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IMPACT OF ECONOMIC SHOCKS ON IRAQ'S AGRICULTURAL SECTOR FOR 2004-2023

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ABSTRACT

The study aims to assess the impact of aggregate economic shocks on the Iraqi economy as a whole, and on the agricultural sector in particular, by examining the effects of selected macroeconomic variables on GDP and subsequently on agricultural output. This is achieved through the use of the two-stage least squares (2SLS) method. The results of the long-term relationship estimation indicate that all economic variables included in the study have statistically significant effects on GDP through co-integration. Among these, certain variables exhibit a more pronounced influence, as revealed by the impulse response analysis, which shows that their effects persist over an extended period, Specifically, the impact of oil prices becomes evident in the third year, taxes in the second year, the exchange rate in the third year, inflation in the second year, and the tax rate in the fourth year. These findings demonstrate that macroeconomic shocks significantly affect GDP, and the responses of GDP to these macro variables are positively and statistically significant. Based on these outcomes, the study recommends greater attention to international economic changes that influence the agricultural sector. It also advocates for the development of appropriate agricultural policies and the adoption of scientific.

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INTRODUCTION

Both developed and developing countries are frequently exposed to external shocks, which can be either positive or negative, and temporary or permanent. In developed economies, macroeconomic policies typically respond in a counter-cyclical manner, smoothing out the effects of the economic cycle. In contrast, developing countries—particularly those dependent on petroleum exports—often respond pro-cyclically, amplifying economic booms and deepening recessions. As a result, external shocks in these economies tend to disrupt fiscal policy consistency, leading to increased volatility and instability in economic activity, Iraq's macroeconomic policies are similarly oriented towards managing economic activity, yet the country's economy remains highly vulnerable due to a series of crises and conditions that have rendered it fragile and susceptible to both internal and external shocks. These shocks frequently lead to abrupt changes in fiscal and monetary policy, further reflecting the unstable internal structure of the Iraqi economy, The importance of this study lies in highlighting the role of economic policy in developing countries

like Iraq, where such policies have a significant impact on overall economic performance. Any disturbance to the policy instruments can be transmitted directly to macroeconomic variables due to their interconnected nature. This is particularly relevant in the context of Iraq, where macroeconomic shocks often stem from imbalances and fluctuations in global oil markets, leading to what can be termed. Previous studies and research provide information in the field of scientific research, as well as critical information. One study presented by Ali (2012) was entitled "The Effects of Economic Shocks on Some Variables of Iraq's Economic Shocks". From 1980-2011, this study began from a hypothesis that the external economic shocks of oil prices affected changes in the Iraqi economy, which was greater than the impact of the country's internal economic shocks, which depended on the financial and monetary policy shocks. In the 1980s, Iraq experienced financial shocks when the war was ended. The researcher recommended increasing the contribution of other non-oil economic sectors that would reduce the negative effects resulting from a change in oil prices.

Al-Obaidi (2016) conducted a study that measured and analyzed the impact of fiscal policy shocks on several macroeconomic variables in Iraq during the period 1990–2014. The research aimed to evaluate the effects of fiscal shocks—through both government spending and taxation—on Iraq’s macroeconomic policies, emphasizing the essential role fiscal policy plays in the national economy. Similarly, Abbas and Hamid (2016) examined structural shocks within demand models using a Structural Vector. Auto regression (SVAR) framework, applying the model to Iraq over the period 1970–2010. Their study explored the impact of structural shocks on non-oil GDP, government consumption, and non-oil exports in both the short and long term. By investigating the relationship between output volatility and the volatility of its determinants, the researchers found that all integrated variables revealed two cointegration vectors, and more than a quarter of the model parameters were statistically significant. The SVAR model demonstrated its ability to capture both long-term and short-term relationships and confirmed the stability of the model. Furthermore, it revealed that changes in government and consumer spending significantly influenced non-oil output. Darwish and Abdul Razak (2018) also contributed with a study focusing on the impact of oil shocks on Iraq’s exchange rate during the period 1999–2015. The research aimed to analyze the fluctuations in oil revenues and their effect on the Iraqi dinar’s

MATERIALS AND METHODS

Description of the model used

The model's characterization phase is one of the most important and difficult to estimate stages in the standard economy, and often the most difficult points of

application of the standard economy are to formulate the model correctly (Ali *et al*, 2025)

As a model of our research, the main model is as follows:

Where:

Y= F (X1, X2, X3, X4, X5)

Y1=B0+B1X1+B2X2+B3X3+B4X4+B5X5 +UI … (1)

Y1 = GDP (US $ Million)

X1 = Oil prices (USD).

X2 = taxes (million dollars).

X3 = Exchange rates (JD/USD).

X4 = Inflation rates (%).

X5 = Terms of trade (%).

B0 = absolute limit.

B1, B5 = Variable transactions.

UI = random variable.

The second phase of the estimate is worded as follows:

Y2= F (X1,)

Y2=B0+B1X1 + …UI … (2)

Y2 = Value of agricultural output (US $1 million).

X1 = the estimated function of the first GDP function.

Stabilization Test Results for Study Variables Using the Unit Root Test

Granger and Newbold's work emphasized in 1974 that the existence of self-correlation in time series data can make the R2 determination coefficient unreliable and lead to spurious regression. To overcome this problem, the Unit's root tests were used as a precondition for the combined movement of time chains in the model (Sultan *et al*. 2025). This hypothesis is accepted if the probability value of the test is greater than the level of morale (5%), Alzubaidi and Sultan, 2023:123). In this case, we resort to taking the first difference and re-testing Phillips. & Perron .1988:249). They are otherwise rejected, in the sense that they are free of the unit's root, i.e. they are static or stable. Y2, X2, X4, X5 variables were static at the level, while Y to 1, X4, X3, and X1 variables were static at the first difference, as well as all other variables on it fulfilled the ARDL model requirement.

Table (1) Stable Unit Root for Study Variables For 2004-2023

UNIT ROOT TEST TABLE (ADF)									
At Level									
		Y1	X1	X2	X3	X4	X5	Y2	Y^1
With Constant	t-Statistic	-1.7425	-2.4043	-0.4853	-2.5069	-3.6378	-2.8418	-3.6661	-1.7425
	Prob.	***0.3929***	***0.1537***	***0.8718***	***0.1294***	***0.0149***	***0.0713***	***0.0163***	***0.1929***
		n0	n0	n0	n0	**	*	**	n0
With Constant & Trend	t-Statistic	-2.0332	-2.6095	-3.8583	-2.1948	-4.6113	-2.4930	-4.0188	-2.0332
	Prob.	***0.5408***	***0.2803***	***0.0371***	***0.4655***	***0.0086***	***0.3268***	***0.0308***	***0.7408***
		n0	n0	**	n0	***	n0	**	
Without Constant & Trend	t-Statistic	0.5199	-0.1484	1.2064	-0.6164	-1.5672	-0.1753	0.0725	0.8199
	Prob.	***0.8169***	***0.6193***	***0.9344***	***0.4361***	***0.1076***	***0.6098***	***0.6906***	***0.5169***
		n0	n0	n0	n0	n0	n0	n0	n0
At First Difference									
		d(Y1)	d(X1)	d(X2)	d(X3)	d(X4)	d(X5)	d(Y2)	D(Y^1)
With Constant	t-Statistic	-1.3962	-3.6459	-5.0976	-4.7215	-7.3633	-3.8263	-3.7179	-3.6459
	Prob.	***0.5576***	***0.0161***	***0.0009***	***0.0017***	***0.0000***	***0.0107***	0.0161	0.0261
		n0	**	***	***	***	**	**	**
With Constant & Trend	t-Statistic	-1.9177	-3.5332	-4.9108	-5.2948	-7.2015	-3.8191	-3.4642	-3.5332
	Prob.	***0.5992***	***0.0677***	***0.0059***	***0.0026***	***0.0001***	***0.0398***	***0.0805***	0.0567
		n0	*	***	***	***	**	*	*
Without Constant & Trend	t-Statistic	-0.9219	-3.7449	-4.2748	-4.8169	-7.5111	-3.9370	-3.8867	2.7467
	Prob.	***0.3020***	***0.0009***	***0.0003***	***0.0001***	***0.0000***	***0.0005***	***0.0008***	***0.0005***
		n0	***	***	***	***	***	***	***

Source: A table prepared by the researcher based on the statistical programmed (EViews 10)

Optimal slowing periods have been determined according to AIC criteria, showing that ARDL (2.4.4.4.4.4), the optimal model, has the lowest AIC value, and the best slowing period is {4} according to the VAR model, as shown in the table and figure below:

Table 2. Slowing periods of economic variables of total shocks

Endogenous , variables :{ Y1 X1 X2 X3 X4 X5}						
Exogenous , variables :: C						
Sample :: 2004S1 2023S2						
Included , observations :: 36						
L a g	L o g L	L R	F P E	A I C	S C	H Q
0	-1683.763	N A	2.37e+33	93.87571	94.13963	93.96783
1	-1541.015	229.9828	6.49e+30	87.94527	89.79271	88.59008
2	-1514.025	34.48758	1.28e+31	88.44581	91.87677	89.64331
3	-1475.137	36.72689	1.80e+31	88.28541	93.29988	90.03559
4	-1331.032	88.06419*	1.52e+29*	82.27957*	88.87757*	84.58245*

Source: A table prepared by the researcher based on the statistical programmed (EViews 10)

Then the complementarity of a participant was tested and as shown in the boundary test shown in Table (3), the value of the F test is greater than all I (1) threshold values at] 1%, 2.5%, 5%, 10% [, so there is a common complementary relationship between the developmental variables of the% below a moral level (1%). And that means we reject the hypothesis of nowhere (H0: b = 0) and we accept the alternative hypothesis. (H1:b≠0) (Alzubaidi & Almollah,2022:43) indicating a long-term balance between the variables under consideration, as illustrated in the table below:

Table 3. Joint integration test results using boundary test

(K)	V alue	Test Statistic
(5)	7.724353	F - Statistic
C ritical V alue B ounds		
I_1 Bound	I_0 Bound	Significance
3	2 .08	10 %
3 .38	2 .39	5 %
3 .73	2 .7	2.5 %
4.15	3.06	1 %

Source: A table prepared by the researcher based on the statistical programme (EViews 10)

The standard model used is free of any standard problems of ARCH variability and LM self-correlation tests and the model's structural stability by testing Ramsey for non-natural distribution of Jarque-Leriew errors 8 "Jarque-Leriew") as a 2004.

Table 4. Diagnostic tests of Iraq's total economic shocks

Problem	Testing	Statistical	Result	Probability Value
Abnormal distribution of errors	Jarque-Bera	Jarque-Bera	5.15889^{ns}	0.076
Self-correlation problem	Breusch-Godfrey	F	0.920506^{ns}	0.3693
Variance variation	ARCH	χ^2	0.365583^{ns}	0.5496
Model structural instability	Rasmsey	F	0.578010^{ns}	0.74908
Problem of multiple linear association	Variability Amplification Factor	VIF		
	Variable	Coefficient Variance	Uncentered VIF	Centered VIF
	X1	4.36E+09	13.49063	1.221720
	X2	22312.75	3.477484	1.283207
	X3	2.54E+08	224.4414	1.472078
	X4	2.89E+10	5.395288	1.420449
	X5	9.92E+08	16.58787	1.556362

Source: A table prepared by the researcher based on the statistical programmed (EViews 10)

Model Quality

Based on high model morale, high determination coefficient value, and without standard problems, the model largely reflects the relationship between the dependent variable and the independent variables (Alzubaidi and Almollah, 2022). This is illustrated in the figure below by the considerable convergence between the real values of the variable (red curve) (350: Breusch, 1978), and the values predicted for the dependent variable through the model (green line), as well as the fact that more (95%) of the remnants (errors) (blue curve) are within the limit of confidence, as in the figure below:

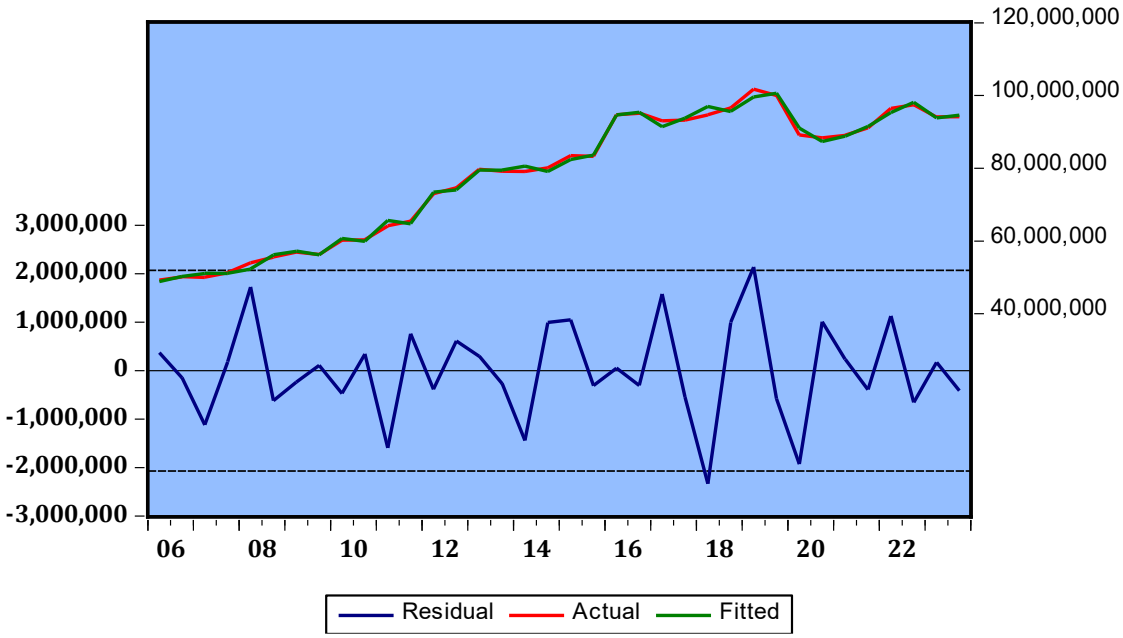


Figure (1) shows the quality of the model

Confirming that there was a common complementarity between modelling variables, there were CointEQ values. (-1) Negative and moral (-0.467), indicating that the speed of modification or adaptation is 1/0.467 = 2.14 less than 2 years (21.8 months) allowing us to move on to the third phase of applying the ECM correction methodology as shown in Table (5), which are the basic conditions of the two methodologies that are denied, thereby allowing us to move to the Granger causation test)) which relied on probable values of the test, there is one causal link from the Y1 to the X2 autonomous variant, which means that the cosmetic product is caused by the tax variable. (AL-Mashhadani, 2018) In the long term, this can be explained as follows: when the state's GDP falls, it may resort to tax increases.

Estimate the long-term relationship:

Following the confirmation of a long-run cointegrated relationship among the research variables, the long-term impact was estimated to assess how economic variables influence overall output over time. According to Jarque and Bera (1980), the analysis utilized the EViews 10 software, which evaluated 128 different models. Based on the Akaike Information Criterion (AIC), the optimal model was identified as ARDL (2, 4, 4, 4, 4, 4), with the lowest AIC value of -4.3543, indicating the best fit for examining the influence of independent variables on GDP. The estimation results, presented in Table (6-4), reveal that all variables exhibit a statistically significant effect on long-run GDP. Specifically, variables X1, X2, and X5 show a positive and significant impact, while variables X3 and X4 demonstrate a negative relationship. These findings are detailed in Table (6) below.

Table 6: shows the long-term estimate of Iraq's total shock variables (2004-2023)

ARDL Long Run Form and Bounds Test
Dependent Variable: D(Y1)
Selected Model: ARDL(2, 4, 4, 4, 4, 4)
Case 2: Restricted Constant and No Trend
Sample: 2004S1 2023S2
Included observations: 36

Conditional Error Correction Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.10E+08	29492276	0.000000	0.0000
Y1(-1)*	0.466770	0.178778	2.610894	0.0311
X1(-1)	-615336.4	169190.5	-3.636943	0.0066
X2(-1)	-1423.432	339.5991	-4.191508	0.0030
X3(-1)	62366.18	14885.45	4.189741	0.0030
X4(-1)	-324418.6	250953.6	-1.292743	0.2322
X5(-1)	389413.2	88655.83	4.392415	0.0023
D(Y1(-1))	-1.573284	0.363110	-4.332799	0.0025
D(X1)	55419.88	48643.47	1.139308	0.2875
D(X1(-1))	752819.4	174815.1	4.306375	0.0026
D(X1(-2))	579192.3	164688.0	3.516906	0.0079
D(X1(-3))	583516.1	162596.0	3.588747	0.0071
D(X2)	-1552.247	338.7690	-4.582022	0.0018
D(X2(-1))	-104.4729	144.0787	-0.725110	0.4890
D(X2(-2))	1263.646	253.5449	4.983913	0.0011
D(X2(-3))	1202.446	285.7876	4.207480	0.0030
D(X3)	102808.9	24828.68	4.140734	0.0033
D(X3(-1))	37201.61	13546.38	2.746239	0.0252
D(X3(-2))	-27638.02	10965.29	-2.520502	0.0358
D(X3(-3))	-26833.53	10142.68	-2.645605	0.0295
D(X4)	-415364.7	127631.6	-3.254404	0.0116
D(X4(-1))	-34623.74	172303.8	-0.200946	0.8458
D(X4(-2))	-5166.679	86352.60	-0.059832	0.9538
D(X4(-3))	161232.6	81865.42	1.969484	0.0844
D(X5)	371362.3	86568.67	4.289801	0.0027
D(X5(-1))	-17656.78	19792.59	-0.892090	0.3984
D(X5(-2))	-197915.8	36977.35	-5.352352	0.0007
D(X5(-3))	-189059.9	37732.13	-5.010580	0.0010

*** p-value incompatible with t-Bounds distribution.**

Levels Equation
Case 2: Restricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
X1	1318286.	136237.8	9.676364	0.0000
X2	3049.538	167.1795	18.24110	0.0000
X3	-133612.3	16831.91	-7.938034	0.0000
X4	-695029.0	156234.4	-4.448631	0.0021
X5	834272.3	75285.11	11.08151	0.0000

EC = Y1 - (1318286.3802*X1 + 3049.5379*X2 -133612.2608*X3 + 695028.9859*X4 +834272.3113*X5 + 235609611.4481)

Source: A table prepared by the researcher based on the statistical programmed (EViews 10)

 Oil price: GDP is affected by a positive relationship when oil prices increase and is in line with the economic logic. This is consistent with the oil price increase of one unit, resulting in an increase in GDP by its apparent flexibility in the above function.

 Taxes: GDP is influenced by an expulsion relationship when tax increases and this is consistent with economic theory, because the higher the tax rates by the (1%) GDP growth rates increased by the flexibility of the function, as increased taxes directly lead to economic activities by giving the government additional resources used to stimulate the economy, thereby contributing to improved productive efficiency and economic growth by stimulating investments.

 Exchange rate: While in exchange rate variables, the parameter signal showed a negative relationship (Reverse) with the variable adopted, when exchange rates increase by only one, the GDP rate will decrease due to its flexibility, because the exchange rate of dinars against foreign currencies, especially the dollar. Iraqi exports, especially petroleum exports, are less competitive in global markets because their dollar prices are higher and imports are cheaper, leading companies and consumers to prefer imported goods to domestic goods, thereby negatively affecting the domestic product.

 Inflation rate: The consequences of the inverse relationship between GDP and inflation rates were shown, as inflation rates increased by the (1%) aesthetic GDP rates decreased by a degree of flexibility. This is consistent with the concept of economic theory due to the high cost of production and an increase in interest rates that operate due to higher prices, lower purchasing power of consumers and an increase in economic recession. (Salman, 2010)

 Trade rate: The results also showed the positive relationship between GDP and trade rates, the higher the trade rate of traders as the trade rate increases by one unit, GDP increases by a degree of flexibility. This is due to an increase in export earnings, which means that improved terms of trade make the country's exports more valuable, boosting government spending and private investment, thereby leading positively and contributing to higher output rates.

Dynamic analysis of GDP

Disparity Segmentation: Variance Decomposition.

The decomposition—or fragmentation—of variables in the model was conducted to better understand the contribution of each component, following the approach of structural decomposition described in Estelok and Aldenamecki’s method for long-term modeling. This process involves breaking down the variance of a variable into different parts, where the forecast error variance in a given variable can be attributed to forecast errors in other variables within the system. This type of analysis is useful for determining the relative importance of each shock in explaining future fluctuations in the target variable. It also helps to predict the behavior of the system

over time. To address the issue of contemporaneous correlation among error terms in the model, the Cholesky Decomposition method was applied, as recommended by Sims (1981), particularly due to its relevance in models of developing economies. When applying Cholesky decomposition to the forecast error variance, as suggested by Liew (2004), the results—summarized in Table (7)—demonstrate a clear divergence in the contribution of variables to forecast variance, providing insights into the dynamic interactions among the variables within the model.

Table 7: Breakdown of variance in Iraq's gross domestic product (GDP) forecast error during 2004-2023.

Period	S.E.	Y1	X1	X2	X3	X4	X5
1	3579974.	100.0000	0.000000	0.000000	0.000000	0.000000	0.000000
2	4715723.	96.38722	1.774344	1.759512	0.024452	0.043280	0.011196
3	5643255.	81.03887	1.904884	6.010204	9.315285	1.720922	0.009835
4	5980015.	75.35350	4.716253	7.245503	10.78189	1.887952	0.014904
5	6409154.	73.93429	8.044878	6.768164	9.389732	1.794030	0.068906
6	6808597.	72.94665	10.73398	6.125330	8.320308	1.738075	0.135659
7	7234859.	72.96331	10.83099	6.655215	7.811760	1.569637	0.169091
8	7472774.	72.75420	11.28221	6.553900	7.732757	1.507509	0.169423
9	7902644.	68.91473	12.66277	7.328161	8.581851	2.330823	0.181668
10	8613569.	61.37128	19.50134	8.125644	8.266477	2.539787	0.195477
11	9690965.	54.53031	29.68799	6.967840	6.626444	2.012805	0.174609
12	10734064	49.18721	37.73112	5.830583	5.449601	1.641969	0.159518
13	11681118	43.55841	43.60384	6.214086	5.029200	1.427046	0.167420
14	12432316	39.06243	46.81527	7.374432	5.065718	1.492954	0.189196
15	12882150	36.66499	47.61467	8.422838	5.155292	1.925173	0.217034
16	13135037	35.44605	48.07162	9.088132	5.106493	2.059641	0.228064
17	13303553	35.04002	48.56633	9.177135	4.983177	2.008658	0.224679
18	13442421	34.71749	49.04117	9.167050	4.880787	1.972259	0.221247
19	13642444	33.73292	49.38877	9.811137	4.863441	1.979517	0.224209
20	13883726	32.57520	49.25674	10.80492	4.985904	2.144461	0.232771
Cholesky Ordering: Y1 X1 X2 X3 X4 X5							

Source: A table prepared by the researcher based on the statistical programmed (EViews 10)

Based on the results presented in Table (7), it is observed that the standard error (S.E.) in forecasting the outcomes of GDP (Y1) in the first half-year of the study period is approximately 3,579,974. This error increases over time, reaching around 13,883,726 by the second half of the tenth year. The study utilizes biannual data (20 half-years, equivalent to 10 full years) to ensure improved accuracy and reliability in capturing both short- and long-term economic and statistical dynamics. When an oil price shock (X1) occurs—indicating even a slight increase—it has a significant impact on GDP, making oil prices the most influential factor. Taxes rank second in terms of their impact. Shocks to the remaining variables exhibit relatively limited influence on

GDP ,The increasing prediction error over time is largely attributed to the growing impact of oil price fluctuations. Specifically, by the fifth year, approximately 61.3% of the variance in the forecasted GDP is explained by oil prices, followed by 19% from taxes, 8% from the exchange rate, another 8% from inflation, and 2.5% from trade rates, with trade rate impact being the lowest at 0.19% .In a separate scenario involving a different model specification (referred to as the "receptive tongues" case), 32% of the variation in GDP forecasts is attributed to the shocks themselves, where oil prices account for approximately 49%—again the highest contribution among all variables. Taxes contribute 10%, the exchange rate 5%, inflation 2%, and trade rate 0.23%. These findings are also visually supported by the figure below, which illustrates the varying contributions of the independent variables to forecast errors in predicting aggregate output.

Table 8: Analysis of the GDP Response Function during the Period (2004-2023)

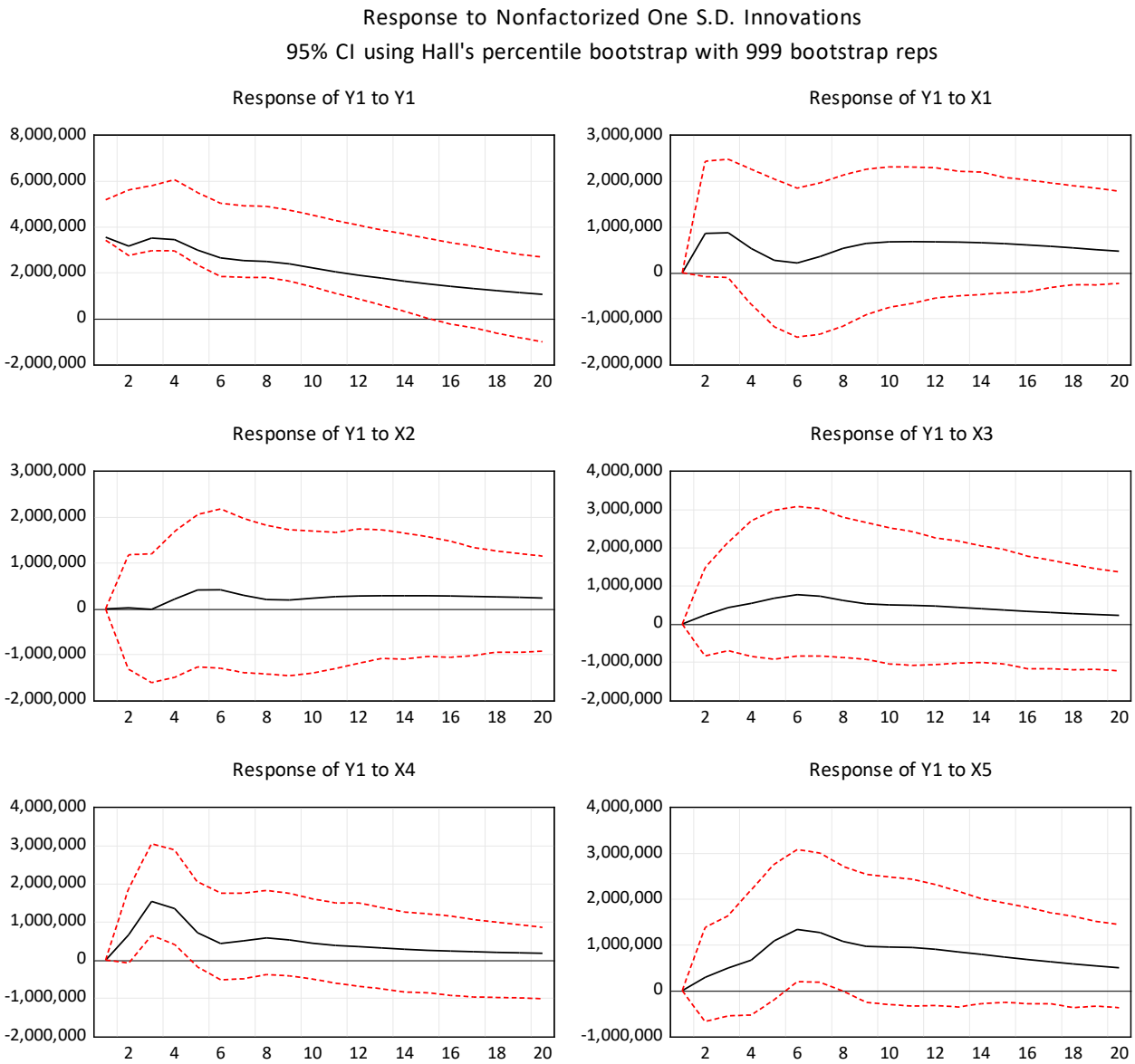
Period	Y1	X1	X2	X3	X4	X5
1	3564086.	0.000000	0.000000	0.000000	0.000000	0.000000
	(2.0E+11)	(0.00000)	(0.00000)	(0.00000)	(0.00000)	(0.00000)
2	3167168.	863218.3	23768 . 09	241197. 2	665888 . 7	293539 .5
	(5.3E +11)	(4.2E +11)	(4.2E +11)	(3.4E +11)	(2.4E +11)	(2.7E +11)
3	3521190.	876118.6	-12897.33	433008.9	1540642.	495844.2
	(5.2E +11)	(4.2E +11)	(5.0E +11)	(5.4E +11)	(4.0E +11)	(3.2E +11)
4	3452555.	533427.0	214096.0	542949.2	1353735.	668030.3
	(6.5E +11)	(5.6E +11)	(6.5E +11)	(7.9E +11)	(4.0E +11)	(4.9E +11)
5	2998532.	275467.7	410012.6	681039.8	721099.3	1089445.
	(6.2E +11)	(6.5E +11)	(7.2E +11)	(9.3E +11)	(3.2E +11)	(5.3E +11)
6	2653841.	216213.5	415117.7	769784.2	439663.6	1339178.
	(6.3E +11)	(6.7E +11)	(7.3E +11)	(9.5E +11)	(3.0E +11)	(5.3E +11)
7	2541775.	357546.7	294261.3	730391.2	507515.6	1268838.
	(6.4E +11)	(6.8E +11)	(6.7E +11)	(8.9E +11)	(3.0E +11)	(4.9E +11)
8	2501381.	535330.1	200958.2	619421.3	583855.5	1077444.
	(6.5E +11)	(6.7E +11)	(6.2E +11)	(8.1E +11)	(2.9E +11)	(4.6E +11)
9	2388750.	641393.7	195051.8	534325.8	534066.9	968849.2
	(6.6E +11)	(6.6E +11)	(5.9E +11)	(7.6E +11)	(2.8E +11)	(4.4E +11)
10	2215128.	676083.7	233911.1	503390.7	442969.0	953443.9
	(6.8E +11)	(6.4E+11)	(5.6E+11)	(7.3E+11)	(2.6E+11)	(4.3E +11)
11	2044571.	681181.4	266527.0	493512.3	386779.5	947057.6
	(7.0E +11)	(6.0E+11)	(5.2E+11)	(7.0E+11)	(2.6E+11)	(4.1E +11)
12	1899066.	679881.7	280823.4	473409.4	356091.2	907955.6
	(7.4E +11)	(5.6E+11)	(4.8E+11)	(6.7E+11)	(2.5E+11)	(3.9E +11)
13	1766246.	673070.0	286101.2	439876.8	322418.6	849773.1
	(7.8E +11)	(5.2E+11)	(4.5E+11)	(6.4E+11)	(2.4E+11)	(3.6E +11)
14	1637898.	658112.9	288175.0	402525.7	285216.9	791908.4
	(7.9E +11)	(4.9E+11)	(4.2E+11)	(6.1E+11)	(2.3E+11)	(3.3E +11)
15	1517881.	636254.9	286450.4	367006.0	256476.1	737360.9
	(8.2E +11)	(4.6E +11)	(4.0E +11)	(5.8E +11)	(2.2E +11)	(3.1E +11)
16	1409767.	609481.0	280588.8	333821.2	237953.5	683355.0
	(8.6E +11)	(4.3E+11)	(3.8E+11)	(5.7E+11)	(2.2E+11)	(2.9E +11)
17	1311569.	578534.9	272227.3	303053.3	222982.7	631132.8

Period	Y1	X1	X2	X3	X4	X5
	(8.8E +11)	(4.1E +11)	(3.6E +11)	(5.6E +11)	(2.1E +11)	(2.7E +11)
18	1220215.	544291.4	262595.4	275566.6	207523.8	583616.7
	(9.2E +11)	(3.9E+11)	(3.5E+11)	(5.5E+11)	(2.1E+11)	(2.6E +11)
19	1135069.	508628.9	251608.9	251638.3	192553.9	541189.2
	(9.8E +11)	(3.8E+11)	(3.4E+11)	(5.5E+11)	(2.2E+11)	(2.6E +11)
20	1056770.	473519.3	239037.5	230612.2	179723.7	502314.5
	(1.0E +12)	(3.7E+11)	(3.4E+11)	(5.4E+11)	(2.2E+11)	(2.5E +11)
Nonfactorized One Std.Dev. Standard Errors: Bootstrap (999 repetitions)						

Source: A table prepared by the researcher based on the statistical programme (EViews 10)

The response of GDP (GM) to shocks in the Independent Government Models (IGMs) can be observed as follows:

The shock to oil prices (X1) shows a noticeable fluctuation between the first and second years, with a significant positive rise initially. However, this effect begins to decline in the third year and continues to decrease over the forecast period, ultimately leading to a reduction in GDP growth rates for the remaining eight years, reaching its lowest point by the tenth year. This decline is primarily attributed to falling oil prices, rising production costs, challenges in economic policies, and global economic developments such as reduced global demand and increased production by countries not adhering to global production restrictions (Travel and Others, 2020). The tax shock (X2) exhibits a different pattern, as shown in the table and the figure below. Tax revenues were positive in the first year but experienced a decline in the second year, followed by a steady positive improvement in subsequent years. This decline in the second year led to a reduction in GDP (Y1), as illustrated in the GDP graph. The increased tax burden, which raises costs for businesses and individuals, results in reduced investment and consumption. However, as economic policies improved, investment began to rise again, contributing to a slight increase in GDP, as noted by Pesaran and Smith (2001).



Form (2) Analysis of the pulse function of response to Iraq's economic shocks

The shock in the exchange rate x3) The shock in the exchange rate led to a positive rise in GDP throughout the forecast period until the third year and then returned to decrease this impact by stabilizing and declining from the fourth year to cause (James and Hueng,2006) a decline in GDP throughout the forecast period where the real value of real dinars increased leads to an improvement in the trade balance of Iraqi dinars working to increase demand for domestic goods and services.

Shock in inflation rate x4) The shock in inflation rate notes a slight positive rise in gross domestic product (GDP) through the second year, and the impact turns into a decline in outcomes due to low demand for goods and services, low investment, deteriorating economic infrastructure and challenges that may arise.

The shock in the terms of trade (x5) The shock in the terms of trade leads to a slight rise in GDP for the fourth year, and the impact then turns into a decline in GDP by a further decline until it causes GDP to fall.

Estimation and analysis of the second model:

Table 9 shows that there is a correlation with a positive meaning effect of the gross sweetener product estimated from the first model in the value of the EZrR product and then the level of its content. (5%), when GDP increases, this results in an increase in the value of the agricultural output and this result demonstrates the unilateral relationship between GDP and the value of agricultural output, These are in line with the logic of the theoretical approach, as the increase of the aesthetic product leads to an increase in the financial specialization of the agricultural sector, resulting in an increase in the value of the table as follows:

Table 9: Results of the agricultural output model estimate

Variable	coefficient	Standard error	t test	probability value
C	1110.690	324.2819	3.425077$^{n.s}$	0.0023
G$\widehat{D}$P	2.51E-05	2.51E-05	2.416617**	0.0240
R^2	%68			
$\bar{R}^2$	%58			
test F	**6.586131			
probability value	0.000145			
**** significant %1**			**n.s Not significant**	

Source: A table prepared by the researcher based on the statistical programme (EViews 10)

CONCLUSIONS

1. There is a fluctuation in agricultural output during the duration of the research and a decline during the duration of the study. This is noted by the decrease in its contribution to GDP
2. ARDL and ARDL models are the self-correlating models of distributed slowdown based on their stability of variations between the first original level of data, and that the models are free of any standard problems, making them the basis for future GDP forecasting.
3. Variables were changed on a long-term basis, representing the direct and indirect impact of variables that demonstrated the morale of all variables in all sample countries, showing that more changes were moral in Iraq and the price of oil because the economy was rent. (49%) followed by taxes (10%) and exchange rate (5%), followed by trade inflation (2%). Finally, the trade rate in rates not exceeding (1%), Iraq is one of the most import-dependent countries, with more than exports.
4. The results of the state of long-term integration of the variables also showed that when the variable deviates from its predictive value of one unit, the variables

deviate by approximately 47% in this ratio and need approximately two years to return to their first balance.

5. The result of the analysis of the dynamic GDP analysis showed that there was a state of stability and stability in GDP.
6. The results of the analysis of the response pulses also showed that these variables are evident in their longitudinal terms. Iraq's level rate appears in the third year of oil prices, whereas taxes in the second year, the exchange rate in the third year, inflation in the second year and the tax rate in the fourth year.
7. The impact of shocks on GDP and the impulses of responding to macroeconomic variables on the positive moral impact of GDP on the value of GDP has also been demonstrated.

RECOMMENDATIONS

1. To pursue exchange policies based on domestic economic policies away from external international changes, particularly those of the Monetary Fund and the World Bank, which were evident in the exchange rate change for 2022 through the exchange rate hike (devaluation), which led to a significant increase in rates.
2. To reduce inflation rates to low and economically acceptable levels by improving the performance of agricultural institutions, undermining their capital and assisting them in making sound financial decisions by adopting rational policies based on the principles and principles of macroeconomic policies and working on the need for sustained inflation policies.
3. Attention to international economic transformations affecting the agricultural sector, through appropriate agricultural policies, and the use of scientific and technical achievements for the domestic use of modern agricultural technologies, as well as their transfer and localization.
4. The need to increase government support to the agricultural sector by increasing the proportion of allocations made to the agricultural sector in the State's general budget for the establishment and establishment of agricultural infrastructure projects.
5. Intensify scientific studies and research on the agricultural sector to deepen the sector's problems and find appropriate solutions.

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CONFLICT OF INTEREST

Conflict of interest: the author declares that there is no conflict of interest with regard to the publication of this article.

تأثير الصدمات الاقتصادية على القطاع الزراعي في العراق للفترة 2004-2023

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الخلاصة

تهدف الدراسة إلى تقييم أثر الصدمات الاقتصادية الإجمالية على الاقتصاد العراقي ، وعلى القطاع الزراعي بشكل خاص، من خلال دراسة تأثير بعض المتغيرات الكلية الاقتصادية على الناتج المحلي الإجمالي ومن ثم على الإنتاج الزراعي. ويتم ذلك باستخدام طريقة المربعات الصغرى ذات المرحلتين (SLS2). تشير نتائج تقدير العلاقة الطويلة الأجل إلى أن جميع المتغيرات الاقتصادية المدرجة في الدراسة لها تأثيرات ذات دلالة إحصائية على الناتج المحلي الإجمالي من خلال التكامل المشترك. ومن بين هذه المتغيرات، تظهر بعض المتغيرات تأثيرًا أكثر وضوحًا، كما يكشف تحليل الاستجابة للصدمة، الذي يوضح أن تأثيراتها تستمر لفترة ممتدة. وبشكل محدد، يصبح تأثير أسعار النفط واضحًا في السنة الثالثة، والضرائب في السنة الثانية، وسعر الصرف في السنة الثالثة، والتضخم في السنة الثانية، ومعدل الضريبة في السنة الرابعة. وتُظهر هذه النتائج أن الصدمات الاقتصادية الكلية تؤثر بشكل كبير على الناتج المحلي الإجمالي, تُظهر هذه النتائج أن الصدمات الاقتصادية الكلية تؤثر بشكل كبير على الناتج المحلي الإجمالي، وأن استجابات الناتج المحلي الإجمالي لهذه المتغيرات الكلية إيجابية وذات دلالة إحصائية. وبناءً على هذه النتائج، توصي الدراسة بزيادة الاهتمام بالتغيرات الاقتصادية الدولية التي تؤثر على القطاع الزراعي، كما تدعو إلى وضع سياسات زراعية مناسبة واعتماد الأساليب العلمية

الكلمات المفتاحية: الناتج الزراعي ،الصدمات الاقتصادية، اسعار النفط، الناتج المحلي الاجمالي.

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