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AN ECONOMIC ANALYSIS OF THE ROLE OF AGRICULTURAL FOREIGN TRADE AND EXCHANG RATES IN THE GROWTH OF AGRICULTURAL OUTPUT IN IRAQ (1990-2020)

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Abstract

The study aimed to determine the influence of agricultural imports and exports on the domestic agricultural sector in Iraq. It employed the ARDL model to examine the effect of foreign trade on agricultural production using annual time series data from 1990 to 2020. The data was initially subjected to ADF tests to determine the order of integration, with test results indicating that an ARDL model in the first difference is appropriate for further econometric analysis. The findings indicate the existence of a long-term relationship equilibrium between agricultural and domestic products and the studied variables. There was a negative relationship between agricultural imports and output in each of the periods. Over both short and long terms, a 1% increase in imports reduces agricultural output by 0.1539 and 0.478%, respectively. This finding is compatible with economic theory, as imports are regarded as one of the sources of leakage that tend to reduce domestic output. Agricultural exports positively and significantly impacted agricultural domestic products, but this were limited due to the small export volume. Exchange rates had different effects over the short and long runs, turning negative and positive, respectively. This study suggests the importance of adopting monetary policies that are

more stable and compatible with the reality of agricultural production in protecting and supporting both producers and exporters.

Keywords: Agricultural exports, Agricultural imports, Exchange rates, Self-regression.

تحليل اقتصادي لدور التجارة الخارجية الزراعية وسعر الصرف في نمو الناتج الزراعي في العراق (1990-2020)

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الخلاصة

يهدف البحث الى تحديد اثر كل من الواردات والصادرات الزراعية بالإضافة الى سعر الصرف في الناتج المحلي الزراعي في العراق ولدراسة تأثير كل من مؤشرات التجارة الزراعية وسعر الصرف في نمو الناتج المحلي الزراعي واعتمد البحث بيانات السلاسل الزمنية السنوية للمدة 1990–2020 للمتغيرات التي تضمنها الانموذج، ثم اخضاع البيانات لاختبارات لتحديد رتبة التكامل وقد بينت نتيجة الاختبار ان انموذج الانحدار الذاتي للابطاءات الموزعة يعد مناسبا حسب نتائج الاستقراريه وطبيعة البيانات مع وجود علاقة توازنيه طويل الاجل بين الناتج المحلي الزراعي والمتغيرات المدروسة، كما بينت نتائج التحليل وجود علاقة سلبية بين كل من الواردات الزراعية والناتج الزراعي في كل من الاجل القصير والطويل اذ تؤدي زيادة الواردات بنسبة 1% الى انخفاض الناتج الزراعي بنسبة 0.478، 0.1539% على التوالي وهذا يتفق مع منطق النظرية الاقتصادية فالاستيرادات تعد من عناصر التسرب والتي تؤدي الى خفض الناتج المحلي. اما الصادرات الزراعية فكان تأثيرها معنوي وايجابي في الناتج المحلي الزراعي في كل من الاجل القصير والطويل ولكنه ضعيفا وذلك لصغر حجم الصادرات. اما سعر الصرف فقد اختلف تأثيره في الاجل القصير عن الطويل حيث كان تأثيره سالبا في فترة الاجل القصير وموجبا في فترة الاجل الطويل ولذا يقترح البحث ايجاد سياسة نقدية اكثر استقرار وانسجاما مع واقع الانتاج الزراعي وتطبيق ضوابط الاستيراد ومعالجة ظاهرة الاغراق في الاسوق العراقية وتوفير الحماية والدعم لكل من المزارعين والمصدرين.

كلمات مفتاحية: الصادرات الزراعية، الاستيرادات الزراعية، الانحدار الذاتي، سعر الصرف.

Introduction

A viable and strong agricultural sector is an important contributor to a nation's economic development process. The sector not only raises overall levels of production and productivity, but is also a way of life having significant economic, social, and environmental functions. It supports a rural community, which constitutes 25% of the population of Iraq, as a source of income and is a major factor in reducing poverty and rural destitution, ensuring a stable population and in reducing the rates of social problems. This is especially so in most developing countries, including Iraq, which suffer from a food deficit and a shortfall in domestic production in the face of the increasing demand for food due to population growth. Population growth rates often exceed that of the agricultural sector (8), and the contribution of this sector to gross domestic product relies heavily on actual production levels. Growth in the agricultural sector contributes much to reducing poverty compared to that of other economic sectors. For this reason, the focus is on the agricultural sector to attain the development goals of the second millennium. Growth is not merely a transition from one point to another on the production curve as such a transition is only a change in the composition of total production and not an absolute change in its volume. Rather, economic growth is reflected in the shift of the production possibilities frontier curve to the top, as this new curve represents a wider production potential and the specific composition of productive and consumer goods at the level of full use (12).

The agricultural sector in Iraq suffers from many problems and constraints in terms of land and water resources, environmental and political changes, and demographic factors. These have led to a decline in the sector's production cycle, a decline in its contribution to GDP growth, and a lack of integration with other productive sectors in the economy except the oil sector. It fomed about 13% of the nation's GDP, while its growth rate reached 3% during the study period. This decrease in production rates led to the adoption of a policy of imports for most food crops and animal products to meet local demand (1). Consumption-wise it created dual problems of a lack of food to achieve food security and self-sufficiency, and significant financial outflows to import food (14). The theory of absolute advantage is the main tool for analysing the expansion of markets ahead of production intended for export, which requires promoting the division of labor and increasing production and thus transfering growth between parties with mutual gains available to them. Ricardo's theory of comparative costs emphasized commercial freedom and specialization in production for commodities whose superiority in relative costs is greater. This theory successfully explains the importance of imports, as it proved that every country has an interest in importing if certain conditions are met, and thus imports become as necessary as exports (4).

During the period under study, Iraq underwent much political and economic changes that impacted the structure of foreign trade for agricultural products as well as its growth and trends. It was affected by both variable exports and imports and the agricultural trade balance of Iraq. The Iraqi market still suffers from heavy dumping of agricultural products and the small contribution of its export sector. The agricultural sector contributed 27% to Iraq's exports (excluding oil exports) during

this study period and experienced a continuous deficit in its trade balance. The promotion of agricultural development through exports will have a positive impact on the well-being of a large segment of Iraq's population. The agriculture and food processing industries are important rural and urban income sources for countries in the region. However, due to the heavy dependence on agricultural imports, the rise in food prices has negatively affected the region through rising inflation, trade deficits, increased poverty, and the consequent lack of political stability (2). Increasing agricultural exports will accelerate growth more than expanding demand in the domestic market, especially in countries with lower urban populations, and increasing external demand for local products leads to stimulating and directing investment toward adopting the best methods for producing and marketing these products. This leads to increased incomes, savings, and national investments (6). Thus, agricultural exports contribute significantly to economic growth in Iraq by raising the sector's share of its GDP (13). The expansion of agricultural exports contributes to the success of the country's economic diversification policy and reduces dependence on exports.

Oil, which constitute 94% of Iraq's total exports, finances the general budget but this poses a major risk due to its linkages to global markets and sharp price fluctuations. The exchange rate is critical, especially to small, open economies, as it determines the value of goods, services, and financial assets that can be purchased in the local currency (11) while foreign currency is used in dealings between domestic and foreign companies. The exchange rate is an important factor in influencing the profitability of export industries and the cost of imported resources (16) as it requires exchanging local with foreign currencies by the exporting country (3). Exchange rate fluctuations significantly impact the agricultural sector, as high exchange rates negatively affect agricultural incentives and output while low rates makes the prices of imported commodities relatively cheaper. The demand for foreign exchange increases instead of for local commodities (17). This research studied the impact of some economic variables on the growth of domestic agricultural production in Iraq for the 1990-2020 period.

Materials and Methods

The descriptive analysis method and the quantitative approach were adopted in building the standard model by applying mathematical statistics to economic data using Eviews 12. The expanded Dickie-Fuller test was used to indicate the stability of the time series and to detect the unit root, which showed that the variables are integrated in the order (1)1.

Estimating the function using the autoregressive distributed delay (ARDL) model: The unit root test is invaluable in applied studies using time series data for estimating functions to show the stability of variables and determine the degree of integration for each variable, as it assumes the stability or stillness of the data to avoid obtaining false regression. Moreover, the non-static series is converted to a static series through the first and second differences, etc. (10), and the null hypothesis, based on the expanded Dickie-Fuller test, means that the variable has a unit root (Ho: P =1). The

alternative hypothesis means the silence of the time series H1: P<1. The expanded Dickey-Fuller test was used to address the serial autocorrelation between the residuals, as it allows the inclusion of several differences with a time gap m of the time-lag dependent variable and under three formulas (9).

$$\Delta \boldsymbol{y_t} = \boldsymbol{\gamma y_{t-1}} + \boldsymbol{\varepsilon_t}$$
$$\Delta \boldsymbol{y_t} = \boldsymbol{\alpha_0} + \boldsymbol{\gamma y_{t-1}} + \boldsymbol{\varepsilon_t}$$
$$\Delta \boldsymbol{y_t} = +\boldsymbol{\alpha_0} + \boldsymbol{a1_t} + \boldsymbol{\gamma y_{t-1}} + \boldsymbol{\Sigma\ \alpha\ j\ \Delta\ Yt\text{-}j+1} + \boldsymbol{\varepsilon_t}$$

1. Without categorical and general direction.
2. In the presence of a categorical, but without a general trend.
3. The presence of a categorical and a general trend.

ARDL is a modern methodology developed by Pesaran and others in 2001 (15). It has several characteristics, including the possibility of estimating short- and long-term parameters with one equation (7). It takes a sufficient number of delays to obtain more consistent estimators. It has the possibility of allowing the explanatory variables to have different slowing periods (5), where the autoregressive models of the dependent variable are combined with the distributed lag models of the independent variables in one model in which the dependent variable is a function of the value of the dependent variable. The values of the independent variables are slowed down for some time, as well as a function in the mass of slowing down the dependent variable and the independent variables in the first difference (10). Thus, the model shows the period for the movement of the response of the dependent variable to the independent variables, as it shows the effect of dynamic models for cases in which the variables are linked to the previous values of other variables. This procedure is essential in the economy, especially in the long term, as there is a period between the economic decision and the final effect of the change in the economic policy variable and the ARDL model means automatic regression for Yt. DL means that the dependent variable will be described through its late period and the delayed one of the independent variables. According to the following models:

$y_t=\beta+\boldsymbol{\beta 0}\ x_t+\beta_1\ x_{t-1}+u_t$ ……(1)

The previous values of the dependent variable can express dynamic behavior.

$y_t=\lambda_1\ y_{t-1}+\lambda_2\ y_{t-2}+\cdots+\lambda_p\ y_{t-p}+u_t$ …..(2)

According to equation (1) above, in the ARDL model, the right side contains a time-lag explanatory variable $y_t=\alpha+\alpha_1\ y_{t-1}+\beta_0 x_t+\beta_1\ x_{t-1}+u_t$ ……(3)

Where (y, x) represent the stationary variables in degrees zero, one, or a combination of both.

To determine the existence of co-integration between the variables, the Bound Test approach was conducted. The F statistic was compared with two tabular values representing the upper limit of the integrated variables of rank (1)1 and the lower limits of the integrated variables of rank (0)1 lower and upper limits of the F test. The calculated value of F is higher than the minimum value. The null hypothesis was rejected, and the alternative hypothesis was accepted, which means the existence of

long-term cointegration between the variables. According to the above, the function is described as follows:

LP=F(LX,LM,LR)

LP = agricultural domestic product (1990-2020).

LX = agricultural exports (1990-2020).

LM = agricultural imports (1990-2020).

LR = exchange rate (1990-2020).

Results and Discussion

The stationarity unit root test was carried out using the augmented Dickey-Fuller (ADF) unit root test. The ADF tests in Table 1 show that all the variables are stationary at the first difference I(1), and none is I(2). This justifies using the bounds approach to cointegration and qualifies for testing the long-run relationship among the variables using the ARDL bound testing technique.

Table 1: Results of the ADF unit root test.

At Level		LP	LM	LX	LR
With Constant	t-Statistic	-4.8818	-0.4849	-0.7838	-3.2690
	Prob.	*0.0005*	*0.8808*	*0.8093*	*0.0276*
		***	no	no	**
With Constant and Trend	t-Statistic	-3.0398	-2.5351	-2.4307	-4.2046
	Prob.	*0.1387*	*0.310*	*0.3576*	*0.0150*
		no	no	no	**
Without Constant and Trend	t-Statistic	2.2587	0.7242	0.2957	-0.3063
	Prob.	*0.9928*	*0.8660*	*0.7648*	*0.5668*
		no	no	no	no
At First Difference		d(LP)	d(LM)	d(LX)	d(LR)
With Constant	t-Statistic	-2.9279	-6.1611	-4.6465	-14.1365
	Prob.	*0.0544*	*0.0000*	*0.0009*	*0.0000*
		*	***	***	***
With Constant and Trend	t-Statistic	-3.6555	-6.0367	-4.5845	-13.8820
	Prob.	*0.0423*	*0.0002*	*0.0053*	*0.0000*
		**	***	***	***
Without Constant and Trend	t-Statistic	-2.5676	-5.8466	-4.6179	-14.3733
	Prob	*0.0122*	*0.0000*	*0.0000*	*0.0000*
		**	***	***	***

Source**:** Author computation using Eviews 12**.**

Table 2 presents the lag order selection based on four criteria i.e., LR, FPE, SC, and HQ. All the four criteria suggest one (1) lag selection. Hence, this study adopted the optimal lag of one (1) for the cointegration test.

Table 2: Results of lag selection for the co-integration test.

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-192.5994	NA	9.09006	13.55858	13.74717	13.61765
1	-89.53254	170.5935*	0.022740*	7.553968	8.496931*	7.849292*
2	-73.29929	22.39069	0.024018	7.537882*	9.235215	8.069465

Source: Author computation using Eviews 12.

The results from applying the model indicate the choice of formula (4.3.3.4) with four times delays for the dependent variable agricultural output, three delays for each of agricultural imports and exports, and four slowdowns for the exchange rate. TheR^2 value showed that 0.98 of the fluctuations in the dependent variable (agricultural output) were due to the independent variables, 0.2 were due to the random error limit, and the F value of 41.61 showed a significant function at the level of 1%

Table 3: Estimating the standard model of the agricultural output growth function according to the ARDL test.

Selected Model: ARDL(4, 3, 3, 4)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LP(-1)	0.437138	0.211809	2.063836	0.0691
LP(-2)	-1.328901	0.409567	-3.244651	0.0101
LP(-3)	0.494186	0.333251	1.482923	0.1722
LP(-4)	-0.736314	0.268134	-2.746063	0.0226
LM	-0.205972	0.089917	-2.29069	0.0325
LM(-1)	0.167528	0.061123	2.741394	0.0228
LM(-2)	0.097908	0.047589	2.057349	0.0698
LM(-3)	0.056061	0.038993	1.437716	0.1844
LX	0.170392	0.056317	3.025572	0.0143
LX(-1)	-0.003118	0.042761	-0.072911	0.9435
LX (-2)	0.065241	0.058071	1.123476	0.2903
LX (-3)	0.056061	0.038993	1.437716	0.1844
LR	-0.876772	0.440278	-1.991406	0.0776
LR(-1)	0.438495	0.319303	1.373286	0.2029
LR(-2)	0.886486	0.390087	2.27253	0.0492
LR(-3)	-0.018756	0.300822	-0.06235	0.9516
LR(-4)	0.638342	0.341429	1.869618	0.0944
C	21.74151	4.443454	4.89293	0.0009
R-squared	0.987439	Mean dependent var	15.30528	
Adjusted R-squared	0.963712	S.D. dependent var	0.898542	
S.E. of regression	0.171166	Akaike info criterion	-0.457642	
Sum squared resid	0.263681	Schwarz criterion	0.40625	
Log likelihood	24.17816	Hannan-Quinn criter.	-0.200761	
F-statistic	41.61744	Durbin-Watson stat	2.347549	
Prob(F-statistic)	0.000002			

Source: Authors computation using Eviews 12.

The result of the F-bound co-integration in Table 4 show that the F-statistics value is 5.654, which is greater than the upper bound critical value of 4.66 and the lower bound critical value of 3.65 at a 1% significance level. This implies a cointegration (long-run relationship) between variables. Therefore, the null hypothesis of no cointegration between the variables is rejected, and the alternative hypothesis is accepted. Hence, the variables have a long-run equilibrium relationship with one another. This is higher than the upper limit of the critical values at a significance level of 1%, indicating a long-term co-integration sign between the variables used in the model.

Table 4: F-bound test for co-integration.

F-Bounds Test		Null Hypothesis: No levels of relationship			
Test Statistic		**Value**	**Signif**	**I(0)**	**I(1)**
F-statistic		5.654456	10%	2.37	3.2
K	**3**	5%		2.79	3.67
		2.5%		3.15	4.08
		1%		3.65	4.66

Source: Author computation using Eviews 12.

Table 5 shows the estimation of the short-run model. The results show that the ECT, which determines the speed of adjustment from short-run dynamics to long-run equilibrium, is negative, which is acceptable and appropriate. From the above estimation, the coefficient of ECT is -0.32 and statistically significant 0.03, suggesting that almost 0.32% of the long and short-run discrepancies will be corrected annually. The results also indicate a negative and significant relationship at the level of 1% between agricultural imports for a previous period and the growth of agricultural output, and that increasing the volume of agricultural imports by 1 unit leads to a decrease in the growth of agricultural output by 0.1539 in the short term.

While agricultural exports had a positive and significant relationship at 1% with agricultural output, the change in agricultural exports by 1 unit contributes to increasing agricultural output growth by 0.1703 in the short term. The exchange rate variable had a negative and significant relationship at the 5% level with agricultural output, and the change of 1 unit in the exchange rate led to a decrease in agricultural output growth by 0.8 in the short run.

Table 5: Results of the short-run ARDL model.

ECM Regression Case 2: Restricted Constant and No Trend				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
DLP(-1))	1.571029	0.282702	5.557188	0.0004
DLP(-2))	0.242128	0.216745	1.117112	0.2929
DLP(-3))	0.736314	0.185899	3.960833	0.0033
D(LM)	-0.005975	0.033072	-0.180681	0.8606
DLM(-1))	-0.153969	0.036751	-4.189557	0.0023
DLM(-2))	-0.056061	0.029930	-1.873062	0.0938
D(LX)	0.170392	0.033884	5.028616	0.0007
D(LX(-1))	0.054625	0.023722	2.302736	0.0468
D(LX(-2))	0.119866	0.029539	4.057937	0.0029
D(LR)	-0.876772	0.283122	-3.096801	0.0128
D(LR(-1))	-1.506071	0.314705	-4.785657	0.0010
D(LR(-2))	-0.619585	0.229420	-2.700655	0.0244
D(LR(-3))	-0.638342	0.220631	-2.893253	0.0178
CointEq(-1)*	-0.326383	0.126370	-2.582756	0.0364
R-squared	0.954303		0.206423	
AdjustedR-squared	0.908606		0.471096	
S.E. of regression	0.142419		-0.753938	
Sum squared resid	0.263681		-0.082022	
Log likelihood	24.17816		-0.554142	
Durbin-Watson stat	2.347549			

Source: Authors computation using Eviews 12.

Table 6 on the results of the long-run ARDL estimation shows that agricultural imports for a previous period (LM) have a negative insignificant relationship with agricultural sector output (LP). This means a 1% increase in this variable will reduce

agricultural sector output (LP) by 0.1478%. Similarly, the long-run results also show that exchange rate (LR) and agricultural exports (LX) lag values are positive with coefficients of 0.500 and 0.0527, respectively. This implies that a 1% increase in the study variables will increase agricultural sector output by 0.5% and in the long-run.

Table 6: Results of the long-run ARDL model.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LM	-0.147862	0.029116	-5.778488	0.0007
LX	0.052790	0.018718	2.820231	0.0200
LR	0.500398	0.140763	3.554886	0.0062
C	10.18867	1.075644	9.472156	0.0000

Source: Author computation using Eviews 12.

The results of the Breusch-Pagan-Godfrey test (Table 7) show that the calculated F value of 0.457 is not significant (0.92>0.05) is not significant indicating no serial autocorrelation problem in the model.

Table 7: Diagnostic tests results.

Heteroskedasticity Test: Breusch-Pagan-Godfrey			
Null hypothesis: Homoskedasticity			
F-statistic	0.45790	Prob. F(17,9)	0.9209
Obs*R-squared	12.5223	Prob.Chi-Square(17)	0.7675
Scaledexplained SS	1.73465	Prob.Chi-Square(17)	1.0000
Breusch-Godfrey Serial Correlation LM Test: Null hypothesis: No serial correlation at up to 2 lags			
F-statistic	0.61630	Prob. F(2,7)	0.5668
Obs*R-squared	4.04249	Prob.Chi-Square(2)	0.1325

The calculated F value is 0.386 and not significant (0.55<0.05) according to the Ramsey reset test (Table 8), indicating that the model does not suffer from the wrong functional form or an error in the characterization.

Table 8: Ramsey reset test results.

	Value	Df	Probability
t-statistic	0.621297	8	0.5517
F-statistic	0.386010	(1, 8)	0.5517
Likelihood ratio	1.272329	1	0.2593
F-test summary:			
	The sum of Sq.	Df	Mean Squares
Test SSR	0.012137	1	0.012137
Restricted SSR	0.263681	9	0.029298
Unrestricted SSR	0.251544	8	0.031443

The test results indicate that the value of the Jarque-Bera statistic was not significant (0.297 < 0.05), indicating a normal distribution of the residuals.

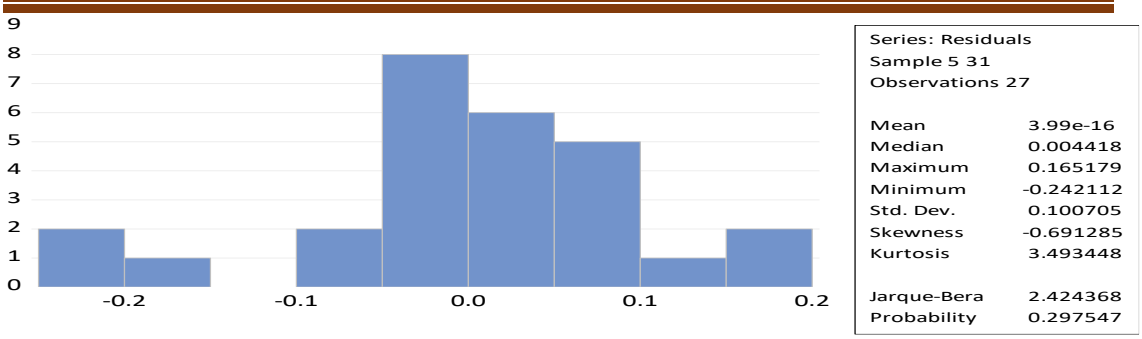

Figure 1: Test for normal distribution of a function.

Testing the structural stability of the model's capabilities: Figures 2 and 3 show that the cumulative sum of squares of the residuals fell within the critical limits at a significance level of 5%, indicating the absence of structural changes in the model's variables during the study period.

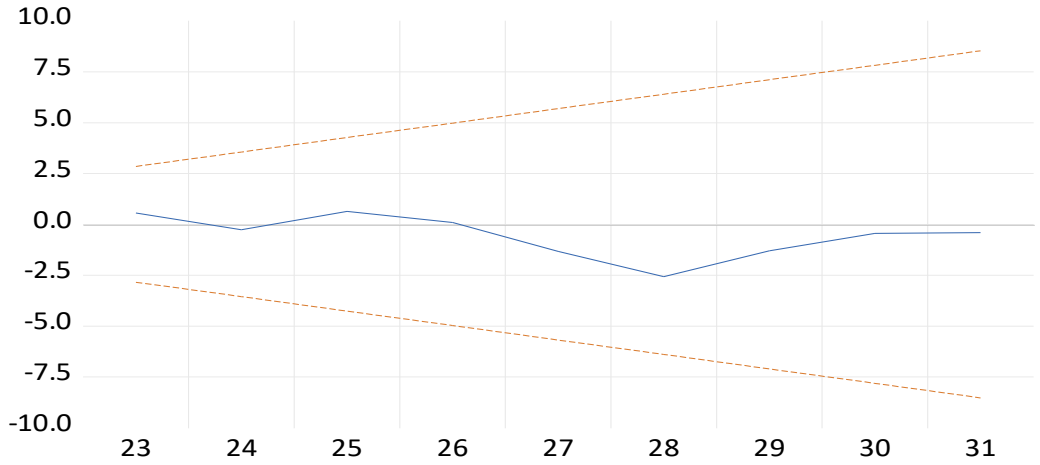

Figure 2: CUSUM test for the stability of the function parameter.

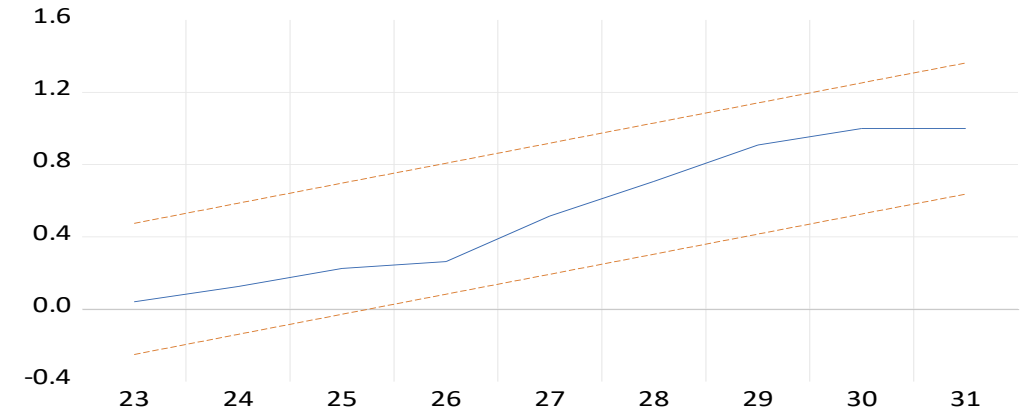

Figure 3: CUSUMSQ residual stability test.

Conclusions

This study examined the effects of exchange rate, agricultural imports, and exports on Iraq's agricultural sector output using the ARDL model approach. The results show that the exchange rate has a negative insignificant effect on agricultural sector output in the short-run, but a positive insignificant effect on agricultural sector output (LP) in the long run. This means that the exchange rate can be a catalyst for production in the short-term, thus reducing agricultural imports, though over the

longer term it may significantly affect production costs, especially of capital goods, leading to a decline in production and higher imports to meet local demand. Furthermore, through capital inflows, farmers can import the needed technology to improve efficiency in the sector and operate on a large scale.

Consequently, the government should create an enabling and conducive environment to attract more capital inflows to boost agriculture and increase its output. The result show that foreign trade in agriculture led to higher agricultural output in Iraq during the study period. Agricultural exports contributed to higher volumes of agricultural output. However, the relative importance of agricultural exports limited its impact. The higher import and lower export volumes for agriculture had a negative impact on the growth of domestic agricultural products. This effect depends on the difference between imports and exports. The decrease in export volumes, despite its positive effect on increasing production, was slight. Using the concept of comparative advantage, this requires supporting agricultural exports by motivating producers to raise export volumes and combat the dumping of foreign goods in Iraqi markets which reduces the ability of farmers to compete and expand production.

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Author A. F. Ahmed: methodology, writing and original draft preparation; I. A. Almosabbeh writing, review and editing. All authors have read and agreed to the published version of the manuscript.

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The authors declare no conflict of interest.

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References

1. Alattabi, H. A. (2019). Economic Analysis for Role of Agricultural Exports in Agricultural Growth in Iraq for the Period (1990–2017). (Doctoral dissertation, M. SC. Thesis, College of Agricultural Engineering Science, University of Baghdad. pp: 138).
2. Al-Badawi, S. A., and Al-Wasity, R. T. (2023). An economic analysis of the most important variables affecting agricultural employment in Iraq for the period (1998-2019). Anbar Journal of Agricultural Sciences, 21(1): 224-249. https://doi.org/10.32649/ajas.2023.179764.
3. Al-Bayati, D. O. N., Al-Dulaimi, S. A. S., and Al-Mihimdy, N. A. A. (2022). Analyzing the impact of exchange rate fluctuations and inflation on the GDP in Iraq using the modern methodology of Cointegration for the period (1988-2020). Journal of Economics and Administrative Sciences, 28(131): 83-108.
4. Al-Mohammedi, N. A., Mohammed, I., and Affat, M. A. (2020). Measurement and analysis determinants of demand for money in Iraqi economy for the period 1985-2015. Journal of Anbar University for Economic and Administrative Sciences, 12(28): 29-54.
5. Dickey, D. A., and Fuller, W. A. (1979). Distribution of the estimators for autoregressive time series with a unit root. Journal of the American statistical association, 74(366a): 427-431. https://doi.org/10.1080/01621459.1979.10482531.
6. Elhayani, M. K. M., and Al-Mohammadi, M. K. O. (2021). The Impact of Determinants of Investment on the Iraqi Economy for the Period (2004-2018), A Standard Study. Journal of Business Economics for Applied Research, 1(1): 111-132. https://doi.org/10.37940/BEJAR.2021.1.1.6.
7. Gujarati, D. N., and Porter, D. C. (2003). Basic Econometrics, McGraw-Hill. New York.
8. Hamdi, N. M., and Ahmed, A. F. (2024). An economic analysis of the impact of government lending agricultural and the agricultural initiative on the agricultural domestic product in Iraq for the period (1990-2020). Anbar Journal of Agricultural Sciences, 22(1): 665-679. https://doi.org/10.32649/ajas.2024.183785.
9. Hassler, U., and Wolters, J. (2006). Autoregressive distributed lag models and cointegration. Allgemeines Statistisches Archiv, 90: 59-74. https://doi.org/10.1007/s10182-006-0221-5.
10. Hill, R. C., Griffiths, W. E., and Lim, G. C. (2011). Principles of Econometrics, Fourth ed. John Wiley and Sons, pp: 477.
11. Jubair, B. N. (2017). An economic study of the impact of fluctuations of exchange rate on the structure of foreign trade in Iraq during the period 1990-2015. PhD dissertation, Department of Agricultural Economics, College of Agriculture, University of Baghdad, pp: 66.
12. Khalaf, M. A., and Sarhan, Sh. A. (2023). Economic analysis of the effects of disparities in household spending on commodity groups in iraq according to

surveys of the years 2007 and 2012. Anbar Journal of Agricultural Sciences, 21(2): 667-681. https://doi.org/10.32649/ajas.2023.182130.

13. Omar, H. M. (2020). Agricultural development in Iraq. Journal of Economic and Administrative Sciences, 26(121): 369-382.
14. Paciello, M. C. (2015). Building sustainable agricultural for food security in the Euro-Mediterranean area. Rome: Edizioni Nvova Cultura. pp 16.
15. Pesaran, M. H., Shin, Y., and Smith, R. J. (2001). Bounds testing approaches to the analysis of level relationships. Journal of applied econometrics, 16(3): 289-326. https://doi.org/10.1002/jae.616.
16. Salim, Y. A., and Ahmed, A. F. (2019). Impact of monetary policy on agricultural domestic product in Iraq for the period (1990-2014). The Iraqi Journal of Agricultural Science, 50(2): 557-566.
17. Yuan, L., Zhang, Q., Wang, S., Hu, W., and Gong, B. (2022). Effects of international trade on world agricultural production and productivity: evidence from a panel of 126 countries 1962-2014. International Food and Agribusiness Management Review, 25(2): 293-309. https://doi.org/10.22434/IFAMR2021.0055.