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A COMPARATIVE ECONOMIC STUDY OF IMPORTED INFLATION IN THE AGRICULTURAL SECTOR IN GROUP OF ARAB COUNTRIES FOR THE PERIOD (1990-2022)

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ABSTRACT

The research aimed to compare imported inflation in the agricultural sector in Iraq and Jordan, where data collected for time series for the period (1990-2022) and using ARDL model. The results showed a positive and significant relationship between imported inflation and both the price index of agricultural imports, agricultural product, population, agricultural trade openness and exchange rate in the short and long terms in Iraq, the variables were significant in the short term in Jordan, but in the long term some variables were not identical to economic logic, It turns out that there is a long-term equilibrium relationship between the dependent variable and some illustrative variables because not all variables have a long-term equilibrium relationship. The research recommended doing more researches and studies on inflation in the agricultural sector in Iraq and Jordan and more Arab countries and searching for other economic variables affecting inflation in the agricultural sector and reducing inflation rates that affect the agricultural sector which reflects positively on the Iraqi and Jordanian economies; Also supporting agricultural products prices and providing a subsidy for agricultural inputs for the purpose of increasing local production, developing the local economy and reducing imported inflation resulting from the increase in food and agricultural imports.

Keywords: agricultural import price index, agricultural trade openness, ARDL, Foreign trade.

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INTRODUCTION

Imported inflation results from the rise in prices in foreign markets on which the country depends for imports (Acemoglu ,2007). It is one of the problems that developing countries' economies suffer from and poses a risk in a country with economic exposure. The impact of imported inflation increases when stagflation increases). Imported inflation in the agricultural sector in Iraq is one of the problems that the Iraqi economy faced after 2003 due to the trade openness of the Iraqi economy to global markets, (Ali et al., 2022) Jordan also suffering from it. This inflation occurs in the economy of a country that depends on imported goods and services, especially in developing countries and reliance on imported production requirements increases, (AL-Ghanai, 2019) as each country has its own balance of payments that reflects economic transactions between residents of this country and residents of other countries during a specific period of time. Imported inflation arises due to the country's dependence on imported goods and services from abroad, (Ali, 2018) and when the country exporting these goods and services suffers from inflation, inflation transmitted to the local economy through imported goods and services (Al-Aqidi, 2024)The effects of imported inflation on the agricultural sector include the high cost of local investment. (Alwan, 2022) In addition, high customs duties, disparities in the distribution of income and wealth, and excessive growth of the services sector. Imported inflation can be measured using a set of formulas, one of them: Imported inflation = (value of imports × global

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inflation rate / GDP) * 100, and policies to reduce imported inflation include sterilization policies, economic stabilization funds, sovereign funds, financial and trade policies, monetary policies, and the exchange rate as an intermediate target (Erbaykal et al., 2018) The research aims to calculate the rates of imported inflation in the agricultural sector in both of Iraq and Jordan for the period 1990-2022.

MATERIALS AND METHODS

Inflation defined as the continuous increase in the general level of prices. Not every increase in prices is inflation, as the increase in the prices of agricultural commodities for production and marketing reasons such as seasonal reasons and climatic factors is not inflation. (Eggoh et al., 2020) Imported inflation is the rapid increases in the prices of final goods and services imported from abroad, and developing countries are among the countries that import the most inflation due to economic dependence and openness to the outside world (Ali et al., 2022). One of the reasons for imported inflation in the agricultural sector in Iraq is the transformation of the Iraqi economy from a production economy that depends on agriculture and industry to a rentier economy that depends on oil (Ali et al., 2025). As for Jordan, it is a country that suffers from a weak agricultural production base, especially of the main grain crops, and therefore it is a net importer of them. (Al-Mohammadi et al., 2022).

First: Measuring imported inflation in the agricultural sector: Imported inflation in the agricultural sector can measured through the following formula (Al-Ghanai, 2019): Imported inflation in the agricultural sector = (value of agricultural imports / value of agricultural product) × global inflation rate * 100.

Second: The econometric model:

LY= F (LX1, LX2, LX3, LX4, LX5)

Where: - LY: The natural logarithm of the imported inflation rate in the agricultural sector.

LX1: The natural logarithm of the agricultural import price index.

LX2: The natural logarithm of the exchange rate of the Iraqi dinar and Jordanian dinar against the US dollar.

LX3: The natural logarithm of the population.

LX4: The natural logarithm of the agricultural product

LX5: The natural logarithm of the agricultural trade openness ratio

Tables 1 and 2 show the study data that will used in the analysis

Variables included in the model:

1- Agricultural Imports Price Index: It represents the price paid by the state for what it obtains from imports because of exporting one unit of its exports (Al-Karawi et al., 2020).

2- Exchange Rate: It is the monetary units that exchange one unit of local currency for a foreign currency and it is between two different currencies.

3- Agricultural Domestic Product: The agricultural sector is of great importance in Iraq and Jordan due to its role in economic development, and contributes to the formation of the gross domestic product and securing the needs of agricultural and food commodities and absorbing a large number of the workforce due to the high population growth rates, (Al-Mohammadi et al., 2021) as it is a major source of livelihood for the population (Al-Khulaifi, 2022). The agricultural sector in Iraq and Jordan plays an important role in achieving economic, (Bashar,2022) social and environmental development, providing agricultural products and supplying other sectors such as the industrial sector, exporting agricultural products to foreign markets and increasing exports (Al-Mawla, 2022).

4- Agricultural Trade Openness: The trade openness rate is an important indicator of growth in the country's agricultural foreign trade (Al-Mawla, 2022). It is also an indicator of imported inflation. The importance of the trade openness indicator highlighted by its contribution to foreign trade, the formation of the gross domestic product, increasing economic growth rates, and improving economic development (Baltar, 2022).

RESULTS AND DISCUSSION

Results of the analysis of imported inflation in the agricultural sector in Iraq for the period (1990-2022):

1.Testing the stationary of the variables in the model: The stationary of the variables in the time series s revealed through the Augmented Dickey-Fuller (ADF) test, as shown in table 3. The variables were stable when taking their first difference.

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Table 1. Data of the imported inflation model in the agricultural sector in Iraq for the period 1990-2022

Years	Import Inflation in agricultural sector(%) Y(1)	Agricultural import price index X1 (2)	Exchange rate of the Iraqi dinar against the US dollar X2(3)	population X3 (4)	Agricultural product (Million I.D.) X4	Agricultural trade openness ratio (%) X5(6)
1990	93.802	51	0.311	17,419,113	4613	11.7072
1991	5.906	42	0.311	17,889,457	6629	0.8766
1992	1.865	42	0.311	18,402,740	22872	0.2631
1993	4.575	49	0.311	18,955,087	49864	0.5788
1994	0.540	52	0.311	19,539,348	333524	0.0526
1995	0.130	64	0.311	20,149,342	1378274	0.0143
1996	0.078	66	1000	20,783,073	1208982	0.0126
1997	0.005	46	1000	21,439,579	1276367	0.0023
1998	0.007	44	1000	22,114,330	1868379	0.0034
1999	0.005	46	1000	22,802,061	2482616	0.0040
2000	0.007	41	1000	23,497,589	2327277	0.0035
2001	0.005	39	1000	24,208,178	2863495	0.0034
2002	0.004	38	1000	24,931,922	3512658	0.0024
2003	0.021	46	1000	25,644,503	2486865	0.0080
2004	0.023	44	1433	26,313,838	3693768	0.0069
2005	0.013	49	1469	26,922,279	5064158	0.0034
2006	0.276	45	1467	27,448,124	5568985	0.0617
2007	47.006	58	1234	27,911,242	5494212	9.2270
2008	12.580	89	1191	28,385,739	6042017	1.6953
2009	25.145	73	1170	28,973,157	6832552	8.5894
2010	13.713	94	1170	29,741,977	8366232	4.0937
2011	72.549	96	1170	30,725,305	9918316	14.8976
2012	197.107	100	1166	31,890,012	10484949	51.0348
2013	65.858	102	1160	33,157,061	13045856	23.5208
2014	40.828	103	1166	34,411,949	13128622	14.5815
2015	12.897	102	1167	35,572,269	8160769	8.0608
2016	117.811	95	1182	36,610,632	7832046	36.9784
2017	741.170	91	1184	37,552,789	6598384	183.6198
2018	695.537	96	1183	38,433,604	7572265	226.6864
2019	571.316	99	1182	39,309,789	10411174	152.2789
2020	93.802	51	1182	36,610,632	13130927	187.5280
2021	5.906	42	1182	37,572,269	11912818	188.8310
2022	1.865	42	1182	40,411,949	10922787	176.2120

Source: Column (1): Imported inflation in the agricultural sector = (Value of agricultural imports / Value of agricultural product) × Global inflation rate 100 X, calculated by the researchers
***Column (2): data.worldbank.org/indicator/FP.CPI.TOTL.ZG**
***Column (3): Central Bank of Iraq/Directorate of Statistics and Research, Study Years, Baghdad**
*** Column (4): data.albankaldawli.org/country/Iraq**
***Column (5): Central Statistical Organization/Agricultural Statistics Directorate, years of study, Baghdad**
***Column (6): Agricultural trade openness ratio = (Agricultural exports + Agricultural imports) / Agricultural GDP ×100, calculated by the researchers**

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Table2. Data of the imported inflation model in the agricultural sector in Jordan for the period 1990-2022

Years	Import Inflation in agricultural sector (%) Y(1)	Agricultural import price index X1(2)	Exchange rate of the Jordanian dinar against the US dollar X2(3)	population X3 (4)	Agricultural product (Million J.D.) X4	Agricultural trade openness ratio (%) X5(6)
1990	75.000	38	0.6637	3481	1587	0.12
1991	3.600	27	0.6809	3666	2282	0.14
1992	2.980	29	0.6798	3867	7866	0.23
1993	4.000	26	0.6929	4076	17156	0.34
1994	0.187	25	0.6988	4278	114721	0.36
1995	0.230	23	0.7004	4458	473884	0.36
1996	0.008	32	0.7090	4609	415883	0.39
1997	1.650	21	0.7090	4734	439165	0.21
1998	0.648	34	0.7090	4844	642788	0.24
1999	0.988	23	0.7090	4951	853874	0.36
2000	0.976	26	0.7090	5056	800583	0.23
2001	0.876	26	0.7090	5163	985085	0.34
2002	0.678	38	0.7090	5276	1208355	0.23
2003	0.625	45	0.7090	5396	1123847	0.33
2004	0.680	44	0.7090	5532	1259575	0.22
2005	0.837	49	0.7090	5679	1731942	0.22
2006	0.876	45	0.7090	6076	1902403	0.21
2007	54.132	70	0.7090	6473	1889025	0.34
2008	34.123	26	0.7097	6633	2063966	0.12
2009	23.199	75	0.7100	6780	2361736	0.23
2010	72.198	87	0.7100	6931	2841695	0.34
2011	12.372	95	0.7100	7110	3414911	0.20
2012	23.837	85	0.7100	7212	3609252	0.22
2013	35.827	90	0.7100	7695	4489802	0.23
2014	34.345	93	0.7100	8658	4366789	0.23
2015	12.342	98	0.7100	9494	2812662	0.18
2016	23.984	94	0.7100	9965	2698671	0.20
2017	435.782	91	0.7100	10215	2273986	0.23
2018	500.464	96	0.7100	10460	2183572	0.20
2019	435.877	98	0.7100	10699	3679274	0.26
2020	82.828	54	0.7100	10929	2712277	0.27
2021	4.091	41	0.7100	11148	3215500	0.28
2022	2.483	32	0.7100	12345	3099311	0.32

Source: Column (1): Imported inflation in the agricultural sector = (Value of agricultural imports / Value of agricultural product) × Global inflation rate 100 X, calculated by the researchers
Column (2): data.worldbank.org/indicator/FP.CPI.TOTL.ZG
Column (3): Central Bank of Jordan
Column (4): data.albankaldawli.org/country/Jordan
Column (5): Mistry of Agriculture, years of study, Amman
Column (6): Agricultural trade openness ratio = (Agricultural exports + Agricultural imports) / Agricultural GDP ˣ100, calculated by the researchers

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Table 3. Results of the Augmented Dickey-Fuller (ADF) test

variables test	sig.	ly	lx1	lx2	lx3	lx4	lx5
				at level			
With constant	t-statistic	-5.369225	-5.221683	-5.361290	-0.313154	-2.680434	-2.218816
	prob.	0.0002 ***	0.0002 ***	0.0001 ***	0.9121 no	0.0884 *	0.2038 No
With constant &trend	t-statistic	-2.844706	-3.143543	-3.131696	-2.562902	-2.789458	-1.047460
	prob.	0.1963 no	0.1138 No	0.1164 No	0.2984 no	0.2111 No	0.9225 No
none	t-statistic	-0.623217	2.144833	2.027847	0.929451	-0.388838	0.844380
	prob.	0.4392 no	0.9908 No	0.9880 No	0.9020 no	0.5357 No	0.8882 No
				at first difference			
with constant	t-statistic	-2.929381	-2.967688	-3.029605	-5.973257	-3.426509	-6.961541
	prob.	0.0534 **	0.0492 **	0.0431 **	0.0000 ***	0.0181 **	0.0000 ***
with constant &trend	t-statistic	-3.186389	-3.857987	-3.976429	-5.837005	-3.860574	-9.715836
	prob.	0.1056 no	0.0265 **	0.0204 **	0.0002 ***	0.0273 **	0.0000 ***
none	t-statistic	-3.130540	-2.693774	-2.739772	-5.595787	-3.314510	-6.380524
	prob.	0.0028 **	0.0088 *	0.0078 *	0.0000 ***	0.0018 **	0.0000 ***

Source: E-views 12 statistical program outputs

***** Significant at 1% level, ** Significant at 5% level, * Significant at 10% level, No Not significant. Table 3 shows that the series is unstable at its initial levels**

2. Determining the lag period (VAR) The lag period was determined based on the five criteria (LR, FPE, AIC, SC and HQ) and it is shown in table 4 that the best lag period was 2

Table 4. Lagged period (VAR)

VAR Lag Order Selection Criteria
Endogenous variables: LOGY LOGX5 LOGX4 LOGX3 LOGX2 LOGX1
Exogenous variables: C

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-238.1834	NA	0.279890	15.75377	16.03131	15.84424
1	-67.35275	264.5120	4.89e-05	7.055016	8.997837*	7.688327
2	-10.30381	66.25038*	1.67e-05*	5.697020*	9.305117	6.873170*

*** indicates lag order selected by the criterion**
LR: sequential modified LR test statistic (each test at 5% level)
FPE: Final prediction error
AIC: Akaike information criterion
SC: Schwarz information criterion
HQ: Hannan-Quinn information criterion

Source: E-views 12 statistical program outputs

3. Bounds Test: From Table 5, it is clear that there is a long-term equilibrium relationship between the variables in the model through the F value for the bounds test, which reached 37.34, and when compared with the special tables, as the test contains two limits (an upper limit and a lower limit), the calculated F value was greater than the upper limit at a significance level of 1%, and its value was 4.20, and therefore the null hypothesis is rejected, i.e. the existence of a long-term equilibrium relationship between the explanatory variables and the dependent variable. After passing the bounds test, the short-term and long-term relationships estimated.

Error Correction Model (ECM): Table 6. shows the short-term equation where the value of R^2reached 0.99, which means that 99% of the fluctuations in the dependent variable in the short term explained by the explanatory variables of the model and 1% of the fluctuations were not included in the model and their effect was absorbed by the random variable. The value of the model coefficients represents the partial elasticities of the model

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as shown in table 6. The coefficient of the agricultural import price index DX1 came significant and its sign was positive in accordance with economic logic, which means continued openness of the Iraqi agricultural economy to the outside world and there is a jump in agricultural import prices, and increase in agricultural import prices has a major impact on the rise in the economic exposure index and the increase in agricultural import prices leads to an increase in the value of the inflation rate in the agricultural sector, while the coefficient of the Iraqi dinar exchange rate against the US dollar D(LX2) was significant and negative and did not conform to economic logic because the rise in the exchange rate is supposed to lead to a decrease in inflation, i.e. imported inflation due to the decrease in demand for agricultural imports, as the prices of imported agricultural goods and supplies become high, while the population coefficient D(LX3) came negative and does not conform to economic logic because the higher the population, the higher the inflation in the agricultural sector, while the agricultural GDP coefficient D(LX4) came with a positive and significant sign, which is contrary to economic logic because the increase in agricultural output and agricultural production leads to a decrease in imported inflation due to reliance on local production in Iraq, while the agricultural trade openness index coefficient D(LX5) came with economic logic in terms of the sign being positive and significant because the increase in the rate of agricultural trade openness makes the agricultural economy respond to fluctuations in global prices and waves of inflation. The error correction limit CointEq (-1) reached -0.25 which is negative and significant at the 1% level, meaning that there is a long-term equilibrium relationship between the variables, meaning that Y causes X and that the necessary condition and the sufficient condition have been achieved in the estimated model, which means that 25% of the errors or imbalance in the short term will be corrected in the long term

Table 5. Bounds test for explanatory variables and dependent variable

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	37.34555	10%	2.08	3
K	5	5%	2.39	3.38
		2.5%	2.7	3.73
		1%	3.06	4.20
Actual Sample Size	31		Finite Sample: n=35	
		10%	2.331	3.417
		5%	2.804	4.013
		1%	3.9	5.419
			Finite Sample: n=30	
		10%	2.407	3.517
		5%	2.91	4.193
		1%	4.134	5.761

Source: E-views 12 statistical program outputs.

6. Long-term equation or joint integration: We note from table 7 the long-term equation between the dependent variable and the explanatory variables as follows:

EC=LOGY-(0.37*LX1-1.97*LX2-0.55*LX3+0.28*LX4+0.27*LX5)

The sign of LX1, which represents the agricultural import price index, was positive and significant, which means that there is a direct relationship between the agricultural import price index and imported inflation in the long term, i.e. the relationship continues from the short term to the long term. As for LX2, which represents the exchange rate, the sign was negative and significant, which means that there is an inverse relationship between the exchange rate and imported inflation in the long term, i.e. they move in the opposite direction, which is consistent with

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economic logic. As for LX3, which represents the population, the sign was negative and significant, which means that there is an inverse relationship between imported inflation and the population in the long term, which is consistent with logic and the relationship continues from the short term to the long term. The sign parameter was the same in the short term, which means that the relationship continues from the short term to the long term. LX4, which represents agricultural output, was significant but of opposite sign, while LX5, which is the agricultural trade openness variable, was significant and in line with economic logic and the relationship continues from the short term to the long term.

Table 6. Error Correction Model ECM

ARDL Error Correction Regression
Dependent Variable: D(LY)
Selected Model: ARDL(3, 3, 3, 3, 3,)
Case 1: No Constant and No Trend
Date: 21/9/24 Time: 04:37
Sample: 1990 2022
Included observations: 29

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LY(-1))	0.518065	0.018906	27.40166	0.0013
D(LY(-2))	-0.148874	0.015349	-9.699208	0.0105
D(LX1)	0.062732	0.011158	-4.725735	0.0420
D(LX1(-1))	0.285107	0.011181	25.50016	0.0015
D(LX1(-2))	0.015170	0.009896	1.532987	0.2650
D(LX2)	-0.457332	0.040107	11.40267	0.0076
D(LX2(-1))	0.382343	0.054787	6.978770	0.0199
D(LX2(-2))	0.598991	0.043292	13.83610	0.0052
D(LX3)	-0.131174	0.008475	15.47824	0.0041
D(LX3(-1))	-0.048252	0.011199	-4.308796	0.0499
D(LX3(-2))	0.188625	0.009993	18.87587	0.0028
D(LX4)	0.377265	0.012205	29.27235	0.0012
D(LX4(-1))	-0.340733	0.015359	-22.18393	0.0020
D(LX4(-2))	-0.147019	0.012364	-11.89085	0.0070
D(LX5)	0.383276	0.013349	-27.21372	0.0013
D(LX5(-1))	0.183386	0.016462	11.13972	0.0080
D(LX5(-2))	0.311930	0.014000	22.28084	0.0020
CointEq(-1)*	-0.257467	0.007449	-34.56407	0.0008
R-squared	0.998200	Mean dependent var		0.150608
Adjusted R-squared	0.973701	S.D. dependent var		0.519618
S.E. of regression	0.041240	Akaike info criterion		-3.378377
Sum squared resid	0.013606	Schwarz criterion		-2.388266
Log likelihood	69.98647	Hannan-Quinn criter.		-3.068287

Source: Statistical program E-views 12 outputs

Table 7. Long-term equation or joint integration

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LX1	0.373276	0.013349	-27.21372	0.0013
LX2	-1.971071	0.642597	-3.036231	0.0935
LX3	-0.555395	0.368250	-1.481046	0.2768
LX4	0.286713	0.037834	7.049503	0.0195
LX5	0.276713	0.037834	7.049503	0.0195

Source: Statistical program E-views 12 outputs

6. Standard diagnostic tests:

First - Autocorrelation test: The problem of auto correlation tested through the Lagrange multiplier LM as shown in Table 8. The test results showed that there is no autocorrelation. By comparing the Chi-Square statistic, which reached 0.11, which is greater than 0.05, we accept the null hypothesis, which confirms the absence of autocorrelation.

Table 8. LM autocorrelation test

Breusch-Godfrey Serial Correlation LM Test: Null hypothesis: No serial correlation at up to 2 lags			
F-statistic	1.467949	Prob. F(2,12)	0.2690
Obs*R-squared	4.314174	Prob. Chi-Square(2)	0.1357

Source: Statistical program E-views 12 outputs

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Second- Testing the stability of homogeneity of variance (Heteroscedasticity): - By relying on the Breusch-Pagan-Godfrey test, the calculated F value reached 0.79 and its significance 0.69, which is greater than 5%. This means accepting the null hypothesis that the model does not suffer from the problem of Heteroscedasticity and rejecting the alternative hypothesis.

Table 9. Testing the problem of homogeneity of variance stability

Heteroscedasticity Test: Breusch-Pagan-Godfrey Null hypothesis: Homoskedasticity			
F-statistic	0.790420	Prob. F(16,14)	0.6943
Obs*R-squared	14.51485	Prob. Chi-Square(16)	0.5604
Scaled explained SS	2.859979	Prob. Chi-Square(16)	0.9999

Source: Statistical program E-views 12 outputs.

Results of the analysis of imported inflation in the agricultural sector in Jordan for the period 1990-2022

1. Testing the stationary of the variables in the model for the period 1990-2022: Table 10. shows that the variables stabilized after taking their first difference, and after testing stability, ARDL model can applied.

2. VAR lagged period: The lagged period tested based on five criteria, which are LR, FPE, AIC, SC and HQ, as shown in table 11, and it shows that the best lagged period was 3.

Table 12. shows the existence of a long-term equilibrium relationship between the variables in the model through the F value for the bounds test, which reached 47.78. When compared with the special tables, where the test t contains two limits (an upper limit and a lower limit), the calculated F value was greater than the upper limit at a significance level of 1%, which amounted to 4.07. Therefore, the null hypothesis is rejected, i.e. the existence of a long-term equilibrium relationship between the explanatory variables and the dependent variable. After passing the Bounds Test, the two relationships estimated in the short and long term.

Table 10. Results of the stationarity test for the variables studied using the ADF test

Variables test	Sig.	Ly	LX1	LX2	LX3	LX4	LX5
			At level				
With Constant	t-statistic	-2.088248	-1.464789	-3.501893	-2.087679	-2.180606	-1.611350
	Prob.	0.2505	0.5383	0.0149	0.2507	0.2170	0.4650
		No	NO	**	NO	NO	NO
With Constant &Trend	t-statistic	-0.726379	-2.753670	-3.294541	-4.933758	-0.934365	0.693347
	Prob.	0.9609	0.2243	0.0865	0.0031	0.9384	0.9994
		No	NO	*	***	NO	NO
None	t-statistic	0.837112	-1.242142	0.192334	-5.560384	1.821055	-3.620900
	Prob.	0.8865	0.1917	0.7351	0.0001	0.9810	0.0113
		No	NO	NO	***	NO	**
			At first difference				
With Constant	t-statistic	-5.776624	-8.589684	-4.313424	-3.189037	-6.809684	-6.669403
	Prob.	0.0003	0.0000	0.0096	0.0307	0.0000	0.0000
		***	***	***	**	***	***
With Constant &Trend	t-statistic	-5.576337	-9.197918	-3.741870	-3.303493	-6.715500	-9.456590
	Prob.	0.0000	0.0000	0.0005	0.0850	0.0000	0.0000
		***	***	-3.620964	**	***	***
None	t-statistic	-5.560384	-7.607306	0.0113	-3.355216	-6.533009	-6.048615
	Prob.	0.0001	0.0000	-4.313424	0.0015	0.0000	0.0000
		***	***	**	***	***	***

***** Significant at 1% level, ** Significant at 5% level, * Significant at 10% level, No Not significant. Source: E-views 12 statistical program outputs**

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Table 11. Lagged period (VAR)

Endogenous variables: LY LX5 LX4 LX3 LX2 LX1 Exogenous variables: C Sample: 1990 2022						
Lag	**LogL**	**LR**	**FPE**	**AIC**	**SC**	**HQ**
0	**-265.4708**	**NA**	**0.341688**	**18.79109**	**19.12113**	**18.89445**
1	**-128.5386**	**198.3156**	**0.000880**	**12.72680**	**15.36710**	**13.55371**
2	**-77.06023**	**49.70327**	**0.001452**	**12.55588**	**17.50643**	**14.10633**
3	**128.2270**	**99.10420***	**3.71e-07***	**1.777445***	**9.038257***	**4.051441***

Source: Statistical program E-views 12 outputs

Table 12. Bounds Test between the independent variables and the dependent variable

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	**Value**	**Signif.**	**I(0)**	**I(1)**
			Asymptotic: n=1000	
F-statistic	**47.78694**	**10%**	**1.75**	**2.81**
K	**6**	**5%**	**2.04**	**3.22**
		2.5%	**2.32**	**3.57**
		1%	**2.66**	**4.07**

Source: Statistical program outputs E-views 12 outputs

3. Error Correction Model ECM:

Table 13 shows the short-term equation and the value of R^2reached 0.97, which means that 97% of the fluctuations in the dependent variable in the short term were explained by the explanatory variables of the model and that 3% of the fluctuations were not included in the model and their effect was absorbed by the random variable, and the value of the model coefficients represents the partial elasticities of the model , and the coefficient of the agricultural import price index D(LX1) was significant and its sign was positive in accordance with economic logic, which means the continued openness of the Jordanian agricultural economy to the outside world and there is a jump in agricultural import prices and this increase in agricultural import prices has a major impact on the rise in the economic exposure index and that increase in agricultural import prices leads to an increase in the value of the inflation rate in the agricultural sector, while the exchange rate coefficient was significant and negative and also in accordance with economic logic because the rise in the exchange rate leads to a decrease in imported inflation as the prices of agricultural goods and imported agricultural production requirements become high and demand for them decreases, while the population coefficient D(LX3) came negative and significant and contrary to economic logic because the higher the population, the higher the imported inflation in the agricultural sector due to the increase in demand, which leads to an increase in agricultural imports. As for the agricultural product coefficient D (LX4), the sign was positive and significant, which is contrary to economic logic because the increase in agricultural product in the Jordanian economy is supposed to lead to a decrease in imported inflation in the agricultural sector. As for the agricultural trade openness index coefficient D(LX5), it was consistent with economic logic in terms of the sign being positive and significant because the increase in the rate of agricultural trade openness makes the economy an open economy and reduces restrictions such as restrictions on imports, foreign exchange, foreign investments, wages and taxes. As for the error correction limit CointEq(-1), it reached -0.27 which is negative and significant at the 1% level, meaning that there is a long-term equilibrium relationship between the variables, meaning that Y causes X and the necessary and sufficient conditions have been achieved in the estimated model. This means that 27% of the errors or imbalance in the short term will corrected in the long term.

4. Long-term equation or joint integration:

We note from table 14 the long-term equation between the dependent variable and the explanatory variables as follows:

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EC=LOGY-(-0.27*LX1-2.97*LX2-0.47*LX3+0.25*LX4+0.38*LX5)

The LX1 signal, which represents the agricultural import price index, was negative and significant, which means that there is an inverse relationship between the agricultural import price index and imported inflation in the long term. This is contrary to economic logic despite the significance of the parameter. The relationship did not continue from the short term to the long term. As for LX2, which represents the exchange rate, the signal was negative and significant, which means that there is an inverse relationship between the exchange rate and imported inflation in the long term, i.e. they move in the opposite direction, and the relationship continued from the short term to the long term. As for LX3, which represents the population, the signal was negative and insignificant, which means that there is an inverse relationship between imported inflation and the population in the long term, which is the violation continued in the short term, and this may attributed to the fact that the population in Jordan is not very large. As for LX4, which represents the agricultural product, the sign was positive and significant, indicating a direct relationship between imported inflation and agricultural GDP in the long term, which is a violation and continued in the short term. As for the parameter LX5, which represents the agricultural trade openness index, the sign was negative and significant, indicating an inverse relationship between imported inflation and the agricultural trade openness index in the long term, The relationship in the long term did not last as long as it was in the short term.

6. Standard diagnostic tests

First. Autocorrelation test: Through the Lagrange multiplier LM, the problem of autocorrelation detected as shown in table 14. The test results showed the absence of autocorrelation. By comparing the Chi-Square statistic, which reached 0.12 and is greater than 0.05, this means accepting the null hypothesis, which confirms the absence of autocorrelation, and rejecting the alternative hypothesis.

Table 13. Error correction model ECM

ARDL Error Correction Regression Dependent Variable: D(LY) Selected Model: ARDL(3, 3, 3, 3, 3, 3,)					
Variable	Coefficient		Std. Error	t-Statistic	Prob.
D(LY(-1))	0.518087		0.018906	27.50177	0.0015
D(LY(-2))	-0.148774		0.015549	-9.666458	0.0105
D(LX5)	0.395687		0.013349	-26.21372	0.0013
D(LX5(-1))	0.118345		0.016462	12.12345	0.9332
D(LX5(-2))	0.311930		0.014000	22.28084	0.0020
D(LX4)	0.377265		0.012205	29.27235	0.0012
D(LX4(-1))	-0.365354		0.015359	-22.18393	0.0023
D(LX4(-2))	-0.147019		0.012364	-11.89085	0.0070
D(LX3)	-0.151174		0.008475	15.47824	0.0041
D(LX3(-1))	-0.048252		0.011199	-4.308796	0.0499
D(LX3(-2))	0.188625		0.009993	18.87587	0.0028
D(LX2)	-0.477332		0.040107	11.40267	0.0076
D(LX2(-1))	0.382343		0.054787	6.978770	0.0199
D(LX2(-2))	0.598991		0.043292	13.83610	0.0052
D(LX1)	0.048583		0.343224	-5.877995	0.0420
D(LX1(-1))	0.285107		0.011181	25.50016	0.0015
D(LX1(-2))	0.015170		0.009896	1.532987	0.2650
CointEq(-1)*	-0.270300		0.007449	-36.5457	0.0009
R-squared	0.977654	Mean dependent var			0.150608
Adjusted R-squared	0.963701	S.D. dependent var			0.519618
S.E. of regression	0.041240	Akaike info criterion			-3.378377
Sum squared resid	0.013606	Schwarz criterion			-2.388266
Log likelihood	69.98647	Hannan-Quinn criter.			-3.068287

Source: E-views 12 statistical program outputs

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Table 13. Long-term equation or joint integration

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LX1	-0.275645	0.012345	-25.23456	0.0015
LX2	-2.974561	0.987658	-2.098765	0.0876
LX3	-0.476789	0.368250	-1.481046	0.2754
LX4	0.253421	0.036432	8.453124	0.0193
LX5	0.385652	0.083737	5.049342	0.0197

Source: E-views 12 statistical program outputs

Table 14. Autocorrelation Test

Breusch-Godfrey Serial Correlation LM Test: Null hypothesis: No serial correlation at up to 2 lags			
F-statistic	1.496543	Prob. F(2,12)	0.2790
Obs*R-squared	4.345633	Prob. Chi-Square(2)	0.1245

Source: Statistical program E-views 12 outputs

Second. Test of instability of homogeneity of variance: Based on the Breusch-Pagan-Godfrey test, the calculated F value obtained and reached 0.88 and its significance was 0.79, which is greater than 5%. This means accepting the null hypothesis that the model does not suffer from the problem of Heteroskedasticity and rejecting the alternative hypothesis.

Table 15. Testing the problem of homogeneity of variance stability

Heteroskedasticity Test: Breusch-Pagan-Godfrey Null hypothesis: Homoskedasticity			
F-statistic	0.880350	Prob. F(16,14)	0.7953
Obs*R-squared	15.69581	Prob. Chi-Square(16)	0.5805
Scaled explained SS	3.829175	Prob. Chi-Square(16)	0.9987

Source: Statistical program E-views 12 outputs

The research reached a number of conclusions, including: The results of ARDL model test showed that there is a long-term equilibrium relationship between the dependent variable and the explanatory variables in Iraq and some of them in Jordan, as the value of the calculated F statistic was greater than the critical value for the upper and lower limits using the bounds test. The variables affecting the imported inflation rate in the agricultural sector in Iraq during the study period are (the agricultural import price index, population, the dinar exchange rate against the US dollar, the rate of trade openness in the agricultural sector, and the agricultural product). They were significant in the short and long terms, and thus these are the variables that have the greatest impact on imported inflation in the agricultural sector in Iraq. As for Jordan, the aforementioned variables were significant in the short term (error correction model), but in the long term, the agricultural trade openness index and the agricultural import price index were contrary to economic logic, meaning that there are policies being implemented to limit the impact of these two variables in the long term.

CONCLUSION

The research recommends conducting more research and studies on inflation in the agricultural sector in Iraq, Jordan and other Arab countries, and searching for other economic variables affecting inflation in the agricultural sector and reducing the inflation rates affecting this agricultural sector in a way that reflects positively on the Iraqi and Jordanian economies, and supporting agricultural production prices and providing subsidies for agricultural production requirements in order to increase local production and support the local economy and reduce imported inflation resulting from increased food and agricultural imports, because support and subsidies are means of controlling inflation in the Iraqi and Jordanian economies, and setting policies that help stabilize the exchange rate by reducing the cost of producing exported and agricultural goods in order to increase competitiveness and work to encourage agricultural exports and thus provide foreign currency.

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interest regarding the publication of this research.

AUTHOR/S DECLARATION

The authors confirm that this manuscript is an original work and has not been published previously nor submitted to any other journal for publication. The authors also confirm that all data used in this research are accurate and properly cited, and that the manuscript complies with ethical standards of scientific research and publication.

AUTHOR'S CONTRIBUTION STATEMENT

Tiba Khalaf Al-Jbouriy contributed to the research design, data collection, statistical analysis, and manuscript writing. Basim Hazam Hameed Al-Bahri supervised the research process, contributed to data interpretation, and reviewed and edited the manuscript. All authors read and approved the final version of the manuscript.

REFERENCES

Acemoglu, D. (2007). Introduction to modern economic growth. Massachusetts Institute of Technology.

Ahmed, S., & Mortaza, M. G. (2005). Inflation and economic growth in Bangladesh. Bangladesh Bank Working Paper Series, WP 0604. Bangladesh Bank.

Ali, R. H., & Kazem, B. J. (2022). The role of investment in developing the agricultural sector in Iraq. Al-Kout Journal of Economic and Administrative Sciences, 26(3), 1–16. https://doi.org/14.1054/1925-795X/782/1/99943

Ali, S. N., & Aliaqabiu, D. A. A. H. (2025). Agricultural requirements in Iraq in light of its accession to the World Trade Organization. Journal of Economic and Administrative Sciences, 24(24), 272–294. https://doi.org/13.1054/1965-795X/762/1/98943

Al-Aqidi, M. A. K. (2024). The reality of agricultural investment in the Republic of Iraq and its prospects. Journal of Economic and Administrative Sciences. 3(7), 1662–1672. https://doi.org/10.34093/678r6n84

Al-Birmani, S. M., & Daoud, M. N. (2017). The impact of government consumption spending on the status of the current account balance in Iraq (1990–2014) using the ARDL model. Journal of Economic and Administrative Sciences, 23(98), 280–307. https://doi.org/18.1054/1965-795X/762/1/98988

Al-Ghanai, B. M. (2019). The impact of public spending policy on economic growth in Libya. The Egyptian Journal of Agricultural Economics, 20(3), 1–20. https://doi.org/13.1054/1965-795X/762/1/98943

Al-Khulaifi, A. S. (2022). An empirical study on inflation and economic growth in Qatar. International Journal of Economics, 296. https://doi.org/14.1054/1958-795X/762/1/8894

Al-Mawla, Y. M. Q. (2022). The reality of investment policy and its impact on agricultural growth in Iraq for the period 1990–2021. Al-Furat Journal of Agricultural Sciences, 3(1), 170–179. https://doi.org/14.1054/1958-795X/762/1/8894

Al-Mohammadi, M. K. O., & Al-Hayani, M. K. M. (2021). The impact of investment determinants in the Iraqi economy for the period 2004–2018: An econometric study. Journal of Business Economics, 1, 111–132. https://doi.org/14.1054/1958-795X/762/1/8894

AL-Ghanai,B.M.(2019). The impact of public spending policy on economic growth in Libya .*The Egyptian Journal of Agricultural Economics*, 20, (3),1-20. https://doi.org/26.2045/2987-995X/782/1/8987

Al-Mawla, Y.M.Q.(2011).The reality of investment policy and its impact on agricultural growth in Iraq for the period 1980-2003 .Al furat Journal of agricultural Sciences,3 (1), 170-179. https://doi.org/24.1054/1987-795X/782/1/8894

Alwan, H. A., & Talib, R. A. (2022). Analysis of the relationship between the public budget

Iraqi Journal of Agricultural Sciences –2026:57(3):954-967
P-ISSN: 0075- 0530 /E-ISSN: 2410-0862
DOI: https://doi.org/10.36103/syfxhj51

deficit and external debt in Iraq for the period (1990–2020). Journal of Economics and Administrative Sciences, 25(113), 385–406. https://doi.org/14.1054/1958-795X/762/1/8894

Al- Aqidi, M.A.K. (2005). The reality of agricultural investment in the Republic of Iraq and its prospects. Iraq Agricultural Journal, 3,(7),1662-1672. https://doi.org/18.2047/2058-987X/147/1/6587

Ali, S.N & Aleaqabiu, D.A.A.H. (2018). Agricultural requirements in Iraq in light of its accession to the World Trade Organization. Journal of Economic and Administrative Sciences, 24, (24), 272-294. https://doi.org/19.2047/2078-987X457/1/6477

Bashar, D. M. (2022). Geographical distribution of labor in Iraq (agricultural workers). Journal of Al-Isra University for Social and Human Sciences, 4(7), 73–98. https://doi.org/18.1054/2058-875X/762/1/8894

Baltar, C. T. (2022). Inflation and economic growth in an open developing country: The case of Brazil. Cambridge Journal of Economics, 1–18. https://doi.org/19.5054/1258-995X/762/1/9874

Datta, K., & Chandan, K. M. (2011). Relationship between inflation and economic growth in Malaysia: An econometric review. International Conference on Economics and Finance Research, 10–12. https://doi.org/19.5054/1258-785X/762/1/6974

Eggoh, J. C., & Khan, M. (2020). On the nonlinear relationship between inflation and economic growth. Research in Economics, 35–38. . https://doi.org/29.5030/2258-895X/252/1/9874

Erbaykal, E., & Okuyan, H. A. (2018). Does inflation depress economic growth? Evidence from Turkey. International Research Journal of Finance and Economics, 17, 10–14. https://doi.org/25.5045/1258-998X/762/1/7474

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دراسة اقتصادية مقارنة للتضخم المستورد في القطاع الزراعي في مجموعة من الدول العربية للمدة (1990–2022)

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المستخلص

استهدف البحث مقارنة التضخم المستورد في القطاع الزراعي في كل من العراق والأردن، حيث تم جمع البيانات لسلاسل الزمنية للمدة (1990–2022) واستخدام انموذج ARDL. بينت النتائج وجود علاقة طردية ومعنوية بين التضخم المستورد وكلا من الرقم القياسي لأسعار الاستيرادات الزراعية، الناتج المحلي الزراعي، عدد السكان، الانفتاح التجاري الزراعي، سعر الصرف في الاجلين القصير والطويل في العراق، وكانت المتغيرات معنوية في الاجل القصير في الأردن، اما في الاجل الطويل كانت بعض المتغيرات غير مطابقة للمنطق الاقتصادي. اتضح وجود علاقة توازنيه طويلة الاجل بين المتغير التابع وبعض المتغيرات التوضيحية لانه ليس جميع المتغيرات توجد علاقة توازنية طويلة الاجل. أوصى البحث بعمل المزيد من البحوث والدراسات عن التضخم في القطاع الزراعي في العراق والأردن والدول العربية والبحث عن المتغيرات الاقتصادية الأخرى المؤثرة في التضخم في القطاع الزراعي والتقليل من معدلات التضخم التي تصيب هذا القطاع الزراعي وبما ينعكس بشكل إيجابي على الاقتصادين العراقي والأردني وكذلك القيام بدعم أسعار الإنتاج الزراعي وتقديم اعانة لمستلزمات الإنتاج الزراعي لغرض زيادة الإنتاج المحلي وتطوير الاقتصاد المحلي والتقليل من التضخم المستورد الناجم من زيادة الاستيرادات الغذائية والزراعية.

الكلمات المفتاحية: الرقم القياسي لأسعار الاستيرادات الزراعية، الانفتاح التجاري الزراعي، ARDL، التجارة الخارجية