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MEASURING AND ANALYZING THE IMPACT OF CRUDE OIL PRICES ON THE POVERTY RATE IN IRAQ FOR THE PERIOD (2004 - 2021)

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Abstract: *The research aims to analyze the relationship between oil prices and the poverty rate, as well as to estimate the impact of crude oil prices on the poverty rate in Iraq for the period (2004 - 2021) using the NARDL model, the research also aims to find out the extent of the impact of a shock in oil prices on the poverty rate in Iraq, the research found that there is a long-term, non-linear inverse relationship between crude oil prices and the poverty rate in Iraq, as an increase in crude oil prices by (1%) will lead to a decrease in the poverty rate by (0.32%), while a decrease in crude oil prices by (1%) will lead to an increase in the poverty rate by (0.24%), and if a shock occurs in crude oil prices, it will lead to a decrease in the poverty rate in Iraq by (2.5%); However, after one semester of the shock (three months), the poverty rate will increase to (0.2%) and reach its peak in the second semester (six months) at (0.4%).*

Keywords: *oil prices, poverty, Gini coefficient, NARDL, Iraq.*

However, the poverty rate in the third semester begins to decline until it reaches the level in the fifth semester to the original balance before the shock occurred, and the poverty rate decreases since the sixth semester (a year and a half) after the shock to below the original equilibrium level before the shock by (0.1%), which continues for the long term, the research recommends to adopt a national strategy to combat poverty in the country that relies on sources of income away from the effects of oil price fluctuations on the global market.

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Introduction:

Poverty is one of the seventeen most important indicators of sustainable development, which is affected by most macroeconomic variables such as gross domestic product, unemployment, and inflation, However, oil-exporting countries' macroeconomic variables are affected by fluctuations in crude oil prices on the global market due to the resource curse.

Iraq is one of the largest countries that export crude oil, It is the fourth largest exporter of crude oil in the world and possesses the fifth largest reserve in the world, the oil sector constitutes about half of the gross domestic product ,and poverty rates in Iraq for the period (2004 - 2021) have fluctuated greatly, which leads to loss of the efforts of the five-year development plans, what are the extent of the impact of fluctuations in crude oil prices in the global market on the poverty rate in Iraq (the resource curse).

Research problem:

The research problem is focused on the following question:

- Do crude oil prices affect the poverty rate in Iraq?

Research hypothesis:

The research starts from the hypothesis that:

- The existence of a long-term non-linear inverse relationship between crude oil prices and the poverty rate in Iraq.

Research objectives:

The research aims to achieve the following objectives:

1. Analyzing the relationship between oil prices and the poverty rate.
2. Estimating the impact of crude oil prices on the poverty rate in Iraq.
3. Knowing the extent to which the poverty rate is able to return to balance when a shock occurs in crude oil prices.

Research methodology:

The research relies on the deductive approach in measuring and analyzing the relationship between crude oil prices and the poverty rate in Iraq for the period (2004-2021)using advanced economic measurement methods (NARDL) using the (STATA17) program.

Requirement One

The theoretical framework of oil prices and poverty

First: The concept of oil price:

Prices express the value of the commodity in monetary terms, and the price of oil represents the value of the commodity in monetary units for a specific period of time, taking into account a group of economic, political and climatic factors.

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There are multiple types of oil prices: the announced price, the realized price, the cost price including tax, the reference price, the transfer price, the spot price, the nominal price, the actual price, the forward price, the paper barrel price, and the reference price (Al-Janani and Al-Jabri, 2021: p. 38-40).

Second: The concept of poverty:

Poverty is defined as the state in which an individual lacks financial resources and the basics for a certain standard of living, and that poverty has many social, economic and political causes and effects (United Nations, 2020).

There are three main terms for poverty: extreme, absolute and relative poverty. Extreme poverty: is the state in which an individual cannot obtain the minimum basic nutritional needs necessary to obtain the minimum amount of calories to remain alive and carry out his normal activities (Khalid, 2015: p. 42), absolute poverty: is the situation in which an individual compares his income to the amount What is required to meet basic personal needs such as food, clothing, and shelter, while relative poverty: is the condition in which a person cannot meet the minimum standards of living compared with others at the same time and place (United Nations Educational, 2015).

Third: The relationship between oil prices and poverty

Oil prices are linked to poverty through the paradox of the "resource curse," which is the situation in which countries that possess precious natural resources in abundance, such as oil, gas, and some minerals, achieve lower rates of economic growth and economic development than countries that do not possess these natural resources.

Many studies have found, including: A study conducted at the London School of Economics on (118) countries for the period (1970 - 2007), which concluded that fluctuations in the prices of natural resources are what cause the resource curse, not their abundance (Al-Janani and Al-Jabri, 2020: p. 51).

A 2017 study found that oil-rich countries typically experience political instability due to demonstrations or riots and provide lower public services than non-oil-rich countries, additionally, studies indicate that countries with abundant natural resources have higher levels of gender inequality in the areas of wages, labor force participation, violence, and education (Mazaheri, 2017).

One of the negative effects of natural resources on human capital formation through several channels is high wages in the resource extraction industry, which pushes young people to leave their schools early in the educational stages in order to find work (Black et al, 2005). in addition, increasing prices of natural resources can lead to lower wages for teachers compared to other workers, which increases the rate of poverty and unemployment for these social segments and weakens students' learning (Marchand and Jeremy, 2020). These factors are the most important reasons for the increase in the poverty rate in rich countries in natural resources.

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Requirement Two

Measuring the impact of crude oil price fluctuations on the poverty rate in Iraq for the period (2004 - 2021)

First: Description of the NARDL model:

The research deals with analyzing the relationship between crude oil prices and the poverty rate in Iraq, as the poverty rate is considered a dependent variable (Geni), and crude oil prices are considered an independent variable (OILP), and the general formula of the model is represented according to the following equation:

Geni = f(OILP) ……(1)

$$\Delta \text{ Geni}_t = C + \sum_{t-1}^{n} \propto_1 \text{Geni}_{t-1} + \sum_{t-1}^{n} \propto_2 \text{OILP}(+)_{t-1} + \sum_{t-1}^{n} \propto_3 \text{OILP}(-)_{t-1} + \beta_1 \text{OILP}(+) + \beta_2 \text{OILP}(-) + \mu_t \ldots\ldots\ldots\ldots(2)$$

Since:

Geni: poverty rate.

OILP(+): Rising crude oil prices.

OILP(-): Decrease in crude oil prices.

Δ: the first difference of the variable.

C: fixed limit.

N: The upper limit of the optimal deceleration period.

$\propto_1, \propto_2, \propto_3$: slope in the short run.

β_1, β_2: slope in the long run.

μ **:** is the limit of the random error

Second: Determine the NARDL form data:

The researcher used Gini coefficient data as an indicator of the poverty rate, as well as Brent crude oil prices on the global market (OILP) in US dollars and current prices, for the period (2004 - 2021). The researcher worked on converting the data from annual to quarterly[1] (quarterly) for the period (2004.Q1 - 2021.Q4) using the (Litterman) method and using the natural logarithm formula, so the number of views is (72) views, and Figure (1) shows the search data as follows:

[1] The data was converted from annual to quarterly (quarterly) due to the small number of views (18), as unit root tests require no less than (22) views. In addition, the NARDL model requires at least (30) View due to its need for a number of lags when estimating, which will reduce the degrees of freedom, making the model results biased.

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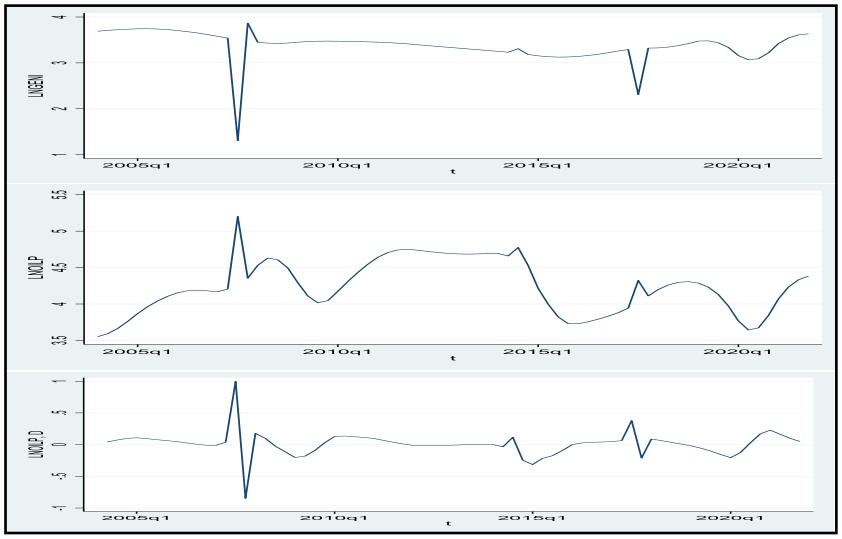
Figure (1): Gini coefficient and crude oil prices on the global market (OILP) for the period (2004.Q1 - 2021.Q4)



Source: From the work of the researcher based on the statistical program (STATA 17).

Third: Unit root tests:

There are many statistical tests to determine whether time series are stationary or not, the extended Dickey-Fuller (ADF) and Phillips-Perron (PP) tests are among the most famous of them, Stationary time series means that its mean, variance, and covariance are constant over time, and this can be inferred as in the table (1) Below:

Table (1): ADF, PP test for poverty rate (Gini coefficient) and crude oil prices

Unit root tests								
Level					1st difference			
Tests / Variables	ADF		PP		ADF		PP	
	T-Statistic	Prob	T-Statistic	Prob	T-Statistic	Prob	T-Statistic	Prob
LnGeni	-7.283	0.000	-7.382	0.000	/	/	/	/
LnOILP	-2.706	0.073	-2.763	0.064	-9.840	0.000	-9.732	0.000

Source: From the work of the researcher based on the statistical program (STATA 17).

It is noted from Table (1) above that the time series of the variable (LnOILP) is stationary at the first difference [I(1)]; While the time series for the variable (LnGeni) is stationary at the level [I(0)], and this is through the value of (T) and for both tests (ADF, PP) is greater than the tabulated, as well as through the value of (P – Value) It is smaller than (5%), which means rejecting the null hypothesis of non-stationarity and accepting the alternative hypothesis of stationarity of the time series (LnOILP) at the first difference [I(1)] and the time series of the variable (LnGeni) at the level [I(0)].

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Fourth: Estimating the standard model:

The results of estimating the NARDL model in Table (2) indicate the existence of co-integration (long-term relationship) between the two research variables (poverty rate and crude oil prices), as the F-Bounds Test proves this through the value of the statistic F of (7.17) and value of (P – Value) has (0.010) and is less than (5%), which means rejecting the null hypothesis and accepting the alternative hypothesis.

Increase in crude oil prices by (1%) will lead to a decrease in the poverty rate by (0.32%), while a decrease in crude oil prices by (1%) will lead to an increase in the poverty rate by (0.24%). and if there is any imbalance in this relationship, in the short term- from the long-term equilibrium , the error correction model will restore equilibrium at a speed of (-0.3949) quarterly, which means that (39.49%) of the imbalance is in the shock of the last semester, It will be corrected in the current semester.

Table (2): NARDL model estimation results

Regression results (variables renamed):

Source	SS	df	MS		
Model	13.1502708	8	1.64378385	Number of obs	= 70
Residual	.722181565	61	.011839042	F(8, 61)	= 138.84
				Prob > F	= 0.0000
Total	13.8724524	69	.201050035	R-squared	= 0.9479
				Adj R-squared	= 0.9411
				Root MSE	= .10881

_dy	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
_y						
L1.	-.3948573	.0886779	-4.45	0.000	-.5721797	-.2175349
_x1p						
L1.	-.1271265	.041958	-3.03	0.004	-.2110267	-.0432264
_x1n						
L1.	-.0941045	.0399547	-2.36	0.022	-.1739989	-.0142102
_dy						
L1.	.1329991	.0881829	1.51	0.137	-.0433335	.3093318
_dx1p						
--.	-2.303687	.1077911	-21.37	0.000	-2.519229	-2.088145
L1.	2.260497	.1707346	13.24	0.000	1.919092	2.601901
_dx1n						
--.	.2794908	.261003	1.07	0.288	-.242417	.8013985
L1.	.1921548	.2549747	0.75	0.454	-.3176986	.7020082
_cons	1.49969	.3348512	4.48	0.000	.8301139	2.169267

(2 missing values generated)

Asymmetry statistics:

Exog. var.	Long-run effect [+] coef.	F-stat	P>F	Long-run effect [-] coef.	F-stat	P>F
lnoilp	-0.322	7.867	0.007	0.238	4.255	0.043

	Long-run asymmetry F-stat	P>F	Short-run asymmetry F-stat	P>F
lnoilp	7.17	0.010	3.706	0.059

Note: Long-run effect [-] refers to a permanent change in exog. var. by -1

Cointegration test statistics: t_BDM = -4.4527
F_PSS = 8.8356

Model diagnostics	stat.	p-value
Portmanteau test up to lag 33 (chi2)	27.17	0.7520
Breusch/Pagan heteroskedasticity test (chi2)	2.338	0.1262
Ramsey RESET test (F)	2.136	0.1055
Jarque-Bera test on normality (chi2)	35.47	0.0000

Source: From the work of the researcher based on the statistical program (STATA 17).

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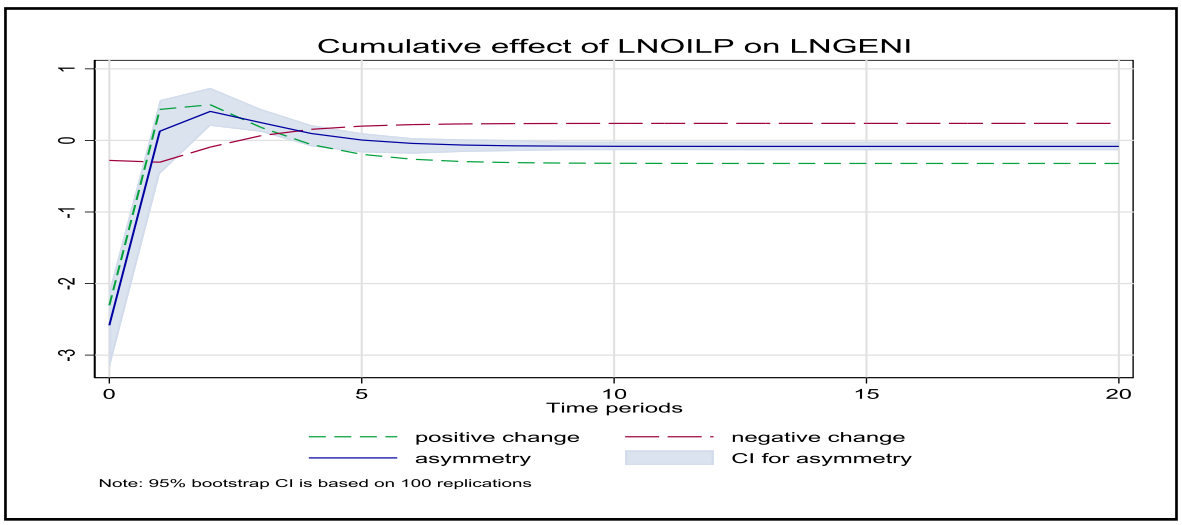
Table (2) above shows that the estimated NARDL model is acceptable from a statistical standpoint, as the (F) statistic confirms this, as the (P - Value) value is (0.000), which is less than (5%), which means rejecting the null hypothesis and accepting the alternative hypothesis, in addition, the rest of the model is free from the problem of serial correlation, as shown by the Portmanteau test, where the value of (chi2) is (0.752), which is greater than (5%), which requires accepting the null hypothesis and rejecting the alternative hypothesis, in addition, the model is devoid of the problem of non-stationarity of variance, as shown by the Breusch - Pagan - Godfrey test, where the value of (chi2) is (0.126), which is greater than (5%), which means accepting the null hypothesis and rejecting the alternative hypothesis, while the rest of the model is not distributed naturally, which It can be observed from the Jarque-Bera test, where the value of chi2 is (0.000), which means rejecting the null hypothesis and accepting the alternative hypothesis, the estimated model is well described, as proven by the Ramsey RESET test (Ramsey Regression Equation Specification Error Test) as the value of F statistic value (2.136) and its (P-value) is (0.106), which is greater than (5%), which requires rejecting the null hypothesis and accepting the alternative hypothesis, meaning that the estimated model does not suffered from a characterization error problem.

Fifth: Estimating the dynamic multipliers:

It can be seen from Figure (2) below that a shock in crude oil prices will lead to a decrease in the poverty rate in Iraq by (2.5%). However, after one semester of the shock (three months), the poverty rate will increase to (0.2%) and reach its peak in the second semester (six months) at (0.4%). However, the poverty rate in the third semester begins to decline until it reaches the level of the original balance in the fifth semester before the shock occurred, the poverty rate decreases from the sixth semester (a year and a half) after the shock to below the original equilibrium level before the shock by (0.1%), which continues for the long term.

Figure (2): The dynamic multipliers for crude oil prices and the poverty rate in Iraq



Source: From the work of the researcher based on the statistical program (STATA 17)

Conclusions:

1. The existence of a long-term, non-linear inverse relationship between crude oil prices and the poverty rate in Iraq.
2. An increase in crude oil prices by a certain percentage will lead to a decrease in the poverty rate by about a third of that percentage, while a decrease in crude oil prices by a certain percentage will lead to an increase in the poverty rate about a quarter of that percentage.
3. If a shock occurs in crude oil prices, it will lead to a decrease in the poverty rate in Iraq by (2.5%). However, after one semester of the shock (three months), the poverty rate will increase to (0.2%) and reach its peak in the second semester (six months) at (0.4%). However, the poverty rate in the third semester begins to decline until it reaches the level in the fifth semester the original balance before the shock occurred, the poverty rate decreases from the sixth semester (a year and a half) after the shock to below the original equilibrium level before the shock by (0.1%), which continues for the long term.

Recommendations:

1. Adopting a national strategy to combat poverty in the country that relies on sources of income away from the effects of oil price fluctuations in the global market.
2. Working to increase investments in labor-intensive sectors with low capital, such as the agricultural and tourism sectors, which provides job opportunities for many individuals, which reduces the poverty rate.

References:

1. Black, Dan A., Terra G. McKinnish, and Seth G. Sanders. "Tight labor markets and the demand for education: Evidence from the coal boom and bust." ILR Review 59.1, 2005: PP 3-16.
2. Marchand, Joseph, and Jeremy G. Weber. "How local economic conditions affect school finances, teacher quality, and student achievement: evidence from the Texas shale boom." Journal of Policy Analysis and Management 39.1 (2020): 36-63.
3. Mazaheri, Nimah. "Oil, dissent, and distribution." World Development 99 (2017): 186-202.
4. United Nations Educational. Poverty. Scientific and Cultural Organization". www.unesco.org. Retrieved 4 November 2015.
5. United Nations. Ending Poverty. Archived from the original on 9 September 2020. Retrieved 22 September 2020.
6. Al-Janani, Ammar Naeem Zaghir and Al-Jabri, Qusay Abboud Faraj. Estimating the returns and risks of oil price fluctuations in the international market for the period (1990 - 2017). Journal of Petroleum Research and Studies. 31. 2021.
7. Al-Janani, Ammar Naeem and Al-Jabri, Qusay Abboud. The impact of crude oil price fluctuations on the financial policy response of the Kingdom of Saudi Arabia for the period (1990 - 2017). Journal of Administrative and Economic Sciences. Al Qussaim university. Kingdom of Saudi Arabia. Volume (13). Issue (2). 2020.

8. Khalid, Bin Jaloul. Determinants of poverty in Algeria - using autoregressive (VAR) models during the period (1980-2014). Journal of Quantitative Economic Studies. Issue (1). 2015.