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MEASURING THE RELATIONSHIP BETWEEN SOME MACROECONOMIC VARIABLES AND TRADE BALANCE IN IRAQ FOR THE PERIOD (2004-2023)

MAIAMI SALAL SAHIB
DEPARTMENT: ECONOMICS, FACULTY OF ADMINISTRATION AND ECONOMICS, UNIVERSITY OF AL-QADISIAYH, DIYWANIA, IRAQ
EMAIL: maiami.alshukri@qu.edu.iq, ORCID: https://orcid.org/0000-0001-5855-4557

Abstract
This study examines the relationship between Iraq's trade balance and key macroeconomic indicators (external debt and budget deficit) from 2004 to 2023 using ARDL, error correction, and bounds test models. Results show that in the short term, GDP positively affects the trade balance, while external debt has a negative impact. In the long term, both GDP and external debt have a positive effect—1% increases in each improve the trade balance by 40% and 3%, respectively. The findings highlight the need to diversify GDP activities and direct external debt toward productive sectors to support sustainable economic growth
Keywords: Trade balance, Macroeconomic, Public debt, GDP, Production system

1. INTRODUCTION

The state of the trade balance is one of the economic indicators that affect the economy of countries, especially developing countries, and makes them subject to developed countries and the decisions issued by them, especially the state of the trade balance deficit. This is what puts the country at risk and exposes it to severe economic shocks that weaken the economic structure of the country as well as its trade, and then the collapse of the economy after a series of collapses in the value of the currency and the rise in prices in the markets and as a result of changing policies in another country or that country being exposed to those changes as a result of a crisis or a previously unplanned situation, which negatively and significantly affects the dependent country. Since Iraq is one of the developing countries that depend mainly on oil products in the diversity of its exports, it must adopt a serious economic policy that will address the imbalance in foreign trade policy and that this should be according to various economic plans, some of which are short-term and some of which are long-term strategic plans in order to achieve the economic goals in a sound manner and then move to the stage of stability and enhance economic construction based on the diversity of exports and the reduction of imports. This requires political will before it is economic will, since Iraq is among the developing countries in which political variables play a prominent role in making economic decisions in Iraq. this paper care of the clarification the necessity of identifying the nature of the relationship between the net trade balance and some macroeconomic policy variables (external debt, GDP) in Iraq. the following question was asked: What is the nature of the relationship between the net trade balance and macroeconomic variables namely (external debt , GDP), and what is the impact of each on the other? The research aims to identify the state of the trade balance and some macroeconomic variables, namely (external debt, GDP) in Iraq and the extent of the impact of this state on the macroeconomic variables studied.
The research is based on the hypothesis GDP and external debt have a dual impact on Iraq's trade balance, which is negative in the short term and positive in the long term.
This Paper This paper is divided into three axes: first axis is the theoretical framework for the study variables. second axis analyzes the study variables in Iraq for the period (2004-2023)while the third axis discusses measuring the relationship between the variables through standard models such as ARDL,ECM.

LITERATURE REVIEW

A lot of experts, scientists, and politicians care about the trade balance and how it impacts the business as a whole. It tells you how well the business of a country is doing.
– **Jasem & Saud** (2023) looked into the connection between Iraq's trade deficit and its spending deficit. The study found a link between Iraq's trade deficit and its overall budget deficit. This is because oil goods make the country money, which lets the government spend more on people.
– **Liaquat, Safdar, & Bibi** (2021) Pakistan's trade imbalance and foreign debt were used to judge its economic growth. Pakistan has a big trade imbalance and a lot of debt to other countries, which is shown by the study. Pakistan needs to find other ways to get money and not borrow as much from other countries.
– **Sowrov (2024**) It checks out how trade-friendly the G-20 countries are, as well as their prices and economic growth. The study's goal is to find connections between tax rates, trade freedom, and economic growth in the G-20 countries. The results show that taxes hurt growth and free trade help it.

-(**Moyo & Garidzira**, (2022) What the trade balance and economic growth in Africa have shown Panel data from 1990 to 2018 are used in this study to look at the link between the trade balance and economic growth in African countries. Trade balance and economic growth are connected. The economies of these places will grow faster if they trade more fairly.
The contribution of this study lies in its examination of external debt and GDP in Iraq and their impact on the trade balance for the period (2004–2023) using modern econometric models such as ARDL and ECM.

3. DATA AND METHODOLOGY

The study followed a descriptive approach to clarify the research variables in terms of theory and analysis. It also used a quantitative approach to measure and estimate the relationship between GDP, external debt, and the trade balance, using modern economic measurement methods (ADF&PP stability tests, cointegration, the distributed lag model, and the error correction model). Employing Eviews Software for implementing cluster analysis the relationship between variables . Data for the studied variables were obtained from local official sources (the Central Bank of Iraq, the Iraqi Ministry of Finance) for the period (2004-2023).

First : The concept of trade balance

For a business to grow and move forward, it needs trade. Over time, trade has grown more important. Some countries need to trade with other countries in order for their economies to grow(**abbas.et al,2021,54**). Looking at a country's economic risk can help you figure out how much its economy relies on trade with other countries. Trade and the things that come into and go out of the country are a big part of how much money the country makes(**Todaro, 2009, 114**), , meaning that economic exposure can be expressed by knowing the extent of the importance of exports and imports, which are naturally measured in relation to the size of the gross domestic product, then the role of the economic analyst comes to distinguish the difference between the cause of the imbalance by knowing the extent of the importance of exports of goods to the output and then measures the extent of the importance of imports to the output, as the higher the percentage of imports, this indicates that the economy is approaching a state of economic exposure and then economic dependence , and sometimes its increase does not mean evidence of economic dependence(**Moor, 2016, 69**), but rather indicates the possibility of the state's economy being exposed to an emergency imbalance as a result of circumstances surrounding foreign trade**.**

second: indicators of Trade Balance

We can show that the indicators of economic exposure of any country are through its trade exchanges with other countries of the world, represented by the export index and the import index, and comparing them with the size of the gross domestic product of that country, which is expressed through the trade balance in the balance of payments. This balance records visible trade, i.e. trade in movable goods that residents export or import from non-residents, with specific exceptions due to changes in ownership such as (processed goods, goods purchased at ports and airports, non-monetary gold) **(Al-Issawi, 2006, 210**). The trade balance of a country is a statement of the difference between the value of what it exports during a specific period, usually a year. If the difference is positive, it is called the trade balance surplus, and if the difference is negative, the trade balance deficit is also called that amount. However, if the values of exports are equal to the values of imports, the trade balance is said to be balanced. The trade balance of a country may refer to its exports and imports with countries of the outside world in general, and it may refer to its exports. And its imports with a specific country or group of countries **(Hassan, 2006, 511)**. The components of the trade balance of exports and imports will be analyzed as important indicators that are relied upon to know and analyze the degree of economic exposure of the country.

1- Export indicator: There is a great and well-known way to find out how open a country is to other countries' economies. It's to check its export score. If you look at the GDP and how important trades are to it, you can figure out how risky the economy is. To get the export coverage index, divide the value of all the goods a country sends abroad by its annual GDP. One of the two parts of foreign trade that affects GDP is exports. You can also look at them to get a sense of how deep trade really is. As you might expect, exports have a bigger effect on raising growth rates the more this number changes. This makes good things happen that can help the country's money. You can use these steps to find this number:

T = {X / Y} x 100 T: Degree of economic exposure in relation to the export index

X: Value of exports , Y=GDP

2- Import indicator : In most cases, the imports received by the country represent a weakness for the importing country as they express the exit of hard foreign currencies from the country to other countries, and thus a significant decrease in its economic and commercial capabilities, with the exception of importing capital goods that can be used for manufacturing within the country, as they represent a strength for the country when it obtains them, especially if they are with their services and learning how to maintain them and access to spare parts easily without complications. Also, importing modern technology conditional on training on it is a source of strength for the importing country if it improves its use and reduces its side effects, including dispensing with workers and others. This indicator can be calculated according to the following equation**(Al-Nusayrat, 2002, 23)**.

T = { M / Y } x 100 T: Degree of economic exposure in relation to the export index

M: Value of Imports , Y=GDP

Its foreign debt is the amount of money it pays other countries. People who work for the government or for the government itself have taken out loans that are called "public external debt." Businesses take out loans to pay for things outside of their own country. External debt can show up for different types of clients in various ways**(Elkhalfi.etal.2024,p2).**

In most parts of the world, Gross Domestic Product (GDP) is used to show how rich a country is. People also use it to check on the progress of a country. The GDP of a country is the market value of all the things and services it makes in a certain amount of time **(Suter, 2024, 1).** As GDP rises, nations change and people's relationships with nature change in big ways**((Eisenmenger et al,1102)**.

4. The Analytical Aspect of Research Variables

First: Analysis of Economic Variable indicators in the Iraqi economy for the period 2004-202 The value of Iraqi exports abroad is observed to increase and grow positively in most years, except for those in which Iraq is exposed to macroeconomic crises. When looking at Table (1), we notice that the value of exports increased from 25,877,930 million dinars in 2004 to reach 34,881,984 million in 2005, i.e. it achieved a growth rate of 4.793%, which is a good indicator indicating the beginning of new trade transactions after the economic blockade imposed on Iraq before 2003. Exports also continued to grow at the same rate of increase during the study period, except for 2009, and due to the repercussions of the macroeconomic crisis on Iraq, the volume of exports decreased to 46,602,714 million dinars, recording a relative decrease of -39.21%, as a result of the decrease in the prices of exported crude oil, which constitutes the highest percentage of exports, as explained in the previous table, at a rate Things got better for of 98.2%. It really hurt the Iraqi economy this year, but not so much in 2010 and 2011. everyone when the price of crude oil went up. In 2011, more items worth 95,298,476 million dinars were sent abroad. That's a growth rate of 55.22%. But it went down when oil prices dropped again at the end of 2011, and it only went back up to 21.89% growth rate in 2012. It's still a good rate, but it shows how the Iraqi economy is affected by changes in world trade and demand. In particular, this is true since Iraq's economy and safety were shook when oil prices dropped again at the end of 2013 and terrorist groups took over some governorates in the north and west in 2014. They went from 101,595,408 million in 2013 to 51,967,725 million in 2016, a huge drop of -37.22%. The price of crude oil went back up after terrorists were let out of the governorates. Things got better all around. That's why exports hit 72,409,222 million in 2017, a growth rate of 39.33%. They got to 49.44% in 2018. But it fell quickly, first to a negative growth rate of -5.15% in 2019 and then to a negative growth rate of -42.66% in 2020, which is equal to 58,669,218 million. That's because the COVID-19 virus spread around the world, and all trade, production, and exports between countries were stopped. The price of crude oil went down again because of this. At the time of the study, Iraqi exports grew at the fastest rate (80.75%) when the above health restrictions were lifted in 2021 and the global system's business restrictions were lifted as well. A lot of different things and services come into Iraq. This is the result of many natural and man-made events. Of course, some of these do happen, like when the country's population grows and more services, like schools, hospitals, and other services, are needed. Some are because of how the business is set up. The country doesn't have the tools to make its own goods and services, which would mean it wouldn't have to buy them. One more reason is the amount of money that comes in. When Iraq gets more money, it can buy more things from other countries. However, in the event of a decrease in the size of macroeconomic revenues, Iraq will resort to reducing the size of imports from abroad to avoid the deficit in the trade balance. It may also resort to preventing imports in the event of encouraging national products and other reasons and justifications that lead to an increase or decrease in the size of imports from abroad. We note from Table (3) that the size of imports in 2004 amounted to 30,952,242 million dinars to 27,593,563 million, with a growth rate of 6.28% in 2006. The intensification of terrorist acts and the difficulty of importing from abroad through border crossings led to a decrease in the volume of imports to 24,905,272 million, at a rate of -11.2%, and it continued to decrease in 2007 to -23.67%. In 2008, with the improvement of the security situation and the improvement of the Iraqi economic situation coupled with the improvement of global oil prices, the volume of imports from abroad increased to 36,295,954 million dinars, at a growth rate of 72.33%, a high percentage of which was to cover security and defense expenses, in addition to other expenses related to establishing infrastructure related to health and educational services and others. In 2009, with the impact of the decline in crude oil prices on the Iraqi economy due to the repercussions of the global macroeconomic crisis that occurred in 2009, the volume of imports decreased to 11,991,508 million in 2009, at a growth rate of -66.96%. The impact of external and internal factors and circumstances continued to affect the volume of imports from abroad throughout the study period, and the decline in crude oil prices played a major role. In determining the size of imports and restricting them, as happened in 2014 when the government resorted to rationalizing spending in all its forms in Iraq as a result of the security conditions and the decline in oil prices, which led to a decline in the rate of imports from abroad by -11.70% in 2014 and also in 2015 until the decline in imports reached -26.99% in 2016, but it began to gradually increase since 2017 with the liberation of Iraqi cities and the rise in oil prices, which generated macroeconomic revenues for Iraq that encouraged laxity in rationalization and preventing imports, so we find that it rose by 11.57% in 2017 and then to 20.7% in 2018, then rose by 27.62% in 2019, as a result of fears of the spread of the Covid-19 epidemic at the end of 2019, this percentage actually decreased to -17.24% in 2020 with the spread of the disease globally and the closure of borders between countries of the world in addition to the decline in crude oil prices Globally, as a result of the halt in manufacturing, transportation, and all commercial and industrial activities, while imports began to increase at the

beginning of 2021, coupled with the easing of preventive measures against Covid-19, and the import rate rose to .22 .10%

It has already been said that Iraq's economy is rentier and rests mostly on oil production when it comes to GDP. This is because the oil business brings in most of the GDP. The price and quantity of oil have gone up, which is linked to the rise in this product. Figure 1 shows that the increase in the GDP during the time period of the study makes sense. Through Table (1), it is clear that the GDP went up and down while the study was going on. INR 53,235,358 million was its value in 2004. It kept going up until 2008, when it was worth 157,026,062 million dinars. That's 40.8% growth each year. Back then, the rise was due to new business deals in Iraq and the country's reopening to the rest of the world's economies after a ban that had been in place since 2003. It kept going down until it reached 130,642,187 million dinars in 2008, a 16.8% drop. The world economy crashed in 2009, which caused both the amount of goods Iraq moved and the price of oil around the world to drop. With a growth rate of 21.3%, it went up again in 2010 and reached 158,521,511 million dinars. It kept going up until it reached 273,587,529 million dinars in 2013. It grew at a rate of 1% per year. Iraq made more things at that time, which caused the price of crude oil to go up, which was a big part of this. In 2014, 2015, and 2016, however, the output went down. It went down to 266,420,384 million dinars, a 2.6% increase. The growth rate went down by 21.9% in 2015, when it hit 207,876,191 million dinars. Then it dropped to 196,536,350 million dinars, which is 5.4% less growth than before. The business, security, and government of Iraq were all getting worse, so the value of its goods went down. ISIS and other terrorist groups were also taking over a lot of governorates, so the government had to spend more on defense. It went up again over the next two years, reaching 221,665,709 and 268,918,874 million dinars, with growth rates of 12.7% and 21.3%, respectively. Then it dropped to 198,774,325 million dinars, which was the worst rate of drop that the study looked at. It was because Covid 19 made things worse.

Table(1)

Economic Variable in Iraq for the period 2004-2023

Years	Exports	Export %	Imports	Imports %	Trade Balance	Trade balance%	GDP	GDP Growth Rate %	external debt	external debt %
2004	**25,877,930**	**-**	**30,952,242**	**-**	-5,074,312	**--**	**53235358**	**-**	**113240000**	**-**
2005	**34,881,984**	**34.79**	**29,443,238**	**(4.87)**	5,438,746	**-207.18**	**73533598**	**38.12**	**109574000**	**(3)**
2006	**45,028,800**	**29.08**	**27,593,563**	**(6.28)**	17,435,237	**220.57**	**95587954**	**29.9**	**9270000**	**(15)**
2007	**50,156,729**	**11.38**	**21,060,708**	**23.67)(**	29,096,021	**66.88**	**111455813**	**16.6**	**763078000**	**(21)**
2008	**76,662,378**	**52.84**	**36,295,954**	**72.33**	40,366,424	**38.74**	**157026062**	**40.8**	**753467000**	**(1)**
2009	**46,602,714**	**(39.21)**	**11,991,508**	**66.96)(**	34,611,206	**-14.26**	**130642187**	**(16.8)**	**667204000**	**(11)**
2010	**61,392,104**	**31.73**	**44,271,008**	**269.18**	17,121,096	**-50.53**	**158521511**	**21.3**	**716823000**	**7**
2011	**95,298,476**	**55.22**	**48,596,470**	**9.77**	46,702,006	**172.77**	**211309950**	**33.3**	**672851000**	**(7)**
2012	**116,159,697**	**21.89**	**58,935,674**	**21.27**	57,224,023	**22.53**	**254255490**	**20.3**	**684663000**	**2**
2013	**110,595,408**	**(4.7)**	**62,150,581**	**5.47**	48,444,827	**-15.34**	**273587529**	**7.6**	**668666000**	**(2)**
2014	**64,006,016**	**(42.12)**	**54,872,921**	**11.70)(**	9,133,095	**-81.15**	**26642.384**	**(2.6)**	**681292000**	**2**
2015	**23823039**	**(62.78)**	**50,888,200**	**(7.26)**	13,117,816	**43.63**	**20.876191**	**(21.9)**	**709247000**	**4**
2016	**51,967,725**	**118.14**	**37,150,695**	**26.99)(**	14,817,030	**12.95**	**196536350**	**(5.4)**	**777426000**	**10**
2017	**72,409,222**	**39.33**	**41,452,106**	**11.57**	30,957,116	**108.93**	**221665709**	**12.7**	**101163000**	**30**
2018	**108,209,080**	**49.44**	**48,711,252**	**17.51**	59,497,828	**92.19**	**268918874**	**21.3**	**117960000**	**17**
2019	**102,416,296**	**(5.35)**	**62,167,341**	**27.62**	40,248,955	**-32.35**	**262917150**	**(2.2)**	**766000000**	**(35)**

2020	**58,669,218**	**(42.66)**	**51,445,616**	**17.24)**	7,223,602	**(82.05)**	**198774325**	**(24.3)**	**800018000**	**6**
2021	**105,940,520**	**80.5**	**59,474,560**	**22.10**	46,465,960	**543.25**	**301439533**	**51.6**	**607931000**	**(2)**
2022	**124,540,660**	**17.5**	**66,452,106**	**11.7**	58,088,554	**25.01**	**360420384**	**19.5**	**556818000**	**(8.4)**
2023	**241.123.000**	**93.6**	**181586.000**	**173.2**	**59537000**	**2.5**	**207223350.0**	**(42.5)**	**459527000**	**(17.4)**

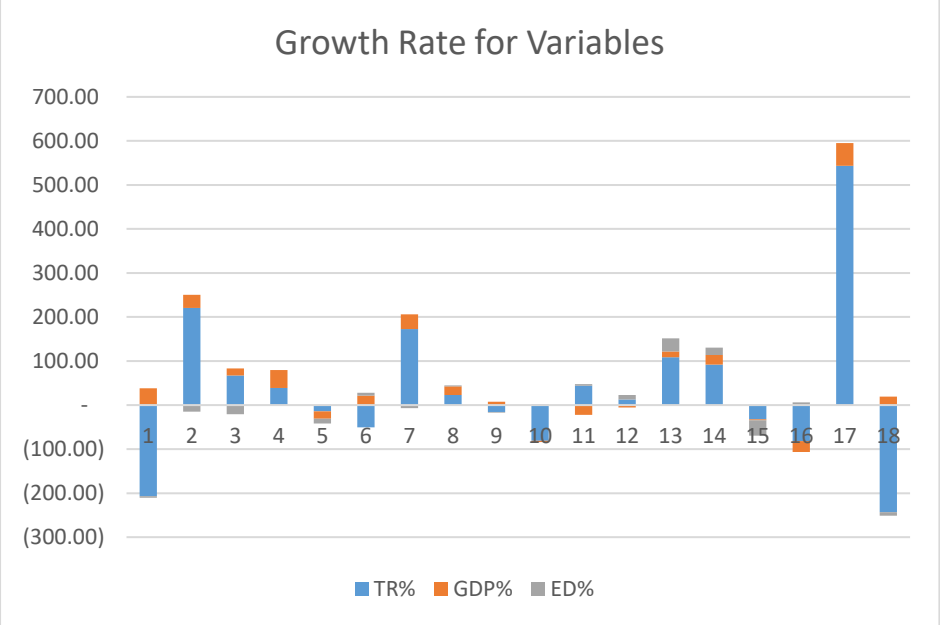
Source: The table was prepared by the researcher based on data from the Central Bank of Iraq, the Directorate of Statistics and Research, and annual bulletins for various years.

.1Republic of Iraq, Central Bank of Iraq, Department of Statistics and Research, Annual Report of the Iraqi Economy for various years.

.2Republic of Iraq, Ministry of Finance, Budget Department, General Macroeconomic Reports

.3Numbers inside brackets mean negative values.

As for the external debt indicator of the Iraqi economy, it reached 113,240 million dinars in 2004, which is a large percentage, which is represented by the accumulation of debts owed by Iraq before 2003. After that, the size of the Iraqi external debt decreased, but at a lower rate during the following years. Since the economic sanctions against Iraq were lifted, it has been slowly going down. This is because Iraq sent more goods abroad and paid its debts with money from its government. Over the course of the study, this sign kept going up and down. At its best, it was in 2018, when it had dropped by 117,960 million dinars and grown by 17%. This happened because the state couldn't pay its bills since oil sales brought in less money. Then it declined again in 2021 to reach 60,7931 with a positive growth rate of 2% due to the improvement in the budget situation and the increase in public revenues.



5. Measuring the relationship between trade Balance and some macroeconomic variables in Iraq for the period(2024-2004)

First: Model variables

1- Independent variables X: It is the macroeconomic variables, (GDP,ED).
2- Dependent variablesY: Trade Balance(TR)
3- Random variables: Symbolized by the symbol Ui.

$$Y_t = \alpha_0 + \alpha_1 X_t + \sum_{i=1}^{m} \alpha_i X_{t-i} + \sum_{j=1}^{n} B_j Y_{t-j} + u_{1t} \dots\dots (1)$$

Second:: Stationarity tests

The ADF and PP tests are the most well-known and important unit root tests. They look for factors that don't have unit roots to stop fake decline. When it finds a number greater than its critical value, the T test says that the variable's time series is no longer moving. The alternative hypothesis (H1) says it is stable, while the null hypothesis (Ho:B=0) says it is not. As in Table (2)

Table (2) Results of ADF and PP tests for unit root

Variables	**ADF**		**PP**	
	Level	**1st Difference**	**Level**	**1st Difference**

TR Prob	--	-2.85695 0.0021	--	-2.59707 0.0047
GDP Prob	---	-2.68645 0.0001		-2.68645 0.0000
ED Prob	-13.3040 0.0000	--	-6.69883 0.0000	--

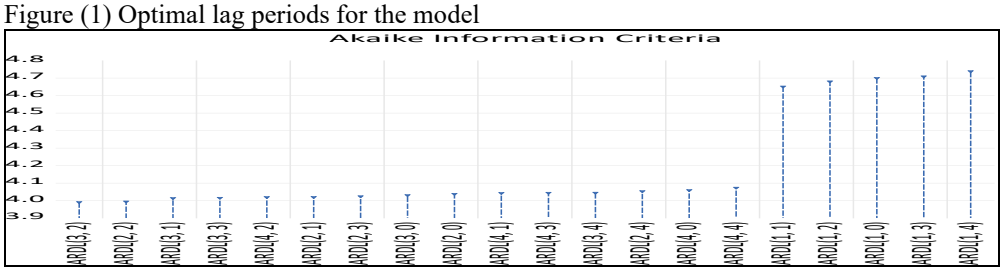
Source: Prepared by the researcher based on the statistical program Eviews13

The table above shows that TR and GDP were not stable at any level of value. But after the first difference, they stopped being different. Since the chance value of the test was less than 0.05, the alternative hypothesis is true and the variable is stable at degree I. ED's number stayed the same, which means it is stable at degree I^(0). Also, the ADF and PP tests came back the same.

Third: Autoregressive Distributed Lag Model (ARDL)

As long as there is no second-degree integration, the ARDL model can be used no matter what degree of integration the factors being studied have. Because the things being looked at vary in how well they fit together, the ARDL model can be used. As an independent variable, the economic exposure index is used in the ARDL model. The time lag period is set at 3.2 based on the Akaike (AIC) values, which are picked by the program to be the lowest value for this task. Based on the Akaike criteria, the time lag was set to two (2) time lags for the risk index and three (3) time lags for the total foreign debt, as shown in Figure (1)

Figure (1) Optimal lag periods for the model



Source: Prepared by the researcher based on the statistical program Eviews13

Table (3) shows the results of estimating the ARDL model. The model is good and the predictions are right, as shown by the statistical tests. Once this is taken into account, the value of (R2) is 0.92 and the value of (F-Statistic) is 317.8002 with a significance level of 0.0000. Also, D.W. is pretty close to 2, which means we accept the null hypothesis (H0), which says the error term in the estimated model does not have an autocorrelation problem.

Table (3) ARDL model estimation results

Dependent Variable: ED			
Method: ARDL			
Sample (adjusted): 2004Q4 2022Q4			
Included observations: 73 after adjustments			
Maximum dependent lags: 4 (Automatic selection)			
Model selection method: Akaike info criterion (AIC)			
Dynamic regressors (4 lags, automatic): tr			
Fixed regressors: C			
Number of models evalulated: 20			
Selected Model: ARDL(3, 2)			
R-squared	0.928509	Mean dependent var	11.11322
Adjusted R-squared	0.915461	S.D. dependent var	9.050682
S.E. of regression	1.682034	Akaike info criterion	3.973811
Sum squared resid	175.4128	Schwarz criterion	4.200460
Log likelihood	-130.0965	Hannan-Quinn criter.	4.063730
F-statistic	317.8002	Durbin-Watson stat	1.987349
Prob(F-statistic)	0.000000		

Fourth: Bounds Test for Cointegration

Table (4) shows the results of the joint integration test using the bounds test methodology. There is a 5% chance that the F-Statistic test result of 4.454944 is greater than the upper limits shown in the table for this type of test, taking into account the sample size and degree of freedom. The null hypothesis is not true because these things work together. We choose the other theory instead, which says there is a long-term stable link. The borders test is used to make sure that people can talk to each other. After that, the links between the short and long terms are found.

Table (4) Bounds test for cointegration

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
			Finite Sample: n=80	
F-statistic	4.454940	10%	3.12	3.623
k	2	5%	3.78	4.327
		1%	5.157	5.957
Actual Sample Size	69			

Source: Prepared by the researcher based on the statistical program Eviews13

Fifth: Error Correction Model ECM according to ARDL methodology

An extra variable called ECMt -1 is added to the error correction model (ECM) to help figure out the long-term link. It is a lagged error correction term for one time period. It checks how quickly the short-term imbalance goes back to the long-term balance in the mistake fix term. If the error adjustment term number is negative and important, it means that the two factors have been linked for a long time. Table (5) shows how the guess about how the risk index would affect foreign debt turned out to be right. It met the requirements to be accepted because the error reduction value is negative and important..

GDP, total foreign debt, and trade balance are all stable for now since it hit -0.266160. That is, only 0.26 percent of the mistakes made in the short term can be changed or fixed in the long term. To put it another way, it takes 3.75 seasons to get back to a state of long-term health. The other idea, which says the link is stable in the short term, is right, as this shows.

Table (5) Error Correction Model ECM

	ARDL Error Correction Regression			
		Dependent Variable: D(TR)		
		Selected Model: ARDL(2, 2, 2)		
	Case 2: Restricted Constant and No Trend			
		Date: 05/14/25 Time: 00:41		
		Sample: 2004Q1 2023Q4		
		Included observations: 78		
ECM Regression				
Case 2: Restricted Constant and No Trend				
Prob.	t-Statistic	Std. Error	Coefficient	Variable
0.0000	6.135309	0.120188	0.737391	D(TR(-1))
0.0002	4.000362	0.038394	0.153591	D(GDP)
0.0045	-2.945149	0.045912	-0.135219	D(GDP(-1))
0.0058	-2.855549	0.011127	-0.031774	D(ED)
0.0815	1.769478	0.011193	0.019805	D(ED(-1))
0.0282	2.244700	0.029474	-0.266160	CointEq(-1)*

Source: Prepared by the researcher based on the statistical program Eviews13

It's clear from Table 6 that there has been a link for a long time. Long-term values are important at the 0.05 level, which means that the Trade Balance gets better because of economic forces.,

Table (6) Long-term parameters

Levels Equation				
Case 2: Restricted Constant and No Trend				
Prob.	t-Statistic	Std. Error	Coefficient	Variable
0.01096	1.356691	0.297567	0.403707	GDP
0.04238	0.688183	0.057349	0.039467	ED
0.00560	-0.847230	58360632	-49444879	C
EC = TR - (0.4037*GDP + 0.0395*ED - 49444879.0283)				

Source: Prepared by the researcher based on the statistical program Eviews13

6. DISCUSSION

From Table(6)We note that there is a positive impact of GDP on the trade balance, at a percentage (40%) This is due to the increase in GDP helping to improve the trade balance, as the domestic product helped create alternatives for imported goods. The impact of external debt was also positive, at a percentage (3%). This means that the increase in external debt helped improve the trade balance and achieve a surplus. This may be due to the efficient use of external debt to finance productive projects that replace imports and improve the environment for long-term investment in infrastructure, which enhances and increases the competitiveness of local products.

7.: Diagnostic tests for the estimated model-Testing the autocorrelation problem

o begin, we use numbers to assess the model's significance. As a next step, we check to see how well it does on some standard tests. We will use the LM test in the table below to make sure that the model doesn't have any problems that stick around:

Table (7) LM Test

Breusch-Godfrey Serial Correlation LM Test: Null hypothesis: No serial correlation at up to 2 lags			
F-statistic	0.380877	Prob. F(2,60)	0.6849
Obs*R-squared	0.865034	Prob. Chi-Square(2)	0.6489

Source: Prepared by the researcher based on the statistical program Eviews13

The predicted model doesn't have the problem of autocorrelation, as shown by the Breusch-Godfrey Serial Correlation LM Test. Since Chi-square's value was greater than 0.05, we accept the null hypothesis that the residuals are not linked to each other.

-Testing the problem of heterogeneity of variance

We checked to see if the residuals have the problem of ranges that are too different. The Prob. Chi-square number for the ARCH Heteroscedasticity Test was 0.2026, which is more than 5%. The null hypothesis is right; the residuals are all the same. For now, we don't need to think about how the range might change.

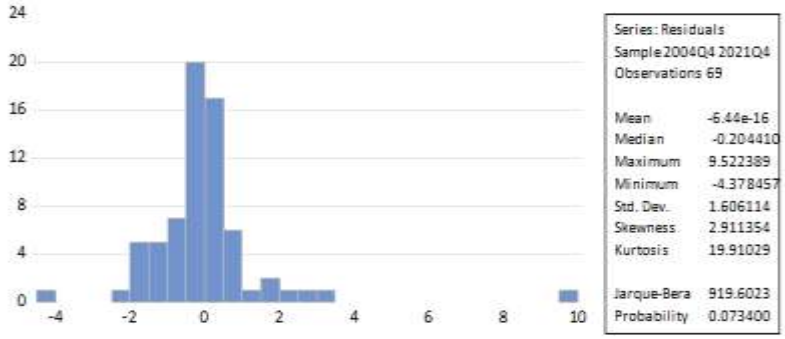
Table (8) Testing homogeneity of variance

Heteroscedasticity Test: Breusch-Pagan-Godfrey Null hypothesis: Homoscedasticity			
F-statistic	1.455136	Prob. F(6,62)	0.2085
Obs*R-squared	8.517171	Prob. Chi-Square(6)	0.2026
Scaled explained SS	65.02025	Prob. Chi-Square(6)	0.0000

Source: Prepared by the researcher based on the statistical program Eviews13

-- Like a bell curve: The chance value for the Jarque-Bera test was about 0.073400, which is more than 0.05 and shows that the residuals follow a normal trend.

Table (9) The normal distribution of the residuals.



Source: Prepared by the researcher based on the statistical program Eviews13

8. CONCLUSION AND POLICY RECOMMENDATIONS

It was clear from the results of the stationarity tests that the variables were free from the unit root problem at different degrees of integration, as the independent variable was integrated at degree (0) while the dependent variable was at degree (1), and this enabled the researcher to use the bounds test for joint integration within the Ardl methodology

The results of the boundaries test showed that the GDP, ED, and Trade Balance factors are always linked.

ARDL model could explain 92% of the changes in foreign debt when it was run. This means that 92% of changes in foreign debt are caused by changes in economic risk.
The model for fixing mistakes showed that over time, about 26% of short-term mistakes can be fixed. They'll be together for a long time.
That when GDP is high, the trade balance is 40% better As GDP went up, more people bought things made in the country instead of those made in other countries. This made the trade balance better.
The impact of external debt was also positive, at a percentage (3%). This means that the increase in external debt helped improve the trade balance and achieve a surplus. This may be due to the efficient use of external debt to finance productive projects that replace imports and improve the environment for long-term investment in infrastructure, which enhances and increases the competitiveness of local products

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