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The Economic Effects of Economic Reform Programs and Policies in Iraq After 2003: An Applied Study on Some Economic Variables with Macroeconomic and Environmental Impact

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ABSTRACT

The economic effects of post-2003 economic reform policies in Iraq have had a clear impact on all economic sectors, including agriculture. These effects were studied using two econometric models. The first model examined the impact of unemployment, greenhouse gas emissions, and total spending on scientific research on GDP. The second model examined the impact of growth, inflation, the budget deficit, and the balance of payments on the economic growth rate. The research concluded that greenhouse gas emissions had a positive impact on GDP, while spending on research and development showed a negative impact. Unemployment, however, had a positive impact, reflecting a delayed response to some labor market variables. The results of the second model showed that inflation had positive effects, although these effects were considered acceptable and within the safe range for developing countries. The budget deficit showed a clear negative impact, while the balance of payments had a positive impact, reflecting an improved foreign trade situation and its positive effect on supporting economic growth rates. The research recommended the need to develop an economic model that suits the characteristics of the Iraqi market, with the aim of moving the economy from a state of structural imbalance to a state of long-term equilibrium, which would ensure the stability of national food security, as well as implementing economic reform programs to diversify sources of national income and reduce dependence on oil revenues, which are affected by global fluctuations, in order to ensure the sustainability of agricultural and industrial development, and working to reduce inflation levels or keep them at safe levels, while taking into account the need to preserve the purchasing power of citizens.

***Keywords*:** Reform policies, sustainable agricultural development, structural unemployment, aggregate demand, foreign trade.

INTRODUCTION

Sustainable development is an approach that aims to meet the needs of the present generations without compromising the rights of future generations. Achieving these goals cannot be isolated from the implementation of real economic programs and reforms, and not just programs drawn up without real implementation, because implementing these programs with real steps is the basis for achieving the goals of sustainable development, as well as stabilizing other economic indicators, including financial stability and the efficient allocation of resources through the implementation of reforms in the banking sector, which would lead to achieving macroeconomic stability. The success of banking policies leads to improved financial quality indicators and reduced risks. Furthermore, monetary and financial stability contribute to strengthening monetary stability and exchange rate stability.

Institutions operating within a stable financial system are better positioned to support and achieve the Sustainable Development Goals (SDGs) because financial stability is a fundamental element of sustainable development, particularly SDG 3. This impact varies depending on the economic system of each country. Financial stability demonstrates a positive impact on SDGs 3 and 7 in countries with high capital buffers in their banking systems[1]. Political stability also plays a crucial role in economic growth and achieving the Sustainable Development Goals, and a stable political environment contributes to building a coherent and continuous path towards sustainable development[2].

The problem is that Iraq suffers from high inflation rates and a large budget deficit, in addition to environmental problems that have worsened recently. The impact of these factors on economic growth was evident, which negatively affected the implementation of economic reform policies. The research aims to determine the impact of certain environmental and social factors on the implementation of economic reform programs and to measure the pace of economic recovery.

Materials and Method

The time period covered by the research is after 2003 until the year 2024, relying on a set of economic indicators. The first model represents the impact of unemployment, carbon dioxide emissions, and research and development spending as a percentage of GDP on the dependent variable, GDP. The second model examines the impact of inflation rates, budget deficits, and the balance of payments on economic growth rates. These two models reveal the economic and social effects of the economic reform programs implemented by the government to advance overall economic development, and agricultural development in particular.

Previous Studies

The study by Belabiod Khadidja and Brahimi Benharrat Hayet (2020) aims to study the relationship between greenhouse gas emissions, represented here by carbon dioxide, and consumption of fossil and renewable energy sources in Germany using standard analysis represented by the vector autoregression (VAR) model during the period 1970–2017. The results showed that Germany consumed double the amount of energy, and this was due to the decrease in greenhouse gas emissions in the medium and long term, which was due to the shift towards clean energy sources. This had a negative impact on per capita GDP from the first year, despite the positive relationship with fossil energy consumption [3].

In his 2024 research, Merwan Haid addressed the reality of carbon dioxide emissions in Algeria and then took the history of this phenomenon as a basis for estimating its equation in terms of economic growth and some economic variables using the Autoregressive Distributed Lag (ARDL) model. The results of the estimation showed that there is a direct relationship between economic growth and carbon dioxide emissions, as economic growth is accompanied by an increase in production, consumption and energy use, which leads to an increase in CO_2 emissions. Among the studied independent variables, it has become clear that population size or population density plays a significant role in increasing carbon dioxide emissions. followed by energy use, then economic growth. In the short term, a high rate of imbalance correction of 105% was observed, which shows a very high adaptation [4].

The study by Al-Beltagy, Walaa Abdallah (2023) aimed to study the effect of a range of factors on the dependent variable, which in this case is the rate of carbon dioxide emissions in Saudi Arabia, was studied using the ARDL model. The independent variables consisted of a group of the most important variables affecting Saudi economic growth, namely GDP per capita, population growth, trade, foreign direct investment, net inflows, total natural resource revenues, and the number of factories operating within Saudi Arabia. The results showed a short-term inverse relationship between per capita GDP, trade, foreign direct investment and net inflows, and the number of factories located within Saudi Arabia, and the carbon dioxide emissions index. There was also a short-term positive relationship between emissions and both population growth and natural resource revenues. In contrast, a strong and significant long-term positive relationship was found between carbon dioxide emissions on the one hand, and both population growth, total natural resource revenues and the number of factories located in Saudi Arabia on the other hand. A long-term inverse relationship also appeared between per capita GDP, trade, FDI , N Inflow, and CDE although this relationship is not strong and not highly significant [5].

The study by Hallam, Zouaouia, 2017 aimed to discover the relationship between economic growth, CO2 emissions, and fossil fuel use in Algeria during the period (1980-2014). The study concluded by applying the EKC model, in the case of Algeria, given the great similarity between the characteristics of the Algerian economy and the assumptions of Simon Kuznets' model, to identify the intensity of use of fossil energy sources in Algeria and the possibility of achieving sustainable economic growth [6].

Alwan, K.H. (2014) investigated the long-term dynamic relationship between economic growth and carbon dioxide (CO2) emissions in Jordan, within the framework of the Environmental Kuznets Curve (EKC) assumptions. The analysis revealed that the results of the CO2 emissions model analysis are consistent with the assumptions of the Environmental Kuznets Curve. Furthermore, it demonstrated a bidirectional causal relationship between the model variables in both the short and long term.. Accordingly, the study concluded that environmental considerations should be taken into account when formulating macroeconomic policies, and that the use of environmentally clean technologies in the industrial and transportation sectors should be prioritized [7].

The research by Taher, Zainab Fadel Muhammad (2023) aimed to analyze the relationship between economic growth and CO2 emissions in Turkey. over three decades. It also sought to provide insights into the environmental

sustainability of Turkey's economic growth and to inform policymakers on how to address climate change in the country. The study concluded that the environmental Kuznets curve is what the Turkish economy has focused on, and that attention to air quality and the use of environmentally friendly technologies are among the most important research recommendations. Furthermore, it stressed the need for reform programs to focus on environmental sustainability in order to achieve the Sustainable Development Goals[8].

This research examines the impact of inflation on economic performance and growth rates in Egypt. Based on the econometric model used, the study reached several important conclusions, including a unidirectional causal relationship between inflation rates and economic growth rates. It also found no significant impact of exports and imports of goods and services on economic growth rates. Furthermore, the analysis showed that inflation has an adverse effect on economic growth rates in Egypt during the period under study. The study recommends reducing government consumption spending when inflation rates exceed safe levels and increasing investment rates, given the direct relationship between investment and increased supply of goods and services. Finally, it recommends directing credit granted to the private sector towards sectors and activities with high social and economic returns from a long-term sustainable development perspective [9].

The research Al-Dabbagh, Nawwar Kanaan, 2023 addressed the theoretical frameworks and empirical studies that analyzed and interpreted the mechanism and channels of influence that high levels of public budget deficit can exert on economic growth. It also tested the research hypothesis by adopting the standard approach to diagnose analysis of the economic effects of the general budget deficit on economic growth rates in Iraq, using Ordinary Least Squares (OLS) based on quarterly data for the period 2004-2021. The results clearly revealed the negative impact of the public budget deficit on the economic growth index, which can be explained in light of the sources of financing and the structure of public expenditures in Iraq. In terms of the structure of financing the deficit, it relies on the banking sector. On the other hand, in terms of public expenditures , the negative effect of the public budget deficit on economic growth indicates the weakness of government investment spending. Thus, the increase in public expenditure items is of a consumption nature and not an investment nature [10].

This research also examines the effect of Iraq's budget deficit and trade balance on the country's general price level during the period (2004 – 2020). Annual data from official sources were used. The research also posits that the Iraqi economy suffers from a twin deficit, with the deficit shifting from the trade balance to the budget, thus driving inflation, given Iraq's nominal financial wealth under a rentier economy. This research concludes that a causal relationship exists between the net budget deficit and the net trade balance. The net impact of budget shocks on inflation is relatively weak. However, the net trade balance variable has a significant contribution to inflation rate changes due to the weakness of domestic production sectors and the heavy reliance on imports to meet domestic demand [11].

The paper aims to try to cover the details of the general budget in Iraq by addressing the results of the budget and reaching the impact of the deficit on economic growth in Iraq during the period 2003-2019, while giving importance to explaining the sectoral effects of the budget deficit and the developmental effects that may affect the economy in the coming periods.. The research concluded that the production structure is disrupted due to dependence on oil, and that budget surpluses since 2003 do not indicate an improvement in the situation, operating expenses represent a significant and substantial proportion of total expenditures in the general budget [12].

Theoretical Framework

Gross Domestic Product (GDP)

Gross Domestic Product is a measure of the value added that results from the production of goods and services during a specific period of time, usually estimated at one year. [13,14].

Inflation

Despite being one of the most common economic terms, there is no consensus among economists on its definition. This stems from differing opinions on its precise meaning, as the term is used to describe several situations, such as excessive increases in the general price level, inflation of monetary income or a component of monetary income like wages or profits, rising costs, excessive creation of monetary reserves, and so on. Economist Gardner Ackley defines inflation as a sustained and significant rise in the general price level. Based on this definition, he argues that a slight or intermittent increase in prices is not considered inflation. Ackley adds that this phenomenon represents a state of disequilibrium and should be analyzed using dynamic, rather than static, criteria [15].

Budget deficit

A budget deficit can be defined as an economic situation where government spending exceeds public revenue (such as taxes and fees) during a given fiscal year. This negative balance represents a financial deficit, and governments are forced to cover it through domestic or external borrowing, which means an increase in public debt. [16].

Economic growth

It is the cumulative increase in the volume of final goods and services produced in an economy over a specific period. It is usually measured as a percentage increase in real GDP or per capita income and is considered a quantitative indicator of economic performance, demonstrating real growth that exceeds population growth [17].

Balance of payments

It is the balance that records the value of rights and debts arising between a particular country and the outside world, which arises as a result of all kinds of economic relations between residents of that country and residents abroad, during one year [18].

Results

The results of the first model, which studies the relationship between GDP as a dependent variable and the unemployment rate, carbon dioxide emissions, and spending on research and development as a percentage of GDP, will be discussed as follows:

First Model

$Y_i = Gross\ domestic\ Product$ (Unexplained variable)

Explanatory variables:

$X_1 = Unemployment\ rate$

$X_{2=}Carbon\ dioxide\ emissions$

$X_3 = Spending\ on\ research\ and\ development\ as\ a\ percentage\ of\ GDP$

Unit Root Testing (Augmented Dickey–Fuller) (ADF) Method

The unit root test is one of the most important statistical tests, particularly in the analysis of time series, which are generally characterized by their instability due to the influence of numerous factors. This test aims to distinguish between stationary and non-stationary time series, as this has a significant and fundamental impact on the accuracy of econometric models. It is worth noting that a stationary time series is one whose mean and variance remain constant, unlike a non-stationary series whose mean and variance change over time. Therefore, failing to perform a stationarity test will lead to econometric problems that affect the results and even give inaccurate values for the model parameters. A stationary time series is one whose mean and variance remain constant over time, while a non-stationary series is characterized by continuous changes in its statistical properties, especially the mean, over time. Neglecting this test leads to serious econometric problems, most notably obtaining spurious regression relationships that yield seemingly statistically significant coefficients but lack real economic meaning[19].

Table 1. Unit Root Test using the Augmented Dickey-Fuller (ADF) Method

	At level			First Defference		
Y	constant	Constant and trend	Without trend	constant	Constant and trend	Without trend
t-Statistic	-1.973122	-1.684795	0.074498	-4.459396	-4.613276	-4.165787
Prob	0.2972	0.7390	0.6522	0.0010	0.0035	0.0001
X1	constant	Constant and trend	Without trend	constant	Constant and trend	Without trend
t-Statistic	-3.516747	-3.441721	-0.472386	-6.349423	-6.410061	-6.403124
Prob	0.0122	0.0591	0.5051	0.0000	0.0000	0.0000
X2	constant	Constant and trend	Without trend	constant	Constant and trend	Without trend
t-Statistic	0.156516	-2.954020	2.719224	-7.688628	-7.710984	-3.247926
Prob	0.9665	0.1567	0.9980	0.0018	0.0000	0.0000
X3	constant	Constant and trend	Without trend	constant	Constant and trend	Without trend
t-Statistic	-1.619746	-2.072785	0.558348	-6.527534	-6.518066	-6.403124
Prob	0.4640	0.5458	0.8329	0.0000	0.0000	0.0000

Source: Results of Statistical program E-views 10

Estimating Model Parameters Using the ARDL Model

The results of the ARDL model, shown in Table 2, indicate logical findings and high explanatory power, represented by a high value for the multiple coefficient of determination (MCD) of approximately 0.955. Furthermore, the model was statistically significant at acceptable levels.

When interpreting the variables, it was found that the carbon dioxide emissions variable had a positive and significant impact. This confirms the dependence of economic growth in Iraq on carbon-based activities, including oil, which is a primary source of revenue for the government budget. Regarding spending on research and development, its significance was significant, but it was negative (-0.361). This can be interpreted as this variable being a heavy burden, as it lacks a rapid impact on the economy due to the absence of productive returns. The unemployment variable showed a positive impact at the second slowdown point (0.330). This clearly indicates that labor market variables do not receive a rapid response from output, thus contributing to unemployment in the labor market.

Table 2. Estimation using the Autoregressive Distributed Lag (ARDL) model

Dependent Variable: LY
Method: ARDL
Date: 03/04/26 Time: 01:15
Sample (adjusted): 2004S1 2024S2
Included observations: 42 after adjustments
Maximum dependent lags: 6 (Automatic selection)
Model selection method: Akaike info criterion (AIC)
Dynamic regressors (2 lags, automatic): LX1 LX2 LX3
Fixed regressors: C
Number of models evalulated: 162
Selected Model: ARDL(1, 2, 1, 2)
Note: final equation sample is larger than selection sample

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
LY(-1)	0.627247	0.078802	7.959813	0.0000
LX1	-0.162512	0.120054	-1.353658	0.1853
LX1(-1)	-0.098106	0.122780	-0.799044	0.4302
LX1(-2)	0.330921	0.115502	2.865056	0.0073
LX2	1.467001	0.387943	3.781488	0.0006
LX2(-1)	-1.037667	0.383615	-2.704967	0.0109
LX3	-0.361560	0.092010	-3.929587	0.0004
LX3(-1)	0.045583	0.096331	0.473188	0.6393
LX3(-2)	-0.109906	0.104849	-1.048226	0.3024
C	-2.500056	1.784902	-1.400668	0.1709

R-squared	0.955273	Mean dependent var	19.04804
Adjusted R-squared	0.942693	S.D. dependent var	0.504284
S.E. of regression	0.120720	Akaike info criterion	-1.186431
Sum squared resid	0.466345	Schwarz criterion	-0.772700
Log likelihood	34.91505	Hannan-Quinn criter.	-1.034782
F-statistic	75.93832	Durbin-Watson stat	1.866498
Prob(F-statistic)	0.000000		

Source: Results of Statistical program E-views 10

Error Correction Model (ECM)

The short-run estimation results of the ARDL model show acceptable statistical quality, with a coefficient of determination (R-squared) of approximately 0.656. This indicates that the independent variables explain 65.6% of the changes in Iraq's GDP (LY) in the short run.

Standardly, the error correction coefficient (CointEq(-1)) showed a highly significant negative sign with a p-value of -0.372 ($p < 0.0000$). This confirms the presence of cointegration between the variables and suggests that the model corrects for 37.2% of deviations from equilibrium at each time to return to equilibrium in the long term.

Table 3.. Model equation in the short run: Error correction model (ECM).

ARDL Error Correction Regression

Dependent Variable: D(LY)
Selected Model: ARDL(1, 2, 1, 2)
Case 2: Restricted Constant and No Trend
Date: 03/04/26 Time: 01:56
Sample: 2003S1 2024S2
Included observations: 42

ECM Regression
Case 2: Restricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LX1)	-0.162512	0.093885	-1.730962	0.0931
D(LX1(-1))	-0.330921	0.093124	-3.553537	0.0012
D(LX2)	1.467001	0.312466	4.694919	0.0000
D(LX3)	-0.361560	0.075476	-4.790429	0.0000
D(LX3(-1))	0.109906	0.065820	1.669788	0.1047
CointEq(-1)*	-0.372753	0.052237	-7.135790	0.0000
R-squared	0.656941	Mean dependent var		0.044044
Adjusted R-squared	0.609294	S.D. dependent var		0.182087
S.E. of regression	0.113816	Akaike info criterion		-1.376907
Sum squared resid	0.466345	Schwarz criterion		-1.128668
Log likelihood	34.91505	Hannan-Quinn criter.		-1.285918
Durbin-Watson stat	1.866498			

Source: Results of Statistical program E-views 10

Estimating the long-term equation

Table 4 shows a stable equilibrium relationship between Iraq's GDP and the independent variables. Econometric analyses revealed a strong and significant positive impact of carbon dioxide emissions (LX2) on GDP, with a coefficient of 1.151, which is statistically significant at acceptable levels. This confirms that a 1% increase in emissions leads to a 1.15% increase in GDP. Conversely, spending on research and development (LX3) showed a significant negative impact, with a coefficient of -1.142. This indicates that this spending has not yet demonstrated its impact and has not yet become a positive driver of long-term growth within the characteristics of an economy like Iraq's, which is characterized as a rentier economy.

The results for the unemployment variable showed that it was not statistically significant in the long run, although the significance level was 0.55, which is close to acceptable statistical levels. This can be explained by the nature of the Iraqi economy, which relies heavily on the oil sector as a source of budget revenue and a major contributor to GDP. Furthermore, the oil sector is not characterized by a strong capacity to create jobs, as it depends on foreign labor. Oil companies operating in Iraq employ workers they have brought in to work within the country at competitive wages, thus depriving local workers of employment opportunities. Additionally, GDP growth is not structurally linked to unemployment; that is, the value added by labor is not clearly related to economic growth. This is evident from an econometric perspective through the general relationship in the cointegration equation.

Table 4. Results of estimating long-run equations

Levels Equation

Case 2: Restricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LX1	0.188603	0.316479	0.595943	0.5554
LX2	1.151794	0.193624	5.948608	0.0000
LX3	-1.142535	0.428468	-2.666556	0.0119

C	-6.707004	4.454724	-1.505594	0.1420

EC = LY - (0.1886*LX1 + 1.1518*LX2 -1.1425*LX3 -6.7070)

Source: Results of Statistical program E-views 10

Cointegration Test Using the Bounds Test

The results in Table 5 indicate a strong and significant long-term cointegration relationship between the variables. The calculated F-statistic was approximately 9.052, and when compared to the critical values at a significance level of 1%, it is higher than the upper limit I(1) of 4.66. Therefore, the alternative hypothesis, which confirms the existence of a long-term equilibrium relationship between Iraq's GDP and the independent variables, is accepted.

Table 5. Cointegration test for the study variables according to the Bounds Test

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	9.052354	10%	2.37	3.2
k	3	5%	2.79	3.67
		2.5%	3.15	4.08
		1%	3.65	4.66

Source: Results of Statistical program E-views 10

Diagnostic tests:

First: - Detecting the problem of Heteroskedasticity through the (Breusch-Pagan-Godfrey) test:

It is noted from Table (6) of the Heteroskedasticity test, the probability values (Prob) are greater than 5%. which states that there is no problem of heteroscedasticity.

Table 6. Results of the BPG test

Heteroskedasticity Test: Breusch-Pagan-Godfrey			
F-statistic	1.292084	Prob. F(9,32)	0.2793
Obs*R-squared	11.19463	Prob. Chi-Square(9)	0.2626
Scaled explained SS	4.667217	Prob. Chi-Square(9)	0.8623

Source: Results of Statistical program E-views 10

Second: - Identifying the problem of Autocorrelation through the (LM) test:

The results of table (7) show that the model does not suffer from an autocorrelation problem.

Table 7. Results of the LM test to detect the presence of an Autocorrelation problem

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	0.533544	Prob. F(2,30)	0.5920
Obs*R-squared	1.442611	Prob. Chi-Square(2)	0.4861

Source: Results of Statistical program E-views 10

Third: Testing the normal distribution of residues according to the Jarque-Bera test:

Figure (1) shows that the Jark-Pera value was 0.679956, and the probability value was 0.711786, which is greater than 5%. This indicates acceptance of the null hypothesis, meaning that the residuals are normally distributed.

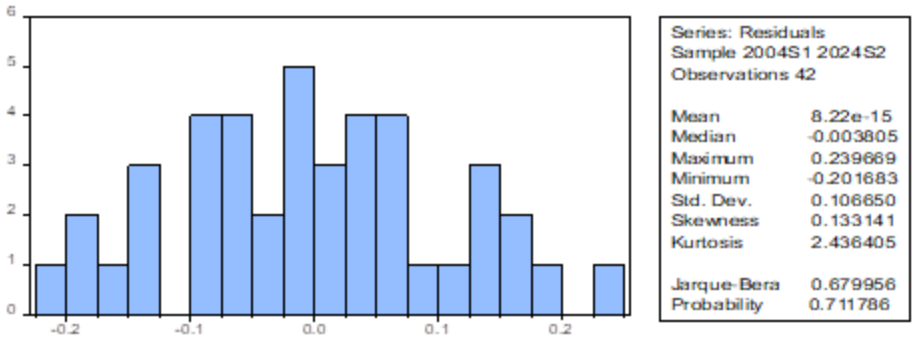

Figure 1. Testing the normal distribution of residues

Source: Results of Statistical program E-views 10

Fourth: Testing the problem of Heteroskedasticity (White test)

Table 8 indicates that the model is free from the problem of heteroscedasticity. This confirms the efficiency of the estimated parameters and the accuracy of the statistical results obtained for the Iraqi economy.

Table 8. White Test Results

Heteroskedasticity Test: White			
F-statistic	1.298242	Prob. F(9,32)	0.2762
Obs*R-squared	11.23371	Prob. Chi-Square(9)	0.2600
Scaled explained SS	4.683510	Prob. Chi-Square(9)	0.8610

Source: Results of Statistical program E-views 10

Fifth: Detecting the structural stability of the model's parameters through the Cusum and Squares Cusum tests.

The results in Figure 2 indicate structural stability during the research period, which provides acceptable confidence in the results and reflects their suitability for developing sound economic policies.

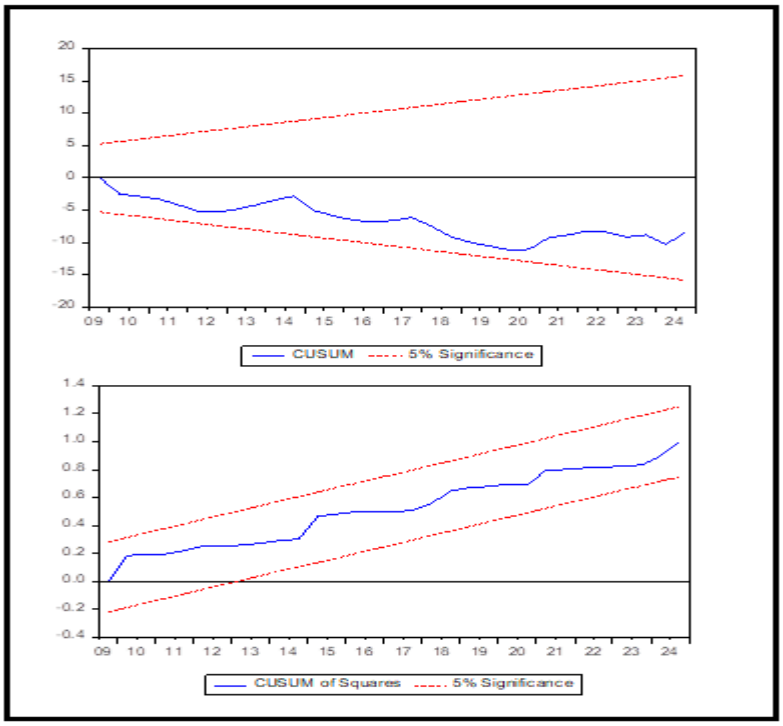

Figure2. Results of the CUSUM and CUSUM of Squares test

Source: Results of Statistical program E-views 10

Akaike Information Criteria

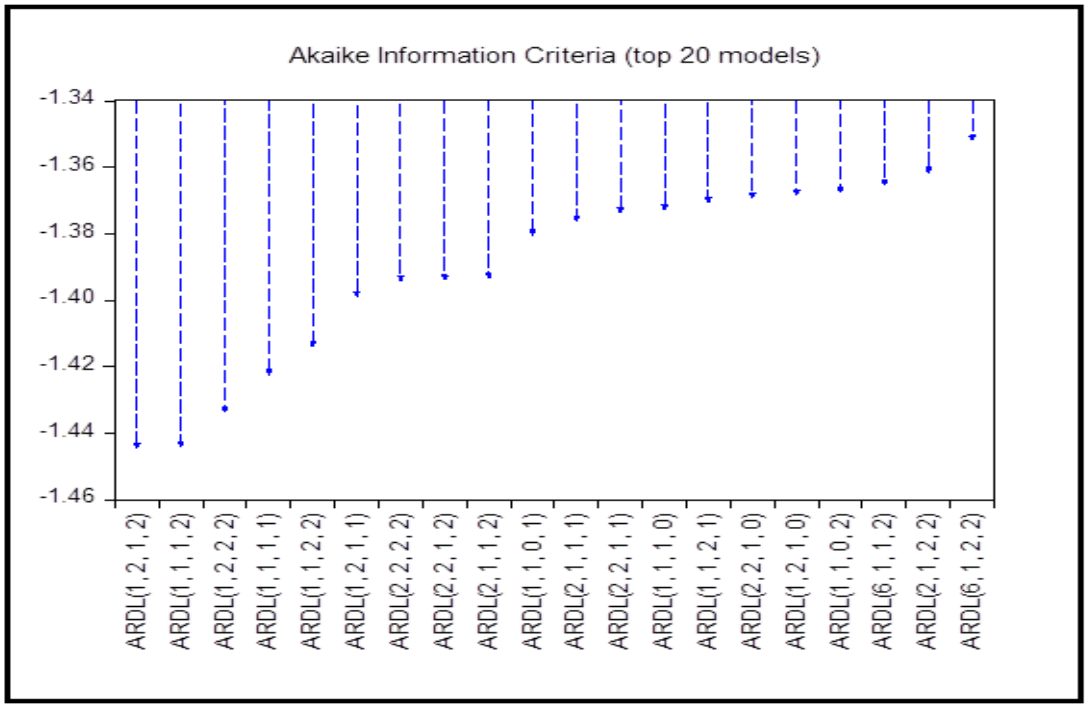

Figure 3. Results of Akaike Information Criteria

Source: Results of Statistical program E-views 10

Results of Model No 2

To measure the pace of economic recovery, the economic growth rate variable was chosen, which reflects growth or an increase in the production of goods and services. Other key indicators include: improved employment data and lower unemployment rates, higher consumption and spending rates, increased corporate profits, and stable or declining inflation rates, indicating the economy's transition from recession to recovery. The budget deficit and balance of payments are also considered. The results of this model will be interpreted and reflected, in one way or another, In various sectors of the Iraqi economy, particularly the agricultural sector.

Based on the above, the economic growth rate was chosen as the dependent variable, while the inflation rate, budget deficit, and balance of payments were chosen as independent variables, according to the available data.

Y_i = Economic growth rate in Iraq during the research period

X_1 = Inflation rate

X_2 = Budget deficit

X_3 = Balance of payments

Results of the Econometric analysis

Table 9. Unit Root Test (ADF) Method

	At Level			First Deference		
Y	Constant	Constant and trend	Without trend	Constant	Constant and trend	Without trend
t-Statistic	-2.224108	-3.303119	-1.977055	-5.586103	-5.449028	-5.586142
Prob	0.2015	0.0815	0.0471	0.0000	0.0004	0.0000
X1	Constant	Constant and trend	Without trend	Constant	Constant and trend	Without trend
t-Statistic	-1.904460	-2.496777	-1.835139	-3.268430	-3.242957	-3.268382
Prob	0.3271	0.3280	0.0638	0.0230	0.0905	0.0017

Table 9. Unit Root Test (ADF) Method

	At Level			First Deference		
X2	Constant	Constant and trend	Without trend	Constant	Constant and trend	Without trend
t-Statistic	-3.629832	-3.676327	-3.675482	-4.124812	-3.995589	-4.243953
Prob	0.0093	0.0355	0.0005	0.0027	0.0179	0.0001
X3	Constant	Constant and trend	Without trend	Constant	Constant and trend	Without trend
t-Statistic	-5.018229	-4.995091	0.032609	-5.016286	-4.989158	-4.993466
Prob	0.002	0.0012	0.6867	0.0002	0.0014	0.0000

Source: Results of Statistical program E-views 10

Estimation using (ARDL) model

Statistical estimates of the (ARDL) model indicate high explanatory efficiency; The R^2 value was approximately 0.736, indicating that the explanatory variables (inflation, budget deficit, and balance of payments) explain roughly 73.6% of the changes in Iraq's economic growth. The estimated short-term indicators were statistically significant; inflation showed a positive effect with a coefficient of 0.41, suggesting that inflation rates remained within the safe threshold for developing countries, typically ranging between 7% and 11%, compared to the thresholds for developed countries (1%-3%) and underdeveloped countries (11%-15%). This positive effect is attributed to inflation's role in stimulating aggregate demand and boosting domestic investment in the Iraqi economy, provided it did not exceed levels that erode purchasing power and destabilize the financial sector. Conversely, the budget deficit showed a significant negative effect at 5% with a coefficient of -0.94, reflecting the financial pressures the deficit exerts on growth. The balance of payments also showed a positive immediate effect with a coefficient of 0.96, further confirming the positive impact of inflation on overall economic growth. Positive role of improved external trade positioning in supporting growth.

Table 10. Results of ARDL Model

Dependent Variable: Y
Method: ARDL
Date: 03/02/26 Time: 05:01
Sample (adjusted): 2004S1 2024S1
Included observations: 41 after adjustments
Maximum dependent lags: 2 (Automatic selection)
Model selection method: Akaike info criterion (AIC)
Dynamic regressors (6 lags, automatic): X1 X2 X3
Fixed regressors: C
Number of models evalulated: 686
Selected Model: ARDL(2, 0, 0, 2)
Note: final equation sample is larger than selection sample

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
Y(-1)	0.608120	0.118359	5.137922	0.0000
Y(-2)	-0.521741	0.091595	-5.696168	0.0000
X1	0.414180	0.134069	3.089295	0.0041
X2	-0.944234	0.397521	-2.375306	0.0235
X3	0.963431	0.431227	2.234164	0.0324
X3(-1)	-0.447996	0.434861	-1.030206	0.3104
X3(-2)	0.436754	0.296824	1.471423	0.1506
C	-5.865098	4.126888	-1.421192	0.1646
R-squared	0.736973	Mean dependent var		5.762195

Adjusted R-squared	0.681179	S.D. dependent var	9.731102
S.E. of regression	5.494589	Akaike info criterion	6.418584
Sum squared resid	996.2868	Schwarz criterion	6.752940
Log likelihood	-123.5810	Hannan-Quinn criter.	6.540338
F-statistic	13.20891	Durbin-Watson stat	1.510033
Prob(F-statistic)	0.000000		

Source: Results of Statistical program E-views 10

• Error Correction Model (ECM)

Results of the ECM estimation in table (11) indicate a good explanatory efficiency of (74.8%) according to the (R-squared) (R^2). The error correction limit parameter (CointEq-1) showed a negative and statistically significant sign at the (1%) level with a value of (-0.913), which confirms the cointegration relationship. This indicates a very high adjustment rate of (91.3%) for correcting deviations from the equilibrium path of economic growth in Iraq (Y) during a single time period (half a year). In the short term, the results showed a positive and immediate effect of the balance of payments (X_3) with a coefficient of (0.96), reflecting the rapid response of economic growth to improvements in external trade positions. The current growth is significantly affected by its previous values, which enhances the stability and reliability of the estimated model. As for the relationship in the short term, the results showed a significant effect of both economic growth and the balance of payments only, while the other independent variables (inflation and budget deficit) did not appear in this table. This is standard because the program chose a zero lag (Lag 0) for it in the selected ARDL model, which means that its effect on short-run economic growth is a direct, immediate effect that appears in the Long-run/Levels Equation table and does not appear as time differences in the ECM.

Table 11. Model equation in the short run (ECM)

ARDL Error Correction Regression
Dependent Variable: D(Y)
Selected Model: ARDL(2, 0, 0, 2)
Case 2: Restricted Constant and No Trend
Date: 03/02/26 Time: 05:19
Sample: 2003S1 2024S2
Included observations: 41

ECM Regression
Case 2: Restricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(Y(-1))	0.521741	0.073439	7.104445	0.0000
D(X3)	0.963431	0.203149	4.742493	0.0000
D(X3(-1))	-0.436754	0.206807	-2.111888	0.0424
CointEq(-1)*	-0.913621	0.101755	-8.978606	0.0000
R-squared	0.748584	Mean dependent var		-0.240244
Adjusted R-squared	0.728199	S.D. dependent var		9.953267
S.E. of regression	5.189092	Akaike info criterion		6.223462
Sum squared resid	996.2868	Schwarz criterion		6.390640
Log likelihood	-123.5810	Hannan-Quinn criter.		6.284339
Durbin-Watson stat	1.510033			

Source: Results of Statistical program E-views 10

Long-Run Equation

The results of the long-run parameters estimate indicate a statistically significant effect of all independent variables on economic growth in Iraq (Y) at the established levels. The results revealed a highly significant positive effect of the inflation rate, with a coefficient of (0.45), indicating that a 1% increase in inflation is accompanied by a 0.45% increase in growth in the long run. This may be attributed to inflation's stimulating effect on productive activity. As for the budget deficit variable, the results showed a clear negative effect (-1.03), meaning that this deficit plays a negative role and exerts pressures that restrict economic growth rates. In contrast, the balance of payments had a

positive effect, meaning that improving the foreign trade situation, in terms of both imports and exports, will support stability in general. This equilibrium relationship is represented as follows:

$$\boldsymbol{EC = Y - (0.4533 * X_1 - 1.0335 * X_2 + 1.0422 * X_3 - 6.4196)}$$

Table (12). Results of long-run equations

Levels Equation
Case 2: Restricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
X1	0.453339	0.146230	3.100174	0.0039
X2	-1.033508	0.452586	-2.283563	0.0290
X3	1.042215	0.479312	2.174397	0.0369
C	-6.419621	4.713551	-1.361950	0.1824

EC = Y - (0.4533*X1 -1.0335*X2 + 1.0422*X3 -6.4196)

Source: Results of Statistical program E-views 10

Cointegration Test (Bounds Test)

To verify the existence of a long-term equilibrium relationship between the variables, the F-Bounds Test was applied. The results shown in Table (13) indicate that the calculated F-statistic value was (14.38), a very high value that significantly exceeds the critical values of the upper bound (1) at a significance level of (1%), which is (5.544). Based on this result, we reject the null hypothesis, which states that there is no relationship between the levels of the variables, and confirm the existence of a strong and statistically significant cointegration relationship between economic growth in Iraq (Y) as the dependent variable, and the inflation rate (X_1), budget deficit (X_2), and balance of payments (X_3) as independent variables, thus proving the stability of the equilibrium relationship between these variables in the long run.

Table 13. Bounds Test

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	14.38004	10%	2.37	3.2
k	3	5%	2.79	3.67
		2.5%	3.15	4.08
		1%	3.65	4.66

Source: Results of Statistical program E-views 10

Diagnostic tests for the model:

All diagnostic tests of the model indicate its validity and its resistance to standard problems such as Heteroscedasticity and autocorrelation, as well as the normal distribution of residuals, as shown in the figure 4.

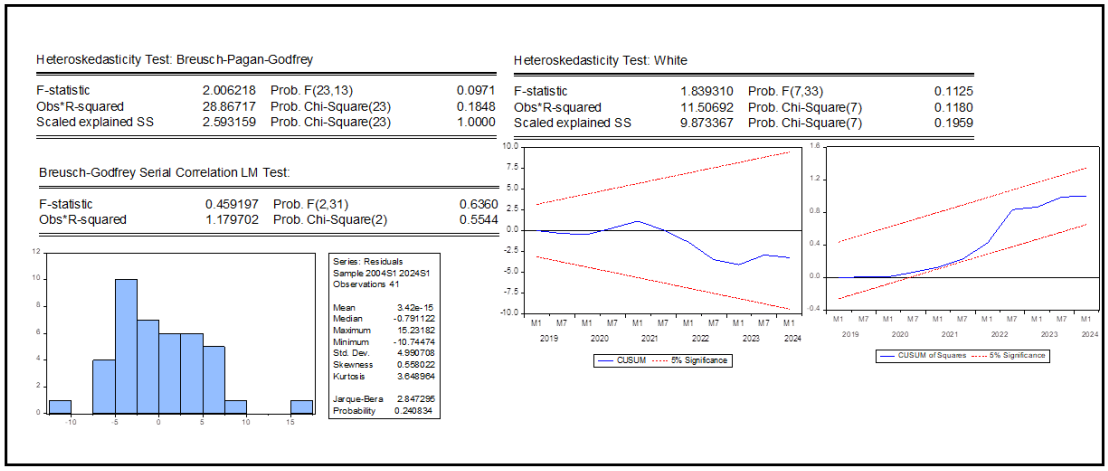

Figure 4. Diagnostic tests for the model:

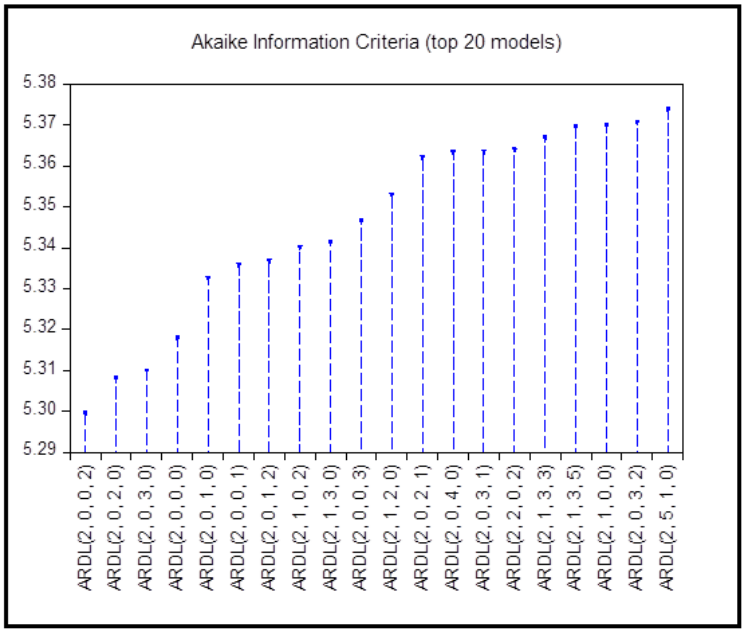

Figure 5. Akaike Information Criteria

Source: Results of Statistical program E-views 10

Conclusion

The Political Implications of the first Model's Results

The standard results of any model are important in explaining the effects of explanatory variables on the target variable. Through these effects, we can understand the political and economic impacts of economic reform programs, albeit indirectly, as some of these effects only become apparent after a period of time, or their impact is reflected in other ways.

In this regard, when greenhouse gas emissions, including carbon dioxide, have a positive impact on GDP, this may seem illogical except within one context: the increased pace of domestic industry, one of whose negative consequences is the saturation of the atmosphere with these gases and increased pollution. In other words, the economic policies implemented aimed to increase GDP in all its forms, whether agricultural or industrial. It is worth noting here that pollution rates, sometimes expressed as increased greenhouse gas emissions, are indicative of increased pace of domestic industry or increased waste and its poor management.

The relationship between pollution and economic growth is a double-edged sword (an inverted U-shaped mechanism). Rapid and uncontrolled growth initially leads to significant environmental pollution due to increased production and resource consumption. Conversely, severe pollution in later stages hinders growth due to decreased productivity and

health and environmental damage, creating an inverse relationship in the long run. This is linked to what is known as the pollution threshold, which varies depending on the country, its economic system, and its level of development. Some countries allow a certain pollution threshold to be reached in order to maintain their economic growth rate.

To support the findings of this research, one study examined the fundamental relationship between environmental pollution and economic growth. It concluded that the growth rates of GDP and sulfur dioxide emissions in China exhibit remarkable rigidity. When the system was in a medium-growth phase, the growth rates of sulfur dioxide emissions and GDP were positively correlated, exhibiting lower probability and weaker sustainability. Conversely, when the system was in a high- or low-growth phase, their growth rates were negatively correlated, exhibiting higher probability and stronger sustainability. Generally, economic growth leads to increased environmental pollution emissions. The correlation and sustainability of sulfur dioxide emissions and GDP are closely related to the regional situation of the system as a whole (20).

From the foregoing, we believe that the positive relationship between GDP and greenhouse gas emissions can be explained by the reasons mentioned above, although in Iraq, the reasons may be concentrated in the increased oil industry and its byproducts, as well as the high rates of improper waste burning.

Although the relationship between unemployment and GDP is inverse according to Okun's Law, the result here was positive and has been interpreted as stemming from a delayed response of GDP to labor market changes. Alternatively, it may be due to the rapid pace of technological advancements that have replaced human labor with machines. Global reports have indicated a new fear: the potential loss of jobs amidst overall economic growth. The crucial question remains: in Iraq, is the relationship between unemployment and GDP growth linked to these factors, or is it due to a flaw in the econometric model?

There is often ample evidence to support the positive relationship, or to suggest that high unemployment does not affect GDP growth in Iraq, due to the rentier nature of the Iraqi economy and its reliance on oil revenues to finance the government budget.

Regarding the third variable, which is spending on research and development as a percentage of GDP, its political and economic impacts are represented by the quality of this spending and where it is directed, especially since we know that spending on scientific research in Iraq is very low, both qualitatively and quantitatively. Spending on scientific research is a means of innovation and development, and if we apply this to the agricultural sector, it means that increased agricultural innovations mean an increase in agricultural GDP and an increase in production and productivity through the use of improved seeds, fertilizers, pesticides, and other technologies. The emergence of such a negative result in spending on research as a percentage of GDP clearly indicates a significant deficiency in investing budget revenues in developing the agricultural sector. This has led to a reliance on imported innovations from around the world, which we purchase at considerable expense. Therefore, we believe that economic reform and agricultural policies have not been sufficient to develop the agricultural sector.

The political and economic implications of the second model's results on the Iraqi agricultural sector

The selection of these independent variables is justified, given the numerous previous studies that employed models similar to ours, as well as the suitability of these variables to the realities of the Iraqi economy across its various sectors, including agriculture.

The use of variables in both models was justified. The variables in the first model reflected the potential economic recovery that the analysis results could achieve, provided they were logical, especially after 2003, given the economic changes across all sectors, including agriculture. We observe that inflation plays a significant role in increasing costs, particularly for seeds, fertilizers, fuel, and machinery. High inflation rates also mean a decrease in citizens' purchasing power, which negatively impacts farmers' profits. Furthermore, it contributes to a rise in the general price level, especially for food. High inflation also negatively threatens food security because it leads to increased import costs and reduced employment rates.

The rise in agricultural production costs, especially input costs such as seeds, fertilizers, pesticides, and fuel used for machinery, will increase overall costs, meaning reduced profits for crop producers, who will face losses. This, in turn, will negatively affect investment rates in the agricultural sector, leading to a decrease in allocations to the sector. While the discussion revolves around the effects of inflation on the agricultural sector, such concerns should not hinder investment in agriculture, especially if inflation rates remain within safe limits. Furthermore, the relative stability of the local currency, which became evident after 2003, can serve as a positive starting point for addressing the structural imbalances caused by previous policies. It is noteworthy that official and shadow exchange rates have converged since 2003, a trend clearly reflected in certain indicators used to calculate domestic policy measures for crop producers. These measures include nominal and non-nominal protections, as well as effective protections. In short, increases in the inflation rate are not always negative, particularly if they remain within safe and acceptable limits.

Therefore, government agencies had to combat these high inflation rates, which could exceed safe limits, by

subsidizing agricultural inputs such as seeds and fertilizers. The goal was to reduce production costs. Government agencies also resorted to providing low-interest loans to farmers, which contributed to increasing their profit margins. Such measures contributed to a significant increase in crop production, especially for major grain crops, thus driving agricultural development rates upward.

Regarding the budget deficit, it was clear that a negative result would have a negative impact on economic growth, which in turn would have a general impact on all economic sectors, including the agricultural sector. The agricultural sector would be affected directly or indirectly, for example, by a decrease in government spending and investment in agriculture, as well as by the impact on developing agricultural infrastructure. Furthermore, reduced support for farmers would lead to a decrease in agricultural production and a further reduction in the agricultural sector's contribution to the GDP, which is already low. Therefore, reducing the budget deficit was a top priority for the government, even though this was linked to fluctuating global oil prices. The third variable, the balance of payments, is a crucial factor because it is an indicator of international economic transactions. Its impact on the agricultural sector is evident in its ability to provide the necessary funds for importing production inputs, as well as for exporting any surplus that the agricultural sector can generate. A persistent deficit in this balance signifies a clear weakness in agricultural investment and, consequently, a decline in the competitiveness of domestic products against foreign products. This leads to continued importation to meet domestic demand, which in turn hinders the achievement of food security and creates structural distortions. The effects of such distortions on the local economy were observed, particularly during the 1990s.

Recommendation

1. Take appropriate measures by rationalizing government spending, particularly unproductive spending that burdens the government budget, while simultaneously increasing government revenues in a manner that aligns with the social and economic realities of citizens. The purpose of these revenues is to finance government projects with social returns.
2. Work to reduce inflation levels or maintain them at safe levels, while taking into account the preservation of citizens' purchasing power.
3. Increase the availability of foreign currency by improving the balance of payments. This will facilitate the import of modern and technologically advanced production inputs, contributing to increased production and the subsequent export of surpluses.
4. The Iraqi market has specific characteristics that necessitate the development of an economic model that is compatible with these features, achieves sustainable development goals, and maintains a stable, long-term structural balance in the economy. This requires implementing economic reform programs that are not heavily reliant on oil revenues.

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No Supplementary Materials.

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Not applicable.

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Data available upon request.

Conflicts of Interest:

The authors declare no conflict of interest.

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Conflict Of Interest

The authors declare no conflicts of interest associated with this manuscript.

Appendix 1: Research Data

Year	GDP	Unemploym ent Rate %	Fossil carbon dioxide emissions (in tons)	Spending on research and development as a percentage of GDP (%)	Economi c Growth	Inflati on Rate %	Budget deficit	Balance of payments
2003	32951342	5.3	82724660	0.01	-36.7	32.4	-19.2	2.8
2004	62959000	15.1	90109480	0.03	53.4	26.8	-7.8	1.01
2005	68924531	17.3	87038130	0.04	1.7	36.9	-3.2	-6.66
2006	77367000	30.6	84657860	0.03	5.6	53.1	10.7	4.12
2007	107828110	17.28	78215540	0.05	1.9	31	12.5	17.47
2008	155982000	15.2	90175970	0.03	8.2	12.6	17.3	21.61
2009	132821500	15	96324090	0.05	3.4	8.5	-5.7	-1.01
2010	159253000	13.9	111013240	0.04	6.4	2.4	-2.6	4.68
2011	212254000	14.1	115463740	0.03	7.5	5.6	6.8	14.07
2012	254225490	16.06	132707720	0.03	13.9	6	4.1	13.55
2013	273587529	17.9	142782490	0.04	7.6	2.4	-1.4	6.86
2014	266332655	19.99	137657610	0.04	2.3	-0.8	-5.6	6.94
2015	194680971	20.1	137045650	0.04	2.6	2.4	-12.9	-1.66
2016	203869832	22.67	147886570	0.04	13.8	0.1	-8.1	1.29
2017	221665709	25.57	161380690	0.05	-1.8	0.2	-2.3	7.95
2018	269918874	13.49	173965500	0.04	2.6	0.4	2.5	15.12
2019	277884869	14.11	187046270	0.03	5.5	0.2	0.83	6.75
2020	218774325	15.87	169583860	0.04	-12.1	0.6	-4.4	-3.49
2021	301152818	16.2	179929540	0.04	1.5	6.1	-0.9	11.71
2022	373064152	15.51	193836310	0.03	7.1	4.9	7.9	20.19
2023	330046390	15.4	195914182	0.04	2.7	4.3	1.8	10.55
2024	209531128	15.53	210528471	0.1	3.5	2.9	-2.5	2.99

Source: Ministry of Agriculture-Iraq , Central Bank of Iraq

References

[1]. Ozili, P. K., & Iorember, P. T. (2024). Financial stability and sustainable development. International Journal of Finance & Economics, 29(3), 2620-2646.

[2]. Radu, M. (2015). Political stability-a condition for sustainable growth in Romania?. Procedia Economics and Finance, 30, 751-757.

[3]. Belabiod Khadidja, Brahimi Benharrat Hayet. 2020. The Relationship between Energy Consumption and the CO2 Emission and Economic Growth in Germany: By Using the Vector Auto Regression during 1979-2017, Strategy and Development Journal, 10(5):132-152. 10.34276/1822-010-005-007

[4]. Merwan, Haid, 2024. The Impact of Economic Growth on Carbon Dioxide Emissions in Algeria: An Econometric Study Using the ARDL Model during the Period 1990 – 2022, Creativity Journal, 14(2):221-238, 10.53999/2297-014-002-013

[5]. Al-Beltagy, Walaa Abdallah, 2023. Measuring the Relationship between Economic Growth and Carbon Dioxide Emissions in Saudi Arabia Using the ARDL Model, Scientific Journal for Business Research and Studies, 37(3):753-785,

[6]. Hallam, Zouaouia, 2017. Causal Relationship Between Economic Growth and The Variables of Environmental Kuznets Curve Model: The Case of Algeria During the Period (1980 - 2014), Strategy and Development Journal, issue (13):168-191. 10.34276/1822-000-013-008

[7]. Alwan, K.H.2014. The Interrelationship between Economic Growth and CO2 Emissions under Environmental Kuznets Curve Hypothesis: A Case Study for Jordan, Jordanian Journal of Economic Sciences, 1(2):95-108, DOI: 10.12816/0007735

[8]. Taher, Zainab Fadel Muhammad, 2023. Estimating the Relationship between Economic Growth and Carbon Dioxide Emissions in Turkey for the Period "1990-2021": Using the ARDL Model. Tikrit Journal of Administrative and Economic Sciences, 19(63):445-458,

[9]. Iman Muhammad Abdul Latif Mustafa. 2020. The relationship between inflation rates and economic growth rates – applied to the Egyptian case during the period 1961-2018. Journal of the Faculty of Economics and

Political Science, Cairo University, 21(3):105-130, 10.21608/jpsa.2020.131170
[10]. Al-Dabbagh, Nawwar Kanaan, Al-Fares, Ahmed Najm Abdullah, and Al-Ta'i, Omar Zuhair Ezz El-Din. 2023. The Public Budget Deficit and its Impact on Economic Growth in Iraq for the Period (2004-2021). International Conference on Social Sciences and Humanities (17th: 2023: Dubai, United Arab Emirates). No. 85 (Conference Special Issue) (September 2023): pp. 261-273. Amman, Jordan: Human Resources Research and Development Center (Rimah). https://search.emarefa.net/detail/BIM-1684415
[11]. Hameed, H., Nehme, S., & Obaid, S. (2023). The impact of the reciprocal relationship of the general budget and the net trade balance on inflation in the Iraqi economy using the (SVAR) model for the period (2004-2020). Humanities Journal of University of Zakho, 11(4), 770–782. https://doi.org/10.26436/hjuoz.2023.11.4.1140
[12]. Al-Saadoun A.L.M. and Saeed B.M. (2022) "Analysis of the Iraqi Budget and the Effects of the Expected Deficit on Economic Growth", Al-Ghari Journal of Economic and Administrative Sciences, 18(2), pp. 45–74. doi:10.36325/ghjec.v18i2.13833.
[13]. OECD. https://www.oecd.org/en/data/indicators/nominal-gross-domestic-product-gdp.html
[14]. Duigpan, Brian (2017). "gross domestic product". Encyclopedia Britannica.
[15]. Ibtisam Eltayeb Eljack. 2023. The Impact of Inflation Rate On Real Gross Domestic Product In Sudan1990-2021. Humanities & Natural Sciences Journal, 4(11); https://doi.org/10.53796/hnsj41110
[16]. Khaled A. H, 2015. Effective economic policies and their role in addressing the Egyptian state's budget deficit - an analytical study. Scientific Journal of Economics and Trade, 45(3):279-314, 10.21608/jsec.2015.163944
[17]. Fadila MalwaH . 2020. The Determinants Of Economic Growth In Algeria Econometric Study Of The Period (1990-2018). Review of Applied Economics and Statistics, Volume 17, Special Issue: 126-141.
[18]. Walid Eidi Abdel Nabi, 2020. Balance of payments as a tool in economic analysis. Central Bank of Iraq General Directorate of Statistics and Research. https://cbi.iq/static/uploads/up/file-152214235072415.pdf
[19]. Paparoditis, E., & Politis, D. N. (2018). The asymptotic size and power of the augmented Dickey–Fuller test for a unit root. Econometric Reviews, 37(9), 955–973. https://doi.org/10.1080/00927872.2016.1178887
[20]. 20- Yan C, Li H, Li Z. Environmental pollution and economic growth: Evidence of SO2 emissions and GDP in China. Front Public Health. 2022 Nov 10;10:930780. doi: 10.3389/fpubh.2022.930780. PMID: 36438209; PMCID: PMC9684716)

الآثار الاقتصادية لبرامج وسياسات الإصلاح الاقتصادي في العراق بعد عام 2003: دراسة تطبيقية لبعض المتغيرات الاقتصادية ذات التأثير الكلي والبيئي

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الخلاصة
كان للآثار الاقتصادية لسياسات الإصلاح الاقتصادي في العراق بعد عام 2003 تأثير واضح على جميع القطاعات الاقتصادية، بما في ذلك الزراعة. وقد دُرست هذه الآثار باستخدام نموذجين اقتصاديين قياسيين. درس النموذج الأول تأثير البطالة وانبعاثات غازات الاحتباس الحراري وإجمالي الإنفاق على البحث العلمي على الناتج المحلي الإجمالي. أما النموذج الثاني، فاختبر تأثير النمو والتضخم وعجز الموازنة وميزان المدفوعات على معدل النمو الاقتصادي. وخلصت الدراسة إلى أن انبعاثات غازات الاحتباس الحراري كان لها تأثير إيجابي على الناتج المحلي الإجمالي، بينما أظهر الإنفاق على البحث والتطوير تأثيرًا سلبيًا. ومع ذلك، كان للبطالة تأثير إيجابي، مما يعكس استجابة متأخرة لبعض متغيرات سوق العمل. وأظهرت نتائج النموذج الثاني أن للتضخم آثارًا إيجابية، على الرغم من أن هذه الآثار اعتُبرت مقبولة وضمن النطاق الآمن للدول النامية. وأظهر عجز الموازنة تأثيرًا سلبيًا واضحًا، بينما كان لميزان المدفوعات تأثير إيجابي، مما يعكس تحسن وضع التجارة الخارجية وتأثيره الإيجابي على دعم معدلات النمو الاقتصادي. أوصى البحث بضرورة تطوير نموذج اقتصادي يناسب خصائص السوق العراقية، بهدف نقل الاقتصاد من حالة عدم التوازن الهيكلي إلى حالة التوازن طويل الأجل، مما يضمن استقرار الأمن الغذائي الوطني، فضلاً عن تنفيذ برامج الإصلاح الاقتصادي لتنويع مصادر الدخل القومي وتقليل الاعتماد على عائدات النفط، التي تتأثر بالتقلبات العالمية، من أجل ضمان استدامة التنمية الزراعية والصناعية. والعمل على خفض مستويات التضخم أو الحفاظ عليها عند مستويات آمنة، مع مراعاة الحفاظ على القدرة الشرائية للمواطنين.

الكلمات المفتاحية: سياسات الإصلاح، التنمية الزراعية المستدامة، البطالة الهيكلية، الطلب الكلي، التجارة الخارجية.