

Article

The Impact of Income Inequality on Household Consumption in Iraq After 2004

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Abstract: This study investigates the impact of income inequality on household consumption expenditure in Iraq during the post-2004 period, a phase characterized by profound political, economic, and structural transformations. The Iraqi economy, as a rentier system heavily dependent on oil revenues, has experienced substantial income fluctuations that have widened income disparities and influenced household spending behavior. Drawing on both classical and modern consumption theories—namely Keynesian consumption theory, the permanent income hypothesis, the life-cycle hypothesis, and the Duesenberry effect—this research employs a Nonlinear Autoregressive Distributed Lag (NARDL) model to capture the asymmetric relationship between individual income and household consumption expenditure. Using quarterly data covering the period 2004–2023, the empirical results confirm the existence of a long-run, non-linear, and positive relationship between income and household consumption in Iraq. The findings reveal that increases in income exert a stronger effect on consumption than income decreases, reflecting asymmetric adjustment behavior consistent with relative income and ratchet effects. Moreover, short-run deviations from equilibrium are corrected relatively quickly, indicating a stable long-run relationship between the variables. The study highlights the vulnerability of household consumption to income shocks driven by oil price volatility and underscores the importance of equitable income distribution, economic diversification, and effective social protection policies in enhancing consumption stability and overall economic resilience in Iraq.

Keywords: Income Inequality, Household Consumption Expenditure, NARDL Model, Rentier Economy, Iraq, Asymmetric Adjustment, Oil Price Shocks

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1. Introduction

The Iraqi economy witnessed fundamental changes in income levels and consumption patterns after 2004. Political and economic conditions contributed to creating clear gaps in individual incomes, which was reflected in living standards and household spending [1]. Several researchers confirm that rentier economies – including Iraq – are more vulnerable to income fluctuations resulting from global oil price volatility, leading to greater income inequality and a decline in consumption levels [2]

This study aims to analyze the impact of income inequality on consumption using a scientific methodology based on both theoretical and applied frameworks. It draws upon traditional and contemporary theories explaining consumption behavior, such as Keynesian theory, the permanent income hypothesis, and the Duesenberry effect [3], [4], [5]. Furthermore, it applies the NARDL model to measure the asymmetric relationship between income and household expenditure [6].

The importance of this study is highlighted by the challenges facing the Iraqi economy due to fluctuations in oil revenues, which directly affect individuals' real income levels and, consequently, their purchasing power. This, in turn, impacts aggregate demand and economic stability [7], [8], [9].

2. Materials and Methods

A. Research Problem

The research problem focuses on answering the following question: Does the distribution of individual income affect household consumption expenditure in Iraq? Economic literature indicates that income inequality is a significant factor in determining consumption levels, as it puts considerable pressure on low-income groups and negatively impacts aggregate demand.

B. Research Hypothesis

The research is based on the hypothesis that there is a long-term, non-linear, positive relationship between individual income and household consumption expenditure in Iraq.

C. Significance of the Research

The significance of this research lies in analyzing the relationship between individual income and household consumption expenditure in light of significant income inequality and the exposure of the economy to external shocks, most notably fluctuations in oil prices.

D. Research Objectives

1. To analyze the relationship between income and household consumption expenditure.
2. To estimate the impact of individual income inequality on consumption expenditure.
3. To determine the impact of shocks to individual income on household expenditure.

E. Research Methodology

The research employs a deductive approach to analyze the relationship between the study variables, drawing on economic theories that explain consumption behavior, as well as incorporating empirical evidence from the Iraqi economy.

F. Temporal and Spatial Framework

Temporal Framework: The period (2004–2023).

Spatial Framework: Iraq.

First Axis: Theoretical Aspect

First: The Concept of Income and Inequality in its Distribution

Income is one of the most important economic determinants affecting the level of social and economic well-being of individuals. It represents the sum of monetary and in-kind returns received by an individual or family during a specific period. This includes wages, salaries, profits from self-employment, interest, rent, and transfers (Badawi, 2015; Mazhar, 2010). Income inequality, on the other hand, is the state of imbalance in the way individuals or families obtain income, such that certain classes control a high percentage of total income while broad segments receive lower percentages. This leads to a widening income gap between the rich and the poor [10], [11]. Income inequality is measured using several indicators, most notably the Gini coefficient and the Lorenz curve, and the ratio of income of the top 10% to the bottom 10% [12], [13].

Second: The Concept of Household Consumption Expenditure and its Importance

Consumer expenditure is one of the largest components of aggregate demand and often represents Consumption accounts for 60–80% of GDP in developing countries [14]. Its importance lies in its reflection of the standard of living and purchasing power, and its direct impact on economic activity and growth [15], [16].

The importance of consumption expenditure is highlighted by the fact that it:

1. Reflects the standard of living of the population.
2. Represents the real purchasing power of society.
3. Directly impacts economic activity and growth.
4. Is closely linked to income levels, prices, economic confidence, and government policies.

Household consumption expenditure represents what families spend on goods and services to meet their basic and non-essential needs. It is one of the largest components of aggregate demand and often represents between 60–80% of GDP in most developing countries.

Third: The Relationship Between Income and Consumption in Economic Theories

Economic literature has offered several explanations for the relationship between income and consumption, the most prominent of which is:

1. Keynesian Consumption Theory Keynes Theory

Keynes assumes that consumption is primarily determined by current income, and that the marginal propensity to consume is less than one. This means that an increase in income leads to an increase in consumption, but at a lower rate. Keynes also emphasizes the direct relationship between income and consumption [17].

2- Permanent Income Hypothesis – Friedman

This hypothesis posits that consumption depends on long-term permanent income, not temporary income, as individuals strive to maintain a relatively stable level of consumption over time [18].

3- Life Cycle Hypothesis – Modigliani

Modigliani assumes that individuals consume according to their life cycle, meaning that consumption changes according to life stages, increasing during youth and old age and saving during working years . [19]

4- Duesenberry Effect (1949):

This theory suggests that consumption depends on social status. The relative importance of the individual in society leads to a sense of ostentation, and individuals do not easily reduce their consumption when income decreases after a period of increase. This is called the "Ratchet Effect," a phenomenon of rapid and unpredictable increases or expansions that do not return to their previous levels even if the conditions that led to them disappear [20].

This theory explains disproportionate consumption behavior, which aligns with the findings of the NARDL model in the applied aspect of the research.

Fourth: The Impact of Income Inequality on Consumer Spending

Most studies indicate that high inequality leads to [21], [22]:

1. Reduced consumption among low-income groups, as these groups tend to spend most of their income on basic goods.
 2. Increased saving among high-income groups instead of spending, which limits aggregate demand.
 3. Weakened economic stability due to a decline in aggregate consumption (OECD).
 4. The growing effects of economic recession in the absence of equitable distribution.
- The importance of studying this impact is highlighted in rentier economies like Iraq, where income levels are subject to fluctuations in oil prices, directly impacting household consumption.

Fifth: Determinants of Household Consumption Spending

Economic theories have addressed several key determinants of consumption, the most important of which are [23]:

1. Individual and disposable income.
2. Prices and inflation rates.
3. Individuals' expectations about the economic future.
4. Fiscal and tax policies.
5. Government transfers and subsidies.
6. Economic confidence and the level of political stability.

Income is considered the most influential factor and is the focus of this research.

Sixth: The Nature of the Iraqi Economy and its Impact on the Relationship Between Income and Consumption

The Iraqi economy after 2004 is characterized by the following features (World Bank, 2023). 1. Heavy reliance on oil revenues, which represent more than 90% of state revenues. 2. Fluctuations in income levels due to volatility in global oil prices. 3. Expansion of the public sector and multiple government transfers.

4. Weak economic diversification.

These characteristics clearly affect per capita income levels, and consequently, consumption levels and the purchasing power of Iraqi families.

Seventh: Literature and Previous Studies

Most studies in developing countries have indicated [24], [25]:

1. A direct relationship exists between income and consumption.
2. Income inequality has a non-linear effect on consumption.
3. Poorer classes experience greater fluctuations in consumption compared to upper classes.
4. Distributive policies (subsidies, taxes, social protection programs) are important in addressing inequality.

Studies specific to Iraq have also shown the sensitivity of consumption to shocks such as oil price changes [26].

Eighth: Theoretical Framework Supporting the NARDL Model

The NARDL model is suitable for analyzing the relationship between income and consumption for the following reasons [27].

3. Results and Discussion

Second Axis: The Applied Aspect

First: Describing the Standard Model:

The NARDL model was estimated by splitting the independent variable (Y) into a positive part and a negative part, as follows:

$$Y_t = Y_0 + Y_t^+ - Y_t^-$$

Which

$$Y_t^+ = \sum_{j=1}^t \Delta Y_t^+ = \sum_{j=1}^t \max(\Delta Y_j, 0)$$

$$Y_t^- = \sum_{j=1}^t \Delta Y_t^- = \sum_{j=1}^t \min(\Delta Y_j, 0)$$

Figure 1. Functional relationship between the variables under investigation

According to economic theory, individual income (personal income) is the independent variable and household consumption expenditure is the dependent variable. Economic theory emphasizes a direct relationship between the two variables of the research, and the relationship is as follows:

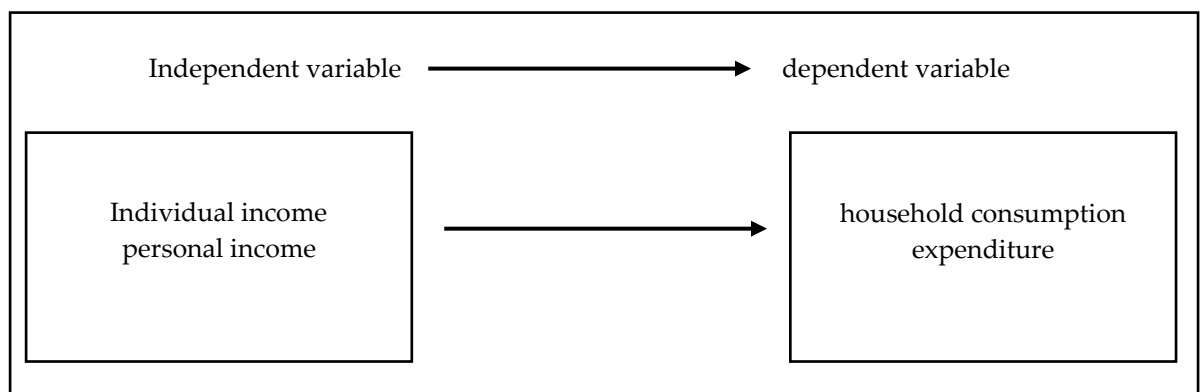


Figure 2. The general framework of the relationship between variables in the NARDL model

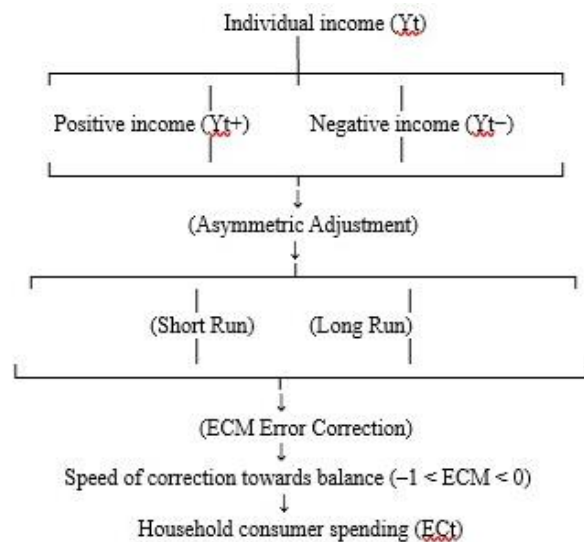


Figure 3. The general framework of the asymmetric relationship between variables in the NARDL model

Reference: Shin et al. (2014); Pesaran et al. (2001).

Based on the two previous assumptions, we have the NARDL(p,q) model as follows:

$$CE_t = \sum_{j=1}^p \phi_j CE_{t-j} + \sum_{j=0}^q (\theta_j^+ Y_{t-j}^+ + \theta_j^- Y_{t-j}^-) + \varepsilon_t \dots\dots(1)$$

Which

CE_t : Household consumption expenditure (dependent variable).

Y_t^+ Increase in per capita income (independent variable).

Y_t^- : Decrease in per capita income (independent variable).

The above equation shows the short-term formula to describe the NARDL model, which requires that its parameters be stable and free from the problems of serial correlation and variance.

$$\Delta CE_t = \rho \xi_{t-1} + \sum_{j=1}^{p-1} \Delta CE_{t-j} + \sum_{j=0}^{q-1} (\phi_j^+ \Delta Y_{t-j}^+ + \phi_j^- \Delta Y_{t-j}^-) \dots\dots\dots(2)$$

Which

ξ_{t-1} : This represents the error correction limit.

ρ It represents the speed of error correction.

It is also assumed that the error correction limit is negative and significant, in addition to what was mentioned above, that the value of the error correction speed should be between (-1) and (0).

$$\Delta CE_t = \rho CE_{t-1} + \theta^+ Y_t^+ + \theta^- Y_t^- + \sum_{i=1}^{p-1} CE_i \Delta Y_{t-i} + \sum_{i=0}^{q-1} \pi_i \Delta Y_{t-i} \dots\dots\dots(3)$$

The equation above illustrates the long-term formula for the NARDL model.

Second: Determining the Standard Model Data:

The researcher relied on data for individual income (personal income) (Y) in US dollars at current prices, and household consumption expenditure (EC) at current prices in millions of US dollars. The researcher converted the data from annual to quarterly (Q1-Q4 2023) using the Litterman method and employed the natural logarithm formula. The number of observations was thus (80). The data profile is shown as follows

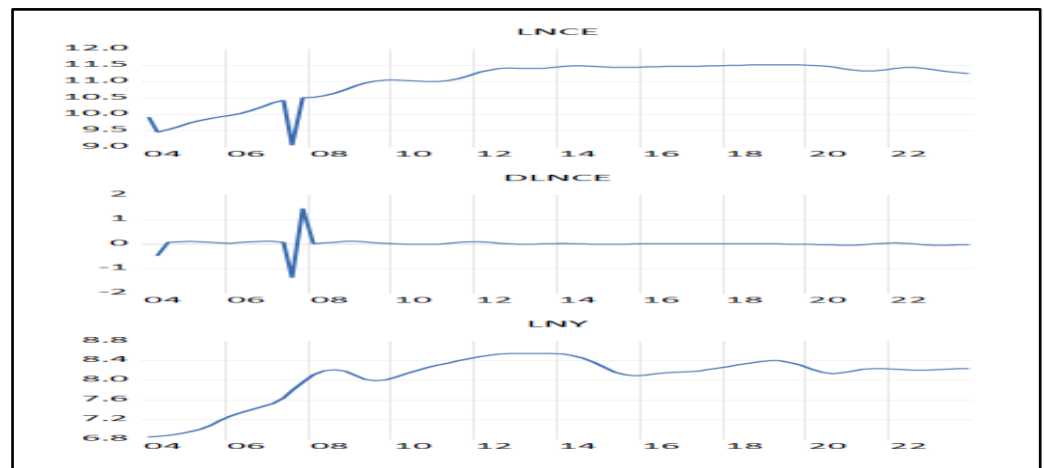


Figure 4. Individual income (Y) and household consumption expenditure (EC) in Iraq. (2004.Q1 – 2023.Q4)

Reference: Prepared by the researcher based on the (Eviews13) program.

Third: Unit Root Tests for the Standard Model:

There are several tests to determine whether a time series is stationary. The Dickey-Fuller Extended Test (ADF) and the Phillips-Pyron Test (PP) are among the most well-known. A stationary time series means that its mean, variance, and constant values are fixed over time. Therefore, a time series is stationary when the three conditions mentioned above are met. To eliminate the spurious regression phenomenon, Tables 1 and 2 below illustrate the results. My test (Dickey-Fuller Extended ADF, and Phillips-Byron PP):

The Extended Dickey-Fowler Test (ADF):

The results of the Extended Dickey-Fowler Test (ADF) show that the time series of the individual income variable (LnY) is stationary at the $[I(0)]$ level; While the time series of the household consumption expenditure variable (LnEC) is stationary at the first difference $[I(1)]$, this is determined by using the value of (P-Value), which is less than (5%). This means rejecting the null hypothesis that the time series is not stationary and accepting the alternative hypothesis that the time series is stationary at the level $[I(0)]$ for the variable (LnY) and that the variable (LnEC) is stationary at the first difference $[I(1)]$.

Table 1. Augmented Dickey-Fuller (ADF) unit root test results

Unit Root Tests:				
Tests	) *Level(		At the first team	
Variables	T-Statistic	Prob	T-Statistic	Prob
LnY	-3.441	0.013	/	/
LnEC	-2.862	0.055	-9.862	0.000

Reference: Prepared by the researcher based on the (Eviews13) program.

Phillips-Pyron PP Test:

The results of the Phillips-Pyron PP test reveal that the time series for the individual income variable (LnY) is stationary at level $[I(0)]$; however, the time series for the other variable (household consumption expenditure (LnEC)) is stationary at the first difference $[I(1)]$, since the value of (P-Value) is less than (5%). Therefore, the null hypothesis of non-station is rejected, and the alternative hypothesis is accepted, with the time series being stationary at level $[I(0)]$ for the variable (LnY) and the variable (LnEC) being stationary at the first difference $[I(1)]$.

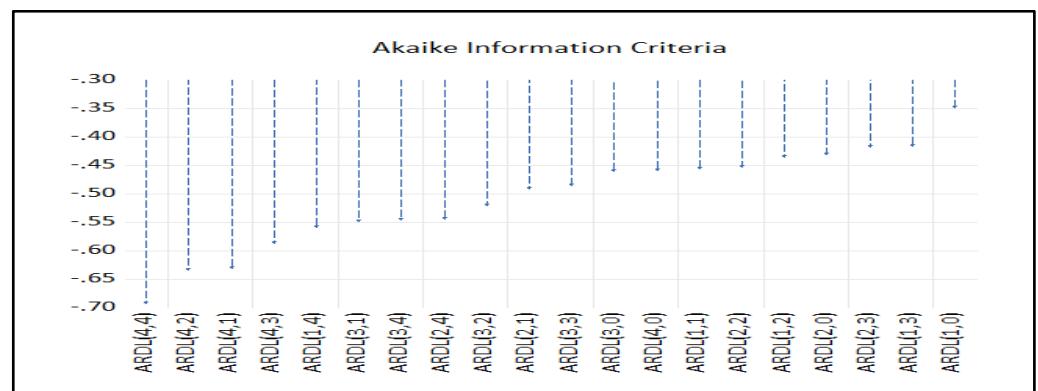
Table 2. Phillips-Perron (PP) unit root test results

Unit Root Tests:				
Tests	) *Level(		At the first team	
Variables	T-Statistic	Prob	T-Statistic	Prob
LnY	-2.986	0.041	/	/
LnEC	1.895-	0.333	-17.465	0.000

Reference: Prepared by the researcher based on the (Eviews13) program.

Fourth: Optimal Lag Period Test:

The results of the optimal lag period test, according to the AIC criterion, show that the optimal lag period is (4) for both variables. The optimal model according to the AIC criterion is the NARDL (4,4) model, which can be observed from figure (1) and table (2). The criterion requires that the optimal model be the one with the lowest value. AS shown In table (2), it is clear that the lowest value according to the AIC criterion is (-0.692130), which corresponds to the NARDL (4,4) model, which is considered the optimal model.

**Figure 5.** Best results of (20) NARDL models according to the AIC criterion

Reference: Prepared by the researcher based on the (Eviews13) program.

Table 3. Top (20) NARDL Model Results According to the AIC criterion

Model Selection Criteria Table					
Dependent Variable: D(LNCE)					
Date: 08/23/25 Time: 16:50					
Sample: 2004Q1 2023Q4					
Included observations: 75					
Model	LogL	AIC*	BIC	HQ	Specification
1	40.954878	-0.692130	-0.228632	-0.507061	ARDL(4,4)
3	34.747123	-0.633257	-0.293358	-0.497539	ARDL(4,2)
4	32.651055	-0.630695	-0.352596	-0.519653	ARDL(4,1)
2	34.982738	-0.586206	-0.184508	-0.425813	ARDL(4,3)
16	32.906190	-0.557498	-0.186700	-0.409443	ARDL(1,4)
9	28.525463	-0.547346	-0.300147	-0.448642	ARDL(3,1)
6	34.454938	-0.545465	-0.112867	-0.372733	ARDL(3,4)
11	33.404333	-0.544116	-0.142418	-0.383722	ARDL(2,4)
8	29.498892	-0.519970	-0.210972	-0.396591	ARDL(3,2)
14	25.400257	-0.490674	-0.274375	-0.404308	ARDL(2,1)
7	30.174035	-0.484641	-0.113843	-0.336585	ARDL(3,3)
10	23.245945	-0.459892	-0.274493	-0.385864	ARDL(3,0)
5	24.151303	-0.457368	-0.241069	-0.371002	ARDL(4,0)
19	23.048598	-0.454629	-0.269230	-0.380601	ARDL(1,1)
13	25.936498	-0.451640	-0.173541	-0.340598	ARDL(2,2)
18	24.316046	-0.435095	-0.187896	-0.336391	ARDL(1,2)
15	21.128123	-0.430083	-0.275584	-0.368393	ARDL(2,0)
12	26.658562	-0.417562	-0.077663	-0.281844	ARDL(2,3)
17	25.570401	-0.415211	-0.106212	-0.291831	ARDL(1,3)
20	17.060188	-0.348272	-0.224672	-0.298920	ARDL(1,0)

Reference: Prepared by the researcher based on the (Eviews13) program.

Fifth: The F-Bounds Test for Cointegration of the Standard Model:

The results in Table (4) indicate the existence of cointegration between individual income and household consumption expenditure in Iraq. The calculated F-Bounds Test value of (7.015) is greater than the tabulated upper limit at a significance level of (5%).

Therefore, the alternative hypothesis of cointegration between individual income and household consumption expenditure in Iraq is accepted, and the null hypothesis is rejected.

Table 4. (F) boundary test for cointegration

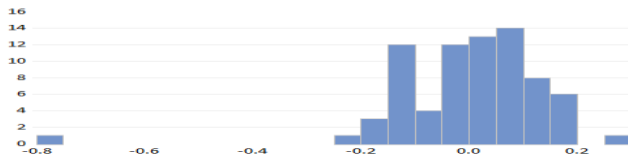
Null hypothesis: No levels relationship						
Number of cointegrating variables: 2						
Trend type: Rest. constant (Case 2)						
Sample size: 75						
Test Statistic				Value		
F-statistic				7.015135		
		10%		5%		1%
Sample Size	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)
70	2.730	3.445	3.243	4.043	4.398	5.463
75	2.725	3.455	3.253	4.065	4.458	5.410
Asymptotic	2.630	3.350	3.100	3.870	4.130	5.000
* I(0) and I(1) are respectively the stationary and non-stationary bounds.						

Reference: Prepared by the researcher based on the (Eviews13) program.

Sixth: Standard Model Quality Tests:

Table (5) below shows the absence of a chain correlation problem in the residuals of the estimated NARDL model. This is confirmed by the Breusch-Godfrey test, as the Prob. Chi-Square value of (0.62) is greater than (5%), which means rejecting the alternative hypothesis and accepting the null hypothesis, i.e., the absence of the problem. The Breusch-Pagan-Godfrey test also indicates the impossibility of heteroskedasticity, as the Prob. Chi-Square value of the test is (0.48), which is greater than (5%), meaning accepting the null hypothesis and rejecting the alternative hypothesis. Furthermore, the model residuals are normally distributed, as indicated by the Jarque-Bera test results, where the p-value is (0.426). Accepting the null hypothesis and rejecting the alternative hypothesis means that the model is well described based on the value of (F) which is (0.15) and the value of (P- Value) which is (0.70) and which is greater than (5%), which means that the alternative hypothesis must be accepted and the null hypothesis rejected, meaning that the model does not suffer from a description error problem. In addition to what was mentioned, the model parameters are stable, as shown by the (CUSUM & CUSUM-squared) tests, through the passage of the estimation line between the confidence limits and at a significance level of (5%), and thus accepting the null hypothesis and rejecting the alternative hypothesis.

Table 5. Results of diagnostic and stability tests for the NARDL Model

Breusch-Godfrey Serial Correlation LM Test			
Null hypothesis: No serial correlation at up to 2 lags			
F-statistic	0.377430	Prob. F(2,58)	0.6873
Obs*R-squared	0.963572	Prob. Chi-Square(2)	0.6177
Heteroskedasticity Test: Breusch-Pagan-Godfrey			
Null hypothesis: Homoskedasticity			
F-statistic	0.923135	Prob. F(8,57)	0.5033
Obs*R-squared	7.545418	Prob. Chi-Square(8)	0.4791
Scaled explained SS	141.8955	Prob. Chi-Square(8)	0.0000
			
Series: Residuals Sample 2005Q2 2023Q4 Observations 75 Mean 1.75e-16 Median 0.012596 Maximum 0.287071 Minimum -0.797227 Std. Dev. 0.141099 Skewness -2.342990 Kurtosis 14.82028 Jarque-Bera 1.241218 Probability 0.425791			
Ramsey RESET Test			
Equation: EQ01			
Omitted Variables: Squares of fitted values			
Specification: D(LNCE) LNCE(-1) @CUMDP(LNY(-1),2004Q2) @CUMDN(LNY(-1),2004Q2) C D(LNCE(-1)) D(LNCE(-2)) D(LNCE(-3)) D(@CUMDP(LNY(-1),2004Q2)) D(@CUMDN(LNY(-1),2004Q2)) D(@CUMDP(LNY(-1),2004Q2)) D(@CUMDN(LNY(-1),2004Q2)) D(@CUMDP(LNY(-2),2004Q2)) D(@CUMDN(LNY(-2),2004Q2)) D(@CUMDP(LNY(-3),2004Q2)) D(@CUMDN(LNY(-3),2004Q2))			
t-statistic	Value	df	Probability
F-statistic	0.151193	(1, 59)	0.6988
Likelihood ratio	0.191949	1	0.6613

References: Prepared by the researcher based on the (Eviews13) program.

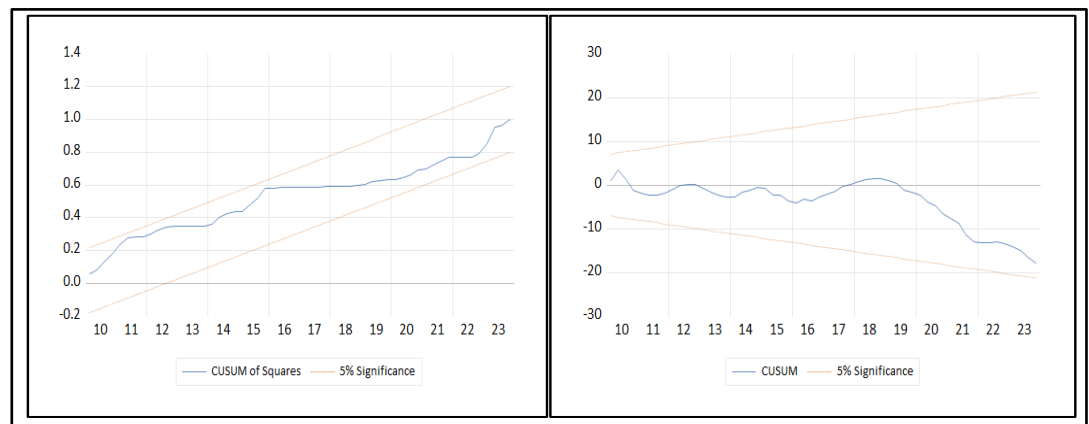


Figure 6. CUSUM and CUSUM of squared tests for the NARDL model
Reference: Prepared by the researcher based on the (Eviews13) program.

Seventh: Estimating the NARDL Model and Interpreting the Results:

The results in Table (6) indicate the estimated general NARDL model, which shows that individual income explains approximately (64.46%) of the changes in household consumption expenditure in Iraq. This is demonstrated by the R^2 value of (0.6446). Furthermore, the estimated NARDL model is statistically significant overall, as the F-statistic value of (7.77) and its Prob value of (0.000) are less than (5%). Therefore, the null hypothesis of the estimated model's lack of significance is rejected, and the alternative hypothesis of the estimated model's overall significance is accepted.

Table 6. Estimation results of the General NARDL Model

Dependent Variable: D(LNCE)
 Method: ARDL
 Date: 05/17/25 Time: 17:59
 Sample: 2005Q2 2023Q4
 Included observations: 75
 Dependent lags: 4 (Automatic)
 Automatic-lag dual non-linear regressors (4 max. lags): LNY
 Deterministics: Restricted constant and no trend (Case 2)
 Model selection method: Akaike info criterion (AIC)
 Number of models evaluated: 20
 Selected model: ARDL(4,4)

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
LNCE(-1)	-0.613472	0.168755	-3.635281	0.0006
@CUMDP(LNY(-1))	0.445202	0.171972	2.588804	0.0121
@CUMDN(LNY(-1))	0.423350	0.128043	3.306318	0.0016
C	6.384860	1.656281	3.854938	0.0003
D(LNCE(-1))	-0.513453	0.167296	-3.069124	0.0032
D(LNCE(-2))	-0.517828	0.156386	-3.311213	0.0016
D(LNCE(-3))	-0.394424	0.117046	-3.369812	0.0013
@DCUMDP(LNY)	0.093919	2.981724	0.031498	0.9750
@DCUMDN(LNY)	5.675052	2.848010	1.992637	0.0509
@DCUMDP(LNY(-1))	-13.43718	6.281472	-2.139177	0.0365
@DCUMDN(LNY(-1))	-14.00622	6.146413	-2.278764	0.0263
@DCUMDP(LNY(-2))	16.91886	5.931369	2.852437	0.0059
@DCUMDN(LNY(-2))	15.67981	6.185423	2.534961	0.0139
@DCUMDP(LNY(-3))	-7.359979	2.680880	-2.745360	0.0080
@DCUMDN(LNY(-3))	-8.134168	2.882468	-2.821945	0.0065
R-squared	0.644616	Mean dependent var	0.020346	
Adjusted R-squared	0.561692	S.D. dependent var	0.236688	
S.E. of regression	0.156698	Akaike info criterion	-0.692130	
Sum squared resid	1.473265	Schwarz criterion	-0.228632	
Log likelihood	40.95488	Hannan-Quinn criter.	-0.507061	
F-statistic	7.773659	Durbin-Watson stat	1.921452	
Prob(F-statistic)	0.000000			

*Note: p-values and any subsequent test results do not account for model selection.

References: Prepared by the researcher based on the (Eviews13) program.

Table (7) below shows a long-term, non-linear, positive relationship between individual income and household consumption expenditure in Iraq. A 1% increase in individual income (LNY) leads to a 0.73% increase in household consumption expenditure (LNEC), while a 1% decrease in individual income (LNY) results in a 0.69% decrease in household consumption expenditure (LNEC). Any short-term imbalance in the economy that deviates from this long-term equilibrium will be quickly corrected by the error correction model (-0.6135) quarterly, meaning that 61.35% of the imbalance in the previous quarter will be automatically addressed in the current quarter.

Table 7. Long_run astimation results of the NARDL Model

Variable *	Coefficient	Std. Error	t-Statistic	Prob.
@CUMDP(LNY(-1))	0.725709	0.128010	5.669160	0.0000
@CUMDN(LNY(-1))	0.690088	0.184846	3.733324	0.0004
C	10.40774	0.272975	38.12709	0.0000

Note: * Coefficients derived from the CEC regression.

Deterministics: Rest. constant (Case 2)

$$CE = LNCE(-1) - (0.725709 * @CUMDP(LNY(-1), "2004Q2") + 0.690088 * @CUMDN(LNY(-1), "2004Q2") + 10.407742)$$

References: Prepared by the researcher based on the (Eviews13) program.

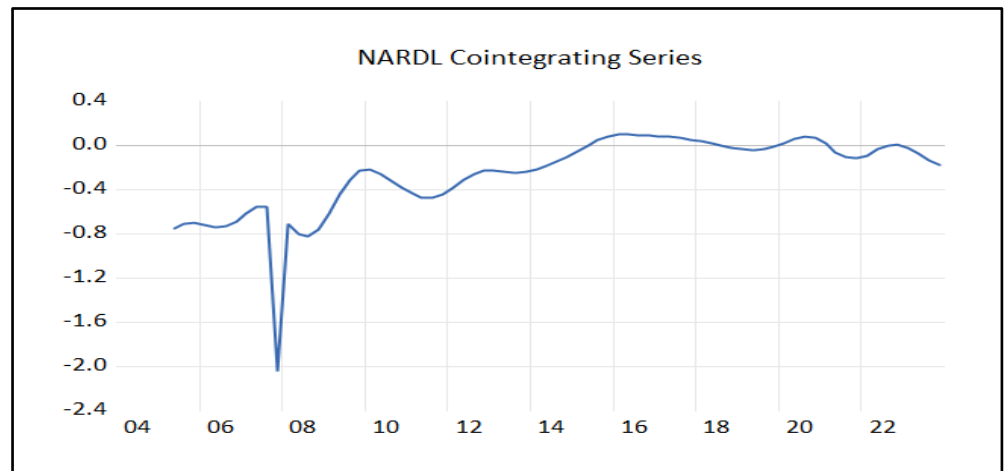


Figure 7. Cointegration relationship between individual income and household consumption expenditure in Iraq

References: Prepared by the researcher based on the (Eviews13) program

Table (7) shows that household consumption expenditure changes directly with individual income in Iraq, but not proportionally. An increase in individual income of (1%) leads to an increase in household consumption expenditure of (0.73%), and a decrease in individual income of (1%) leads to a decrease in household consumption expenditure of (0.69%). The average subsistence level for an Iraqi family is (10.41) US dollars/day. This means that household consumption expenditure in Iraq is subject to the Duesenbury effect, where household consumption is determined based on its relative position in the income distribution ladder. Furthermore, households consume at a certain level under the influence of the conspicuous consumption factor, in addition to the ratchet effect, meaning the reluctance to return to the previous level of consumption after reaching a higher level. This occurs in the long run, not the short run. Consequently, some assumptions of Keynesian and subsequent consumption theories are confirmed, especially the direct relationship and the value of the marginal propensity to consume between (1-0), approaching (1) in the long run. However, in terms of proportionality, it is not proportional, and this is what distinguishes it from the theories in the long run. The characteristic of proportionality has become impossible in the modern era due to economic shocks, and this is what modern studies have concluded at the beginning of the

third millennium. Moreover, the great economist John Maynard Keynes, in his book *The General Theory*, pointed this out by saying, "When the upward trend of a variable is replaced by the downward trend, it happens suddenly and violently, and there is no turning point when the upward trend is replaced by the downward trend".

Table 8. Error correction representation of the NARDL model

Dependent Variable: D(LNCE)				
Method: ARDL				
Date: 05/17/25 Time: 18:04				
Sample: 2005Q2 2023Q4				
Included observations: 75				
Dependent lags: 4 (Automatic)				
Automatic-lag dual non-linear regressors (4 max. lags): LNY				
Deterministics: Restricted constant and no trend (Case 2)				
Model selection method: Akaike info criterion (AIC)				
Number of models evaluated: 20				
Selected model: ARDL(4,4)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
COINTEQ*	-0.613472	0.113019	-5.428035	0.0000
D(LNCE(-1))	-0.513453	0.115161	-4.458578	0.0000
D(LNCE(-2))	-0.517828	0.117578	-4.404103	0.0000
D(LNCE(-3))	-0.394424	0.103358	-3.816100	0.0003
@DCUMDP(LNY)	0.093919	2.539214	0.036987	0.9706
@DCUMDN(LNY)	5.675052	2.690850	2.109018	0.0389
@DCUMDP(LNY(-1))	-13.43718	5.808872	-2.313216	0.0240
@DCUMDN(LNY(-1))	-14.00622	5.864366	-2.388361	0.0199
@DCUMDP(LNY(-2))	16.91886	5.625799	3.007370	0.0038
@DCUMDN(LNY(-2))	15.67981	5.938854	2.640208	0.0104
@DCUMDP(LNY(-3))	-7.359979	2.525617	-2.914131	0.0049
@DCUMDN(LNY(-3))	-8.134168	2.738201	-2.970624	0.0042

References: Prepared by the researcher based on the (Eviews13) program

Eighth: Estimating the Dynamic Multipliers of the NARDL Model:

Figure (8) below shows that a shock to individual income will lead to a decrease in household consumption expenditure in Iraq to (-5%) from the previous equilibrium level. However, in the second quarter following the shock (six months after the shock), household consumption expenditure will increase to approximately (+1%). After that, consumption expenditure will begin to fluctuate due to the impact of the income shock, rising or falling by approximately (1%). However, the effect of this shock will disappear in the tenth quarter following the shock. That is, the impact of the shock on household consumption expenditure diminishes two and a half years after the shock occurs.

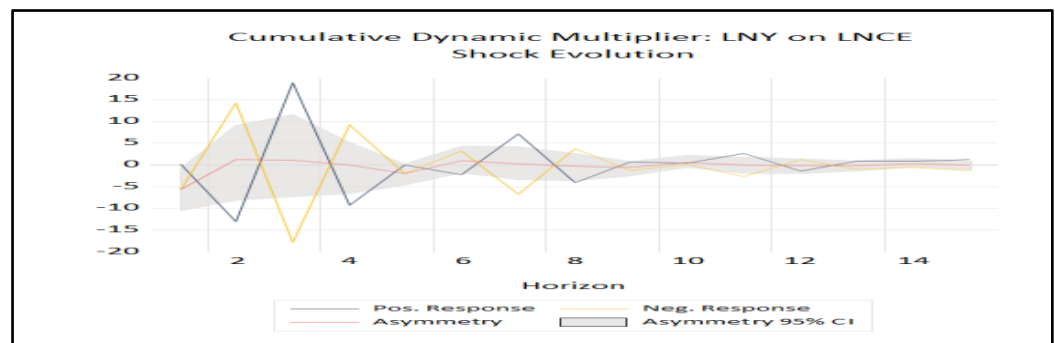


Figure 8. Dynamic multipliers of the NARDL model

References: Prepared by the researcher based on the (Eviews13) program

Figure (8) above shows that the shock to individual income resulting from a global oil price shock will be directly transmitted to Iraqi household consumption expenditure. The shock will be most severe in the first quarter (the first three months). Due to the Iraqi government's implementation of subsidy programs for basic commodities, its attempts to control fluctuations in the local market, OPEC agreements, and the existence of oil futures contracts, the shock will be mitigated after three months. However, it will remain within a narrow range, not exceeding (1%), due to individual uncertainty. After two years, this uncertainty will disappear, leading to the elimination of the impact of the income

inequality resulting from the crude oil price shock on Iraqi household consumption expenditure.

4. Conclusion

- a. The research hypothesis was proven, demonstrating a long-term, non-linear, positive relationship between individual income and household consumption expenditure in Iraq. This aligns with studies that have examined the impact of income on consumption in rentier economies.
- b. A 1% increase in per capita income (LNY) will lead to a 0.73% increase in household consumption expenditure (LNEC) in Iraq. Conversely, a 1% decrease in per capita income (LNY) will lead to a 0.69% decrease in household consumption expenditure (LNEC). The average subsistence level for an Iraqi family is \$10.41 USD per day. This is an asymmetric relationship reflecting modern consumption theories, particularly the Duesenberry effect (1949) and Keynesian theory (1936). Any short-term imbalance in the economy that deviates from this long-term equilibrium will be addressed by a correction model that restores equilibrium at a rate of -0.6135 quarterly, meaning that 61.35% of the imbalance will be automatically corrected.
- c. Household consumption expenditure in Iraq changes directly with individual income, but not proportionally. A 1% increase in individual income leads to a 0.73% increase in household consumption expenditure, while a 1% decrease in individual income leads to a 0.69% decrease in household consumption expenditure. Household consumption expenditure in Iraq is influenced by the Duesenberry effect, where a family's consumption is determined by its relative position in the income distribution. Furthermore, consumption is influenced by the conspicuous consumption factor, as well as the ratchet effect, meaning a reluctance to return to a previous level of consumption after reaching a higher level. This occurs in the long run, not the short run. Consequently, some assumptions of Keynesian and subsequent consumption theories are confirmed, particularly the direct relationship and the marginal propensity to consume, which ranges from 0 to 1 and approaches 1 in the long run. However, in terms of proportionality, it is not proportional, which is what distinguishes it from other long-run theories. The principle of proportionality has become impossible in the modern era due to economic shocks, a conclusion reached by recent studies at the beginning of the third millennium. Furthermore, the renowned economist John Maynard Keynes, in his book **The General Theory of Economics**, pointed this out, stating that "when the upward trend of a variable is replaced by a downward trend, it occurs suddenly and violently, and there is no point of inflection when the upward trend is replaced by a downward one."
- d. A shock to individual income will lead to a decrease in household consumption expenditure in Iraq to (-5%) compared to the previous equilibrium level. However, in the second phase of the shock (six months after the shock), household consumption expenditure will increase to approximately (+1%). Afterward, consumption expenditure will begin to fluctuate due to the impact of the income shock, rising or falling by about (1%). However, the effect of this shock will disappear within ten years of its occurrence. In other words, the impact of a shock to individual income on household consumption expenditure will diminish two and a half years after the shock occurs.
- e. The shock to individual income resulting from a shock in global oil prices can be transferred directly to Iraqi household consumption spending, which will peak in the first quarter of the shock (the first three months). This is due to the Iraqi government initiating support programs for basic commodities, attempting to control fluctuations in the local market, as well as OPEC agreements. In addition, due to the existence of future contracts for selling oil, these factors will mitigate the severity of the shock after three months of its occurrence. However, it remains within a narrow range not exceeding (1%) due to the uncertainty among

individuals. However, after two years, the uncertainty among individuals will disappear, leading to the disappearance of the effect of the disparity in individual income resulting from the crude oil price shock on household consumption spending in Iraq.

Recommendations

- a. Develop distribution policies by adopting measures that reduce income inequality, thereby enhancing household purchasing power and strengthening aggregate demand in the economy.
- b. Increase support for low-income groups through social protection programs and government transfers to ensure consumption stability during income or price fluctuations.
- c. Diversify national income sources and reduce excessive reliance on oil revenues by supporting productive sectors such as agriculture, industry, and services to mitigate the impact of external shocks on income and consumption.
- d. Improve the management of economic shocks through fiscal and monetary policy tools by building financial reserves and establishing mechanisms to address oil price volatility and ensure stable household spending.
- e. Enhance financial literacy programs for families to improve spending efficiency and rationalize consumption, especially during income shocks, thus helping maintain a stable standard of living.
- f. Develop economic databases and statistics related to income, expenditure, and consumption to improve the quality of econometric studies and economic models related to consumption behavior in Iraq.
- g. Encouraging private investment and providing a stable economic environment that contributes to job creation and increased per capita income, which will positively impact household spending levels.
- h. Adopting modern economic models, such as nonlinear models, to analyze economic relations in Iraq, given their ability to capture the asymmetrical response to economic changes.

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