration are:

- (Engel-Granger test, Johanson-Gesselius test, and ARDL model test).
- The Johansen test proposed by (Johansen and Juselius 1990) and (Johansen 1991) were used when the number of variables exceeded two or even when the number of them would be two. To detect the amount of vectors of cointegration, Johansen proposed two statistical tests:

( $\lambda$  trace test). It verifies the null hypothesis that the number of vectors of cointegration is less than or equal to the number ( $r \leq n$ )  $r$ ) against the alternative hypothesis that the number of vectors is equal to ( $r = n$ ) in the following formula:

$$\lambda_{\text{Trace}}(r) = -T \sum_{i=r+1}^n I_n (r1 - \lambda)$$

( $\lambda$ ) represents the root properties of the variables that can be obtained from the estimation process.

Maximum Eigen values test. The null hypothesis is tested that the number of vectors of cointegration is equal to  $r(n=r)$ , the alternative hypothesis that the number of vectors of cointegration is equal to  $(n=r+1)$ . It is calculated in the following formula:-

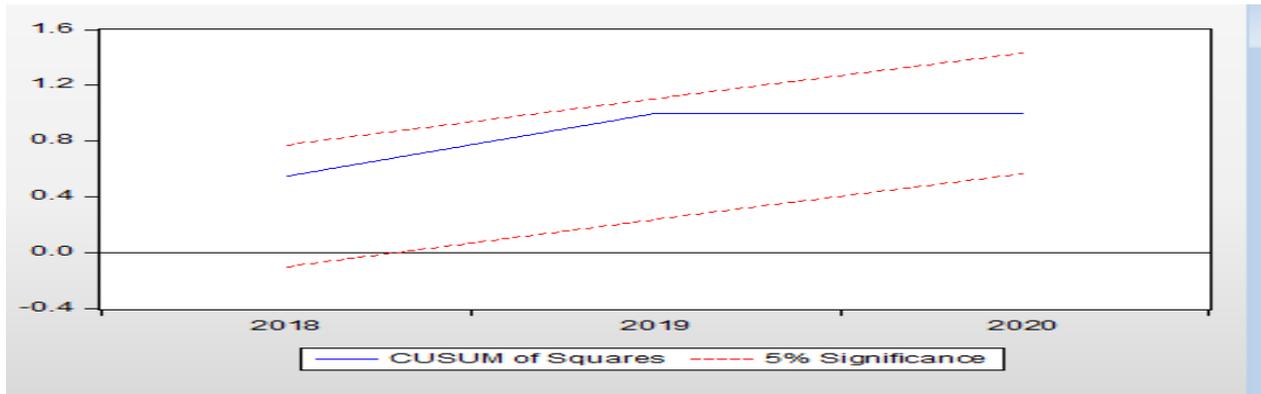
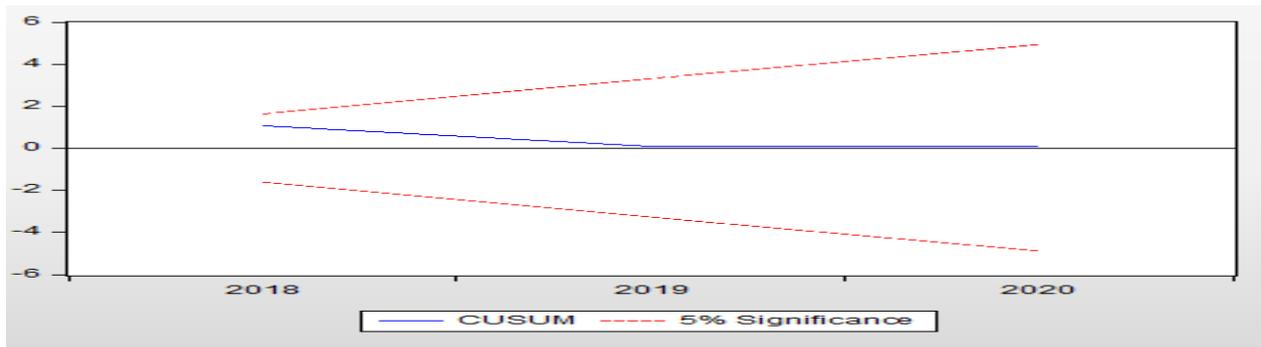
$$\lambda_{\text{max}}(r) = -T I_n (1 - \lambda r + 1)$$

For the purpose of testing the null hypothesis of the two tests ( $\lambda_{\text{Trace}}$ ) and ( $\lambda_{\text{max}}$ ), we compare their calculated values with the critical values presented by Johansson and Jesselius, if the test value is greater than the value. On this basis, the ARDL model was used in the estimate, so the results were as follows:

- Structural stability test for estimated parameters:

In the absence of any structural alterations in the data utilized throughout time, the structural stability test for the short and long term transactions is shown. The cumulative sum test (CUSUM) and the cumulative sum of squares follow-up remainder test (CUSUMSQ) are used to achieve it. The structural stability of the coefficients estimated for the ARDL model is achieved. If the graph of the statistic of (CUSUM) and CUSUMSQ is included with the critical limits at a significant level of 5%, then these coefficients would be stable. If the graph of the statistics of the two aforementioned tests moved out of bounds at this level, the following two figures would show this test:

Figure 1: Structural stability test of the estimated parameters.



Source: It was made by the researchers.

It is noted from the above two figures that the statistics of the two tests are within the confidence limits, and therefore the estimated model is characterized by its structural stability coefficients.

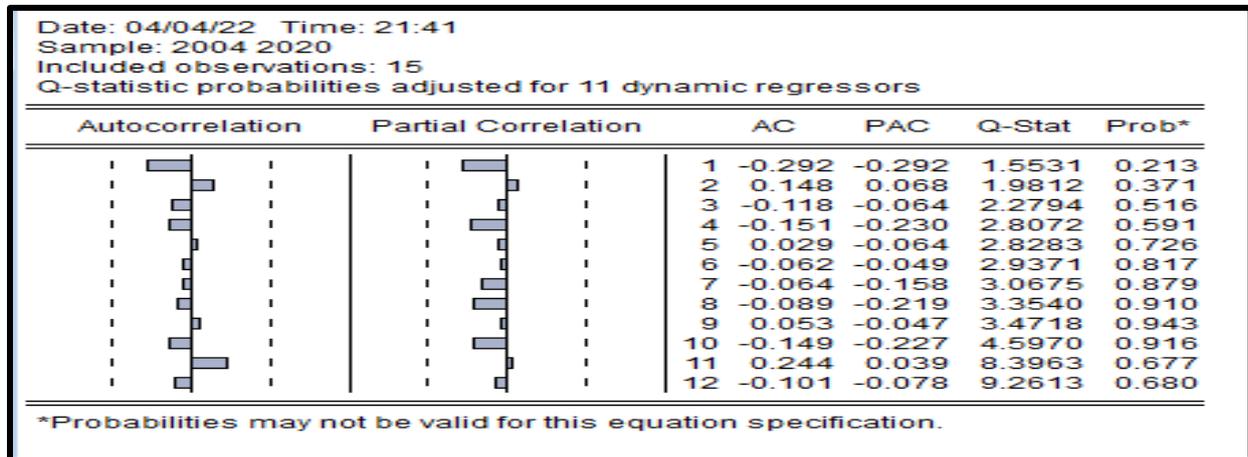
Table (5) Structural stability test for the estimated features

	Y1	X3	X21	X11	X41	X5
Mean	0.076876	1274.218	-0.146949	0.090873	0.005666	65529.85
Median	0.125410	1217.000	-0.492640	0.279840	0.257560	75466.00
Maximum	1.847990	1478.000	2.130000	2.190000	2.339590	105556.8
Minimum	-1.865570	1180.000	-2.130000	-1.634060	-1.466660	12254.00
Std. Dev.	0.991180	112.2114	1.107583	1.032041	0.963941	32771.44
Skewness	-0.064148	1.098612	0.267210	0.110401	0.366960	-0.455162
Kurtosis	2.449444	2.410895	2.590143	2.403518	3.239824	1.672919
Jarque-Bera	0.226363	3.665509	0.321291	0.286552	0.422275	1.834465
Probability	0.892988	0.159972	0.851594	0.866515	0.809663	0.399623
Sum	1.306900	21661.70	-2.498130	1.544840	0.096320	1114008.
Sum Sq. Dev.	15.71900	201462.5	19.62783	17.04175	14.86690	1.72E+10
Observations	17	17	17	17	17	17

Source: The table was made by the researchers.

Residual stability test: The following figure shows the residual partial autocorrelation function test:

Figure (2) Residual stability test:



It is noted from the above figure that all protrusions lie within the confidence limits, and therefore the residuals are stable.

Test for homogeneity of variance of errors:

Table (6) shows the Breusch-Pagan-Kodfree test to detect the problem of heterogeneity of variance:

Table (6) Breusch-Pagan-Kodfree test to identify the problem of heterogeneity of variance

Heteroskedasticity Test: Breusch-Pagan-Godfrey			
F-statistic	0.141163	Prob. F(11,3)	0.9936
Obs*R-squared	5.115958	Prob. Chi-Square(11)	0.9254
Scaled explained SS	0.462495	Prob. Chi-Square(11)	1.0000

From the above table, it is noted that the probability values of the Breusch-Pagan-Kodfree test are more than the 5% level of significance. Thus, the null hypothesis is accepted, stating a homogeneity in the variance of errors.

- Testing the limits method to detect the long-run equilibrium relationship:

The following table (7) shows the F-test according to the limits approach, to detect the long-run equilibrium correlation:

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	5.623881	10%	2.08	3
	5	5%	2.39	3.38
		2.5%	2.7	3.73
		1%	3.06	4.15

From the above table, it is noted that the calculated F value is more than the upper limits of the tabular values. This proves that there is a possibility of correcting short-term mistakes in the long term. This indicates that there is a long-term balance correlation among the variables of the study. The estimated model:

Table (8) Economic variables and the same explanation for the poverty rate

Variable	Coefficient	Std. Error	t-Statistic	Prob.
X11	0.832377	0.006203	1.677492	0.0920
D(X21)	0.245356	0.661022	0.001177	0.0352
D(X3)	0.006877	0.004759	1.445066	0.0442
D(X41)	-0.871454	0.006908	7.439318	0.0926
D(X5)	-0.070000	7.15E-05	5.005321	0.0061
C	1.371396	0.495698	2.766594	0.0698

An increase in the unemployment rate by 100% boosts the poverty rate by (83%), and an increase in the 1<sup>st</sup> variable of the inflation variable by 100% leads to an increase in the unemployment rate by (24.5%). Increasing the 1<sup>st</sup> variable of the inflation variable by 100% leads to an increase in the poverty rate by 0.687, and an increase in the GDP by 100% leads to a decrease in the poverty rate by (87%). The probability value of the F test is less than the 5% level of significance, which indicates that the estimated model is significant. In addition, the explanatory power of the assessed model was 79.59%. This indicates that the explanatory variables (unemployment rate, GDP, inflation, exchange rate, money supply) indicate that about 79.59% of the changes occurring are in the poverty rate, as shown in the following figure:

Table (9) the explanatory variables (unemployment rate, GDP, inflation, exchange rate, money supply) and changes in the poverty rate.

R-squared	0.795965	Mean dependent var	-0.042977
Adjusted R-squared	0.778345	S.D. dependent var	1.053964
S.E. of regression	1.028447	Akaike info criterion	2.884539
Sum squared resid	3.173110	Schwarz criterion	3.450979
Log likelihood	-9.634044	Hannan-Quinn criter.	2.878505
F-statistic	15.06394	Durbin-Watson stat	2.523490
Prob(F-statistic)	0.005660		

Source: It was made by the researchers.

Visions and solutions to reduce poverty rates in Iraq

### First: Challenges

As a result of the fast spread of modern technology, improvements in industrial efficiency, and inability to keep up with these technological advances, the digital gap, which is associated with poverty, weakness, and marginalization of nations that did not rely on it, increased. The rise in unemployment rates leads to an exponential increase in poverty rates. Since work is a major

component of people's income, poverty will automatically increase with unemployment. Poverty in Iraq is a problem that has been going on for quite some years since 2003, as a result of the deteriorating conditions in Iraq and the spread of systematic corruption. To address poverty in Iraq, it must be based on several axes: (UNCTAD, 2017, p. 7)

In light of the abnormal conditions, we notice an unprecedented fluctuation of the poverty rate in Iraq, as the poverty rate decreased according to the national poverty line from 22.4% in 2007 to 18.9% in 2012 (a decrease of 16%). In 2014, the poverty rate increased to 22.5%, then it decreased again in 2018 to 20.5%, which is considered a slight decrease. With the decrease in the poverty rate in 2018 compared to 2007, the number of the poor did not decrease, but rather increased from 6.6 million in 2007 to 7.4 million in 2018, due to the high population growth rate among people in general and the poor in particular. According to official estimates issued by the Ministry of Planning since 2008, the poorest, most unemployed and most deprived governorates are the southern ones. The highest unemployment rates have been known. In the southern governorates of Maysan, Muthanna, Qadisiyah, Basra, and Dhi Qar, there are the highest rates of poverty, as poverty reached 34.6% in 2007, and decreased slightly to 31.6% in 2018. Hence, we evoke the characteristics and causes of poverty in Iraq, as poverty analyzes, from 2007 to 2018, indicated the following: (Ministry of Planning and Development Cooperation, 2018)

- Multidimensional poverty distinguishes poverty in Iraq. In addition to the low level of income and the approaching of a large proportion of the population to the poverty line, there are various factors that contribute to the deprivation suffered by the poor, including the lack of education, health, housing, empowerment, work, personal security, and other factors. (Al-Obeidi, 2012, p. 101)
- The absence of digital technologies and innovation has a tremendous ability to spread these multiple dimensions of poverty through the low main and sub-indicators of technology in Iraq, because science, technology and innovation provide job opportunities, enhance the provision of basic public services in the labor markets, and empower marginalized sectors of society.
- Iraq suffers from increasing multiple dimensions of poverty as a result of the lack of infrastructure such as roads and electricity and the high costs of technological technologies, which represent the main means of communication with urban areas and the potential they generate for providing health care and education as well as their ability to access markets.

- Poor communication and information systems, especially the spread of mobile phone coverage in rural areas, and low investment in decentralized and renewable energy systems inside Iraq, reduces new opportunities for work and services in rural markets. This would lead to a high rate of multidimensional poverty.
- Low levels of education and training. There is a discrepancy between rural and urban areas in the field of education, where the percentage of those enrolled in education in urban areas is higher than the percentage of educated people in rural areas. This shows the weakness of developments in the field of education in Iraq, which is a weak indicator of orientation towards the digital economy. It hinders individuals from getting into the digital market and increases the rate of multidimensional poverty. (Al-Hamiry, 2015, p. 99)

### **Second: opportunities**

The following axes generate opportunities tackling poverty, including: education, housing, health, social safety nets, providing foodstuffs as essential commodities for the poor, and increasing the social benefits. This is carried out according to plans and programs, with coordination within the framework of development and economic growth goals and policies to ensure the aspect of economic growth and satisfy the citizens' living needs consistently. The issue of fulfilling objectives of the strategy is through the concerned ministries, provided that an official institution or body is established to deal with poverty and the poor. Those objectives must be implemented under the direct supervision and management of that institution in order to ensure that errors that occur during the process of implementing those objectives by those institutions are bypassed. Focus is also placed on many matters and taken into consideration for the success of an integrated national strategy that works to address poverty, unemployment, illiteracy and improve the health level through the following: (Hammadi, 2015, pp 172-173)

- Development plans and policies for the goals and requirements of achieving growth and economic development by satisfying basic needs should be included. Causes of poverty should be addressed through legislation and laws by institutions and ministries, in a way that preserves social justice and equal opportunities, and balanced utilization of benefits and services and combating corruption and illegal sources of income .
- Providing effective social safety nets that provide loans and grants to small and medium individual projects, especially productive ones. A program to grant emergency subsidies to poor families in cases of illness, death and disasters should be conducted, as well as a program to help poor students to continue their studies. The disabled, widows,

orphans, and families of martyrs must be included, and the ceiling of social assistance for individuals must be raised above the poverty line in order to reduce poverty rates.

- Measuring the poverty and providing data and statistics for poor individuals and families should keep the track on through an official institution concerned with poverty affairs that provides research and surveys and prepares and implements plans on a regular basis. It must be an institution independent of management and financial budgeting, in order for poverty reduction strategies to succeed.
- Paying attention to the labor market and striving to develop the labor force through training and qualification. Thus, we can obtain the greatest amount of productivity and the highest wages for the worker. The poor must be integrated into the labor market and given priority in obtaining suitable work.
- Focusing on the agricultural sector in Iraq for providing foodstuffs, especially the basic ones, because Iraq possesses expertise, manpower, agricultural lands and water resources. Importing these materials and burden the budget with a great burden should be stopped and lessened, but to get benefit from the surplus towards the service sectors.
- Paying attention to oversight by official institutions in Iraq in order to control financial and administrative corruption, especially in plans and programs aimed at reducing poverty.

#### **4. Discussion**

- Investment expenditures in the general budget of Iraq should be increased in order to generate jobs for the private sector because it is directly linked to government spending. Government investment spending has multiplying effects by doubling investment. This leads to the employment of more labor force and job opportunities, which increases the possibility of improving the standard of living of a number of individuals in society and in a way that undermines poverty in it.
- Stabilizing the rate of exchange for the dinar to the US dollar should be preserved, because changing the exchange rate when oil shocks occur will make individuals lose their confidence in the Iraqi dinar, as well as increasing inflationary expectations. The incomes of the middle and poor classes would run out due to inflation, especially the low-income class.
- The structure of exports should be diversified through effective economic mechanisms and strategies that suit the environment of the Iraqi economy, and in a way that reduces dependence on oil.

- Development investments and revitalizing the Iraqi economy should be supported in a way that contributes to improving the standard of living and alleviating the repercussions of poverty.

## Conclusions

- An increase in the unemployment rate by 100% led to rise the poverty rate by (83%), in addition to boosting the 1<sup>st</sup> variable of the inflation variable by 100% led to boost in the unemployment rate by (24.5%). Increasing the first variable of the inflation variable by 100% led to an increase in the poverty rate by 0.687, and increasing in the GDP by 100% led to a decrease in the poverty rate by (87%).
- 2 - The probability value of the F-test, which is less than the 5% level of significance, indicates that the calculated model is significant. The explanatory power of the estimated model was 79.59%. This indicates that the explanatory variables (unemployment rate, GDP, inflation, exchange rate, money supply) show 79.59% of the changes in the poverty rate.
- Poverty in Iraq is a problem that extends for years, as it appeared on an extended basis since 2003, as a result of the deteriorating conditions in Iraq and the spread of systematic corruption in Iraq.
- The levels of education and training become low in addition to varying the rural and urban areas in the field of education, which affected the percentage of those enrolled in education in urban areas compared to those in rural areas. This shows the weakness of developments in the field of education in Iraq, which is a weak indicator for orientation towards the digital economy, hindering the individuals from getting into the digital market and increases the poverty rate.

### Appendix (1) Data Form

Poverty rate	Money supply	Domestic Product	Market exchange rate	Inflation %	unemployment %	Years
22.4	12254	101845.3	1462	26.8	26.8	2004
22.9	14684	103551.4	1478	37.1	17.9	2005
22.3	21080	109389.9	1463	53.1	17.5	2006
22.5	26956.1	111455.8	1214	30.9	11.7	2007
21.2	34919.7	120626.5	1180	12.7	15.3	2008
20.7	45437.9	124702.8	1185	8.3	14	2009
22	60386.1	132687	1185	2.5	12	2010
19.6	72178	142700.2	1217	5.6	11	2011

18.9	75466	162587.5	1207	6.1	11.9	2012
15	87679	174990.2	1222	1.9	12.1	2013
22.5	90728	178951.4	1206	2.2	10.6	2014
23.4	84527.3	183616.3	1247	1.4	13.18	2015
23.2	90466.4	208932.1	1275	0.5	10.8	2016
21.9	92857	205130.1	1251	0.2	10.9	2017
20.5	95390.7	210532.9	1208	0.4	13.8	2018
21.4	103440.5	223075	1201.7	2.4	13.65	2019
22.4	105556.8	1893986	1460	2.3	13.88	2020

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