Analysis of Foreign Trade Movement and its Impactin Exchange Rate Dinar the Iraqi for the Duration (2004-2021)

Ibrahim Ahmed Abed [a++*]

[a] *College of Administration and Economics, University of Misan, Iraq.*

Author's contribution

The sole author designed, analyzed, interpreted and prepared the manuscript.

Original Research Article

ABSTRACT

The research aims to study and analyze foreign trade indicators in Iraq, and their impact on the Iraqi dinar exchange rate. Therefore, the research problem was formulated to answer the question: Does foreign trade movement affect the Iraqi dinar exchange rate? Therefore, the time series was analyzed and the significant relationship between foreign trade indicators and the exchange rate was estimated using the VAR model and the Granger test. The test results for the VAR model showed that there was an effect of the volume of foreign trade on the exchange rate of the parallel Iraqi dinar during the research period. The researcher suggested several Recommendations, the most important of which are: The Monetary Authority in Iraq must take effective steps commensurate with the volume of demand for the dollar, especially in the currency sales window and the inclusion of small traders in foreign transactions that take place via the electronic platform to achieve stability in the exchange rate of the Iraqi dinar against the dollar, and to bridge the gap between the exchange rate Formal and parallel.

Keywords: Foreign trade; trade balance; exchange rate; VAR model.

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[++] *Assistant Teacher;*
Corresponding author: E-mail: ibrahim.ahmed @uomisan.edu.iq; ibrahim.a8711@gmail.com;

1. INTRODUCTION

After successive transformations in the global trade scene, interest in the volume of foreign trade is no longer limited to being an economic indicator that reflects the strength and sustainability of countries' economies, but rather it refers more to the relative weight of the country in the political map of the world, as it has become commercial superiority and possessing a larger share of global markets. Evidence of the state's strength and its ability to determine global trade trends. Therefore, the indicators of trade exchange, exports and imports, are among the most important indicators on which the state relies in the process of drawing up economic and trade policies in light of the current global economic changes, and Iraq needs to strengthen its economic relations, especially in the field of foreign trade! Because the Iraqi economy is characterized by instability and its dependence on oil exports as a basis for financing the state's general budget, which is an extended structural crisis, and in light of this, Iraq seeks to meet its needs for goods and services through foreign trade exchange. Accordingly, the current study is an inductive analysis of the impact of foreign trade on price stability. Iraqi dinar exchange rate for the period (2004-2021).

2. METHODOLOGY

2.1 Research Importance

The Iraqi economy suffers from prolonged structural imbalances due to its dependence on oil exports, and therefore the importance of the research lies in paying attention to tracking the movement of foreign trade, and the consequent fluctuations in the exchange rates of the Iraqi dinar against the dollar.

2.2 Research Problem

The weakness of local production has opened the door to imports of foreign goods to invade the local market, and this in turn will lead to the exit of hard currency to cover the value of large imports that mostly include consumer goods that contribute to making the non-oil merchandise trade balance in a state of continuous deficit. The research problem is summarized by asking: What is What changes can be made in the Iraqi economy to achieve significant development in non-oil exports and in turn achieve exchange rate stability?.

2.3 Research Hypothesis

Foreign trade in Iraq plays an important role in the process of economic development, and the monetary authority was able to take some measures that limit fluctuations in the exchange rate of the Iraqi dinar against the dollar.

2.4 Research Hypothesis

It aims to achieve the following:

*   Analysis of Iraq's foreign trade for the period from 2004-2021.
*   Explaining the extent to which the economic openness followed by Iraq affected the exchange rate.
*   Building a standard model (VAR).

2.5 Time Limits

The research includes a time series extending from the year (2004 - 2021).

2.6 Spatial Limits of Research

*   The Iraqi economy.

3. THEORETICAL FRAMEWORK OF FOREIGN TRADE AND EXCHANGE RATE

3.1. The Concept of Foreign Trade

Foreign trade is one of the branches of economics that specializes in studying foreign relations and economic transactions between countries, which are represented in capital movements and the exchange of goods and services, as well as the settlement of debts, with the aim of seeking to achieve economic gains for the state and to achieve a balance between the sides of liabilities and assets, and in addition to achieving development goals. These trade policies are pursued by countries of the world to influence the movements of goods, services, and capital between different countries. There have been many different formulas for defining foreign trade as "the most important form of economic relations under which goods and services are exchanged between countries in the form of exports and imports." Foreign trade is also known as "a branch It is one of the branches of economics that is concerned with studying economic transactions taking place across national borders. It is defined as (the import and export operations carried out by the state,

whether visible or invisible. It also represents the activities of trade exchange of goods and services between different countries of the world in order to achieve benefits. exchange between countries) [1].

3.2 Theories explaining Foreign Trade: [2, 3]

1- David Hume's theory: It summarizes David Hume's vision in foreign trade about the economic progress and prosperity in any country that will help other countries, and that is because of the integration of these countries in pursuing international action, as one country witnessed that it will positively affect other countries neighboring it. For example, (France, Germany, Italy) experienced their feelings in Britain, and the economic backwardness as the countries will have a real impact on the national economy and economy.

2- The absolute view of Adam Smith appears to be: This future theory constitutes an explanation of how to control trade between countries. It is by the economist Adam Smith in 1976, as these trends are manifested in the international division of labor and depend on the existence of a difference in production costs between one country and another. This theory is summarized by each country's specialization in what By producing goods, it will have an absolute external advantage in its production and trade between countries, and it will be beneficial to all participants.

3- David Ricardo's relative view: At this moment, the English economist David Ricardo responded to the questions I planned in Adam Smith's theory, which explains (if a country does not absolutely choose to produce any alternative compared to its competitors from other countries? Or a particular country realizes it) with an absolute advantage? In producing all offers to other countries, does this mean that there are no gains in trade between the two countries? In his book (Principles of Political Economy and Taxation) in 1817, he presented his view of relativity, as its essence was always that for the establishment of commercial trade between countries, it is not necessary for the state to have an absolute advantage in

producing a particular characteristic, but rather that the control of foreign trade depends on the difference in the relativity of goods between countries and not on Absolute costs. Hence, the country's gains from trade are achieved even when the external costs of producing all its products are greater than for firms that provide commercial products.

4- Jon Stuart Mill Theory: Jon Stuart Mill's theory (1806-1873) was concerned with introducing the demand side into the analysis with the aim of determining the rates of trade exchange between countries because each country's desire to offer its exports of goods depends on the amount of its imports, meaning that exports change according to the rates of exchange. The prevailing trade relations between the countries participating in foreign trade, and based on that, he defined the concept of balance between the countries actually participating in foreign trade, as the country in which exports are equal to imports is the other countries participating with it in foreign trade, meaning that the supply of country (A) for its commodity represents its demand On the country's commodity (B) and vice versa, the deviation that occurs in the rate of international trade from the rate of domestic trade increases that country's gains from foreign trade. This came because the previous theories (the theory of absolute advantage and the theory of comparative advantage) relied in their interpretation on the establishment of Foreign trade between countries is on the supply side without paying attention to demand. Therefore, this theory is a notable development in classical thought, as it was considered the correct direction in foreign trade, and a step forward, and it still forms the basis of most modern theories.

5- Linder Estevan's theory of similarity of tastes: The essence of this theory stems from his reliance on the demand side in explaining the phenomenon of international exchange, and proving the error of relying on the supply side, as Linder concluded that individual income levels affect the intensity of foreign trade (as a measure of the volume of foreign trade between Countries) with regard to industrial products, and it was also stated in Linder's

interpretation that there is a difference between two types of goods:

- Primary products: It is believed that their exchange takes place according to comparative advantage and that the advantage is determined by the proportions of production factors. The abundance of factors of production leads to their prices falling and the price of the product falling, while the scarcity of factors of production leads to their prices rising and the price of the product rising.
- Manufactured goods: Linder believes that there is a group of factors that determine potential exports and imports, and there is a group of factors that determine actual exports and imports. From the above, it can be said that Linder Estevan's hypothesis has been proven correct in the country of Sweden, to which Linder belongs, and its validity has not been proven in the rest of the other countries.

3.3 The Concept of Exchange Rate

The exchange rate is considered to be the mirror in which the country's commercial position with the outside world is reflected, through the relationship between exports and imports. Exchange rates are a tool for linking the local economy to the global economy. On the one hand, and on the other hand, importing goods from a foreign country increases the demand for The currency of this foreign country and that exporting goods to foreign countries increases the supply of this country's currency in the national market, or in other words, imports increase the demand for foreign currencies and increase the supply of the national currency in global markets, while exports increase the foreign demand for the national currency and increase the supply Foreign currencies in the national market. Accordingly, the exchange rate was defined as "the number of units of local currency that are exchanged for one unit of foreign currency." It was defined as "the number of units of foreign currency that are paid for with one unit of the national currency." The researcher defined it as an exchange process for the national currency. In foreign currency and vice versa, that is, it is a tool that links the national economy that is open to the outside world with the rest of the world's economies. This is achieved through knowing international costs and prices, and thus facilitating international commercial transactions [4].

3.4 Specific Theories of the Exchange Rate

3.4.1 Gustav castle purchasing power parity theory

After 1914, the Swedish economist Gustav Castle issued his book entitled ((Money and Foreign Exchange Rates)), which adopted the Purchasing Power Parity Theory, as he believes that the price of any currency is determined according to the purchasing power of this currency in the local market compared to By its external purchasing power, that is, the relationship between the currency of a particular country and the currency of another country is determined according to the relationship between the prevailing price levels in both countries. That is, the exchange rate of a country is determined by the ratio that is determined between the level of internal prices denominated in the national currency and the level of world prices denominated in foreign currency [5].

3.4.2 Balance of payments theory

The balance of payments and its various paragraphs are among the basic sources of a country's demand for foreign currencies and then the country's supply of the local currency because it is the decisive factor in determining the exchange rate of the local currency. The exchange rate is determined according to the forces of supply and demand for the local currency and external demand. on her. Therefore, the balance of payments theory depends on the final results in the balance of payments of a country in determining the exchange rate. It is summed up in the fact that the exchange rate is part of the price theory and is then determined in light of the rule of supply and demand, and this is called the "equilibrium exchange rate." When there is a surplus in the balance of payments, this means that there is an increase in demand for the national currency and then an increase in its external value, while the opposite happens in the event of a deficit in the balance of payments, which means an increase in the money supply of the currency and then a decrease in its external value [6].

3.4.3 Critical theory

Identifying the features of monetary theory in explaining exchange rate changes is through studying the effect of both the interest rate and the quantity of money in determining the

exchange rate. This theory focused on the fact that the exchange rate is a monetary phenomenon affected by the real determinants of the demand for money. The money supply in each country is determined independently by the monetary authorities represented by the central bank, while the demand for money depends on the level of real income and the interest rate, as the interest rate has an important influence in determining the exchange rate. Increasing the interest rate in a country leads to an increase in the movement of money. Capital towards these countries, which increases the demand for their currency, thus leading to an increase in the exchange rate, and the opposite happens if the interest rate is reduced. However, the interest rate is not isolated from the money supply, but rather they can work in two opposite directions, each canceling out the effect of the other, and preventing any change in the exchange rate. If, for example, there is no expected change in the money supply in the near future, the exchange rate will not be greatly affected, given that the exchange rate Nominal interest will fall as a result of the expected decline in the money supply [7].

3.4.4 The theory of financial asset market fluctuations

This theory is concerned with determining the balanced exchange rate and depends on the freedom of the markets and market forces to achieve the equilibrium of the exchange rate as well as the equilibrium of the balance of payments. The French economist Jack Arts, who is one of the experts of the International Monetary Fund, explained this theory, as the factors that The exchange rate is determined according to this theory by the foreign demand for local financial assets and the local demand for foreign financial assets. It is noted that the exchange rate changes whenever there are unforeseen changes in the financial markets and the financial assets the state owns compared to the changes that occur in the value of the financial assets owned by foreigners. This is on the one hand, and on the other hand, this theory focused on the experiences available to individuals in maintaining local and foreign financial assets, and according to what this theory determines, the demand for the local currency increases with the decrease in foreign interest rates, and the demand for local securities decreases with the decrease in the local interest rate, and vice versa. Therefore, the return on local financial assets plays a fundamental role in

determining the level of the exchange rate at which individuals determine the stock of foreign financial assets that they hold. Whenever the outflow of foreign financial assets is greater than their inflow, the situation becomes unsuitable for the local currency exchange rate because the more... As the ratio of foreign to local financial assets decreases, the local currency exchange rate deteriorates, hence the importance of this theory [8].

4. ANALYSIS OF THE DIALECTICAL RELATIONSHIP BETWEEN FOREIGN TRADE AND THE EXCHANGE RATE IN IRAQ

4.1 Analysis of the Volume of Foreign Trade and the Trade Balance in Iraq

Foreign trade represents the movement of capital between the two countries. The trade balance is one of the important indicators for measuring the volume of international trade, and the main and effective axis in the structure of the balance of payments because of the difference it represents between the value of exports and the value of imports, which reflects a major impact on the structure of the Iraqi economy. For further clarification, we use Table (1).

From the data in Table (1), it is clear that the trade balance in Iraq for the year 2004 recorded a deficit of (-3,492) billion dollars, with a trade exchange volume of (39,112) billion dollars. This is attributed to the changes that affected the political situation in Iraq, as well as the change in economic policies that caused... In the decline in the volume of trade in exports and imports (Economic Report, 2004: 21). It then took an upward path until the year 2009, when the trade balance recorded a decline of (7,110) billion dollars, at a negative rate (-78%), with trade exchange amounting to (72,454) billion dollars, with a change rate of (-22.8), due to the repercussions of the global crisis that struck the country. world, which was negatively reflected in the decline in exports and imports (Economic Report, 2009: 42), and then the trade balance took a fluctuating path until the year 2020, as it recorded a decline amounting to (5,883) billion dollars, by a negative rate of (-81%), and with a volume of trade exchange amounting to (87,737 billion dollars, with a negative change rate of (-33%), as a result of the decrease in exports and imports due to the global crisis that struck the world and health isolation measures as a result

of the (COVID-19) pandemic (Economic Report, 2020: 54-56), then rising to ($32,235) billion in 2021, with a change rate of (447%)%), and for further clarification, we use Fig. (1), which shows the developments in foreign trade and the trade balance in Iraq for the period under discussion: -

4.2 Foreign Trade of the Most Important Trading Partners with Iraq

Foreign trade in Iraq is closely linked to the development plans set by the government, as

Iraq relies mainly on oil exports to finance development projects, and imports in turn contribute to providing the requirements for economic growth, such as the machinery and equipment needed to build and develop infrastructure in Iraq, and these requirements cannot be provided. Except through foreign trade, which makes Iraq linked to international economic relations with most of the major global economies, and Table (2) represents Iraq's trade with the most important trading partners for the period (2004-2021) and according to the following:

Table 1. The volume of trade exchange and changes in the trade balance in Iraq for the period (2004-2021) billion dollars

Change in trade exchange %	Volume of trade exchange	Change in trade balance %	Trade balance	Imports (CIF)	Exports (FOB)	The year
- - -	39,112	- - -	-3,492	21,302	17,810	2004
11.7	43,699	-205	3,695	20,002	23,697	2005
12.6	49,236	219	11,822	18,707	30,529	2006
14.1	56,212	94	22,968	16,622	39,590	2007
67	93,897	46	33,555	30,171	63,726	2008
-22.8	72,454	-78	7,110	32,672	39,782	2009
22.9	89,091	103	14,435	37,328	51,763	2010
35	120,312	170	39,048	40,632	79,680	2011
18	142,006	18	46,410	47,798	94,208	2012
-1.2	140,216	-15	39,322	50,447	89,769	2013
-7.8	129,180	-1	38,780	45200	83,980	2014
-27.7	93,375	-76	9,279	42,048	51,327	2015
-24.6	70,375	31	12,221	29,077	41,298	2016
19.4	84,065	154	31,053	26,506	57,559	2017
40.8	118,374	75	54,344	32,015	86,359	2018
10.6	131,002	-40	32,168	49,417	81,585	2019
-33	87,737	-81	5,883	40,927	46,810	2020
29.8	113,931	447	32,235	40,848	73,083	2021

Source: Central Bank of Iraq, General Directorate of Statistics and Research, Statistical Bulletin
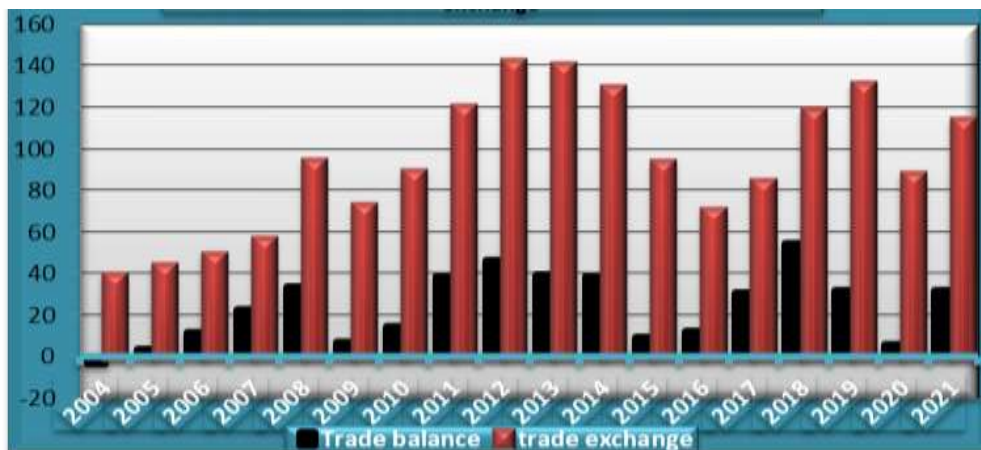

Fig. 1. Developments in the trade balance and the volume of trade exchange

Table 2. Geographical distribution of (Exports) values in Iraq for the period (2004-2021) million dollars

			Geographic area			
Growth rate %	Asian countries	Other European countries	European Union countries	Americas countries	Arab countries	The year
- -	2,155	131	3,127	10,819	1,556	2004
6.1	2,292	393	6,277	13,185	763	2005
65.8	4,427	443	7,406	16,922	949	2006
33.9	6,215	317	9,422	21,694	1,425	2007
47.6	10,005	510	15,167	34,922	2,294	2008
-68.4	5,047	1,144	10,291	19,557	867	2009
147	21,953	1,289	11,155	15,886	1,155	2010
50.3	36,310	2,279	13,801	24,024	2,853	2011
16.7	42,914	2,693	16,311	28,393	3,371	2012
24.3	54,758	629	13,465	17,325	3,501	2013
-10.3	49,381	252	14,781	16,124	3,023	2014
-65.9	25,544	130	7,646	8,341	1,564	2015
-2	25,022	0	9,896	3,574	1,836	2016
-27	19,034	2,171	17,113	2,442	10,002	2017
107	55,848	624	17,424	11,091	1,369	2018
-1.	55,218	412	17,113	6,442	2,398	2019
-41	36,550	323	323	5,999	1,616	2020
44.1	56,838	502	9,328	3,627	2,512	2021

Source: Central Bank of Iraq, General Directorate of Statistics and Research, Statistical Bulletin

4.2.1 Geographical distribution of the volume of foreign trade in Iraq (exports)

From the data in Table (2), it is clear that the geographical distribution of Iraq's exports to the most important trading partners in 2004 amounted to (10,819) billion dollars for the countries of the Americas, (3,127) billion dollars for the European Union countries, and (2,155) billion dollars for the Asian countries. As for the other European countries and the Arab countries, It amounted to ($131 billion and $1556 billion, respectively, for the same year, due to the political changes that occurred after 2003. Then, it took a fluctuating path until 2009, when it reached ($19,557) billion for the countries of the Americas and ($10,291) billion for the countries of the Union. The European and (5,047) billion dollars for the Asian countries. As for the other European countries and the Arab countries, they amounted to (1,144 billion dollars and (867) billion dollars, respectively, with a negative growth rate of (-68.4%). This is attributed to the global crisis that struck the world. It then took an unstable path until the year 2021, as the volume of foreign trade of Iraq's exports recorded an increase with a positive growth rate of (44.1%) and reached (56,838) million dollars. Asian markets, which are among the largest trading partners and a major market for Iraq's exports, especially oil, followed by the European Union

countries, amounting to 9,328 billion dollars The countries of the Americas amounted to (3,627) billion dollars, in addition to the Arab countries and other European countries, which amounted to (2,512) billion dollars and (502) billion dollars, respectively, (The Economic Report, 2021: 55). For further clarification, we use the following Fig. (2):

4.2.2 Geographical distribution of the volume of foreign trade in Iraq (imports)

Imports contribute to providing the requirements for economic growth, such as machinery and equipment necessary to build and develop infrastructure in Iraq. These requirements can only be provided through foreign trade, which makes Iraq linked to international economic relations with most of the major global economies. From the data in Table (3), it is clear that foreign trade in Iraq, represented by imports with the most important trading partners in 2004, was led by the European Union countries, the Asian countries, and the Arab countries, respectively (9,064) billion dollars, (3,983) billion dollars, and (2,373) billion dollars, followed by the countries of the Americas and the other European countries, respectively. (1,861) billion dollars, (0.404) billion dollars, and then took a fluctuating path until the year 2014, as Iraq's imports with the most important trading partners

recorded a positive growth rate amounting to (68.2%), led by the Asian countries, which amounted to (29,301) billion dollars, followed by Iraq's imports. Of the Arab countries, it amounted to (29,301) billion dollars, then the European Union countries amounted to (29,301) billion dollars. As for the rest of the trading partners, the countries of the Americas and other European countries, respectively, recorded about (3,867) billion dollars, and (3,164) billion dollars for the same year, The commodity composition of imports was primarily machinery and transportation equipment, followed by various

manufactured goods and manufactured goods, and then mineral fuels, lubricating oils, etc., to continue after that in a state of fluctuation until the year 2021, as Iraqi imports were recorded for the most important trading partners. A negative growth rate of (-16%) for the Asian countries, the European Union, and the Arab countries, respectively. (28,890) billion dollars, (5,565) billion dollars, (3,100) billion dollars, followed by the countries of the Americas, which amounted to (2,159) billion dollars, and the other European countries amounted to (0,851) billion dollars. For further clarification, we use the following Fig. (3):
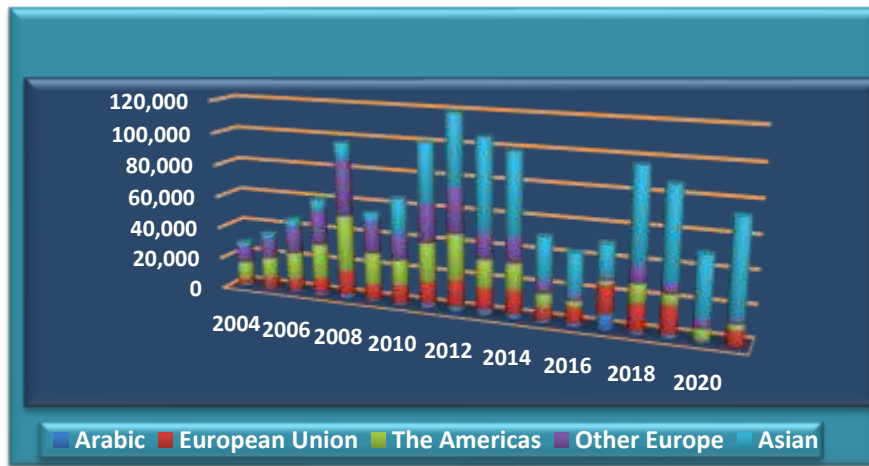

Fig. 2. Geographical distribution of exports for the period (2004-2021)

Table 3. Geographical distribution of (Imports) values in Iraq for the period (2004-2021) billion dollars

Geographic area						
Growth rate%	Asian countries	Other European countries	European Union countries	Americas countries	Arab countries	The year
——	3,983	0,404	9,064	1,861	2,373	2004
-45	2,530	6,975	2,685	3,546	7,198	2005
-14	2,194	6,226	2,946	1,650	7,855	2006
2.4	2,249	4,733	1,271	2,190	9,035	2007
59.6	4,082	8,590	2,307	3,976	16,399	2008
22.3	5,104	9,475	3,348	5,001	14,068	2009
50.2	8,432	13,253	5,885	5,248	10,399	2010
40.2	12,615	13,925	4,881	4,101	11,903	2011
16.4	14,864	20,929	5,918	4,190	12,816	2012
-0	14,811	20,855	5,897	4,175	12,770	2013
68.2	29,301	3,164	8,029	3,867	13,889	2014
-21.7	23,568	2,665	6,251	3,034	12,406	2015
-33	16,793	1,899	4,454	2,162	8,839	2016
12.5	19,034	2,171	5,039	2,442	10,002	2017
44.8	29,800	2,039	6,199	3,280	4,046	2018
32.4	41,212	1,441	7,910	3,767	3,601	2019
-18	34,148	1,006	6,577	2,552	3,664	2020
-16	28,890	0.851	5,565	2,159	3,100	2021

Source: Central Bank of Iraq, General Directorate of Statistics and Research, Statistical Bulletin
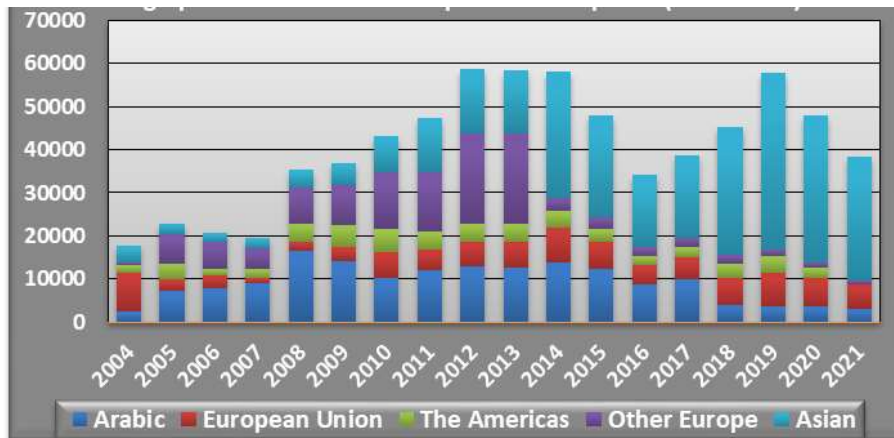
Fig. 3. Geographical distribution of imports for the period (2004-2021)

4.3 Analysis of the Iraqi Dinar Exchange Rate Against the Dollar

The exchange rate is an important tool that plays an influential role in the economies of all countries, especially in Iraq, as the Iraqi political system witnessed changes after 2003 that led to changes in the directions of economic policies in Iraq and the pursuit of external trade openness, and the issuance of some laws contributed to this, especially Central Bank Law No. (56) of 2004 and Banking Law No. (94) of 2004, in addition to Investment Law No. (13) of 2006. There are two foreign exchange rates against the Iraqi dinar: the official rate determined by the monetary authority and the parallel rate determined by the market.

From the data in Table (4), it is clear that the exchange rate of the Iraqi dinar (official and parallel) against the dollar reached (1,453) dinars in 2004, and then took a fluctuating path until the year 2015, when it reached (1,190) dinars, the

official Iraqi dinar exchange rate against the dollar. With a positive growth rate of (2%), while the exchange rate of the Iraqi dinar in the parallel market reached (1,247) dinars, with a growth rate of (2.6) dinars, this is due to the Central Bank issuing new instructions for buying and selling foreign currency requiring the strengthening of the balances of banks wishing to buy with their correspondents abroad. To finance legally permitted banking operations to ensure price stability and to finance trade and other operations, which reflects the growing gap between the official exchange rate and the market exchange rate (Economic Report, 2015: 38). Then the official exchange rate maintained its stability, while the parallel market exchange rate took a fluctuating path until the year 2021, as it reached (1,474) dinars, the parallel market exchange rate at a rate of 17.7%, and the official exchange rate reached 1,450 dinars, with a growth rate of (19.7%). (The Economic Report, 2020: 9). For further clarification, we use Fig. (4).
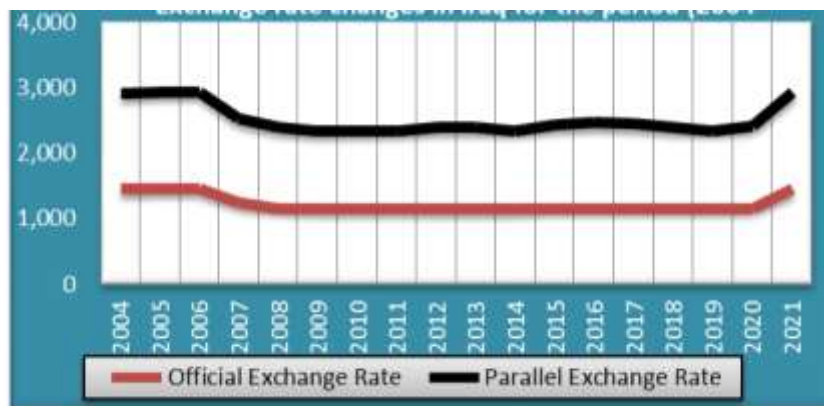

Fig. 4. Exchange rate changes in Iraq for the period (2004-2021)

Table 4. Developments in the Iraqi dinar exchange rate against the dollar for the period (2004-2021)

Gap (exchange rate)	Growth rate %	Exchange rate (parallel)	Growth rate %	Exchange rate (the official)	The year
0	- - -	1,453	- - -	1,453	2004
0.20	1.9	1,472	1	1,469	2005
0.5	0.2	1,475	-0	1,467	2006
0.9	- 15.2	1,267	-15.6	1,255	2007
0.8	-5.1	1,203	-5	1,193	2008
1	-1.7	1,182	-1.9	1,170	2009
1.2	0.2	1,185	0	1,170	2010
2.2	0.9	1,196	0	1,170	2011
5.7	3	1,233	-0.3	1,166	2012
5.6	-0	1,232	0	1,166	2013
4.1	-1.4	1,214	0	1,166	2014
4.7	2.6	1,247	2	1,190	2015
7.1	2.2	1,275	0	1,190	2016
5.7	-1.3	1,258	0	1,190	2017
1.5	-4	1,208	0	1,190	2018
0.5	-0.9	1,196	0	1,190	2019
3.6	3.17	1,234	0	1,190	2020
1.6	17.7	1,474	19.7	1,450	2021

Source: Central Bank of Iraq, General Directorate of Statistics and Research, Statistical Bulletin

5. MEASURING THE IMPACT OF FOREIGN TRADE ON THE IRAQI DINAR EXCHANGE RATE ACCORDING TO THE (VAR) MODEL

5.1 Description of Search Variables

At this stage, the model variables will be described, because it is an important step to clarify the dependent and independent variables, according to the following Table [9].

Table 5. Description of research variables

Now-And	Rum- -g	Variables	T
Independent	V	The trade Exchange	1
Continued	P	Parallel Exchange rate	2

Source: Prepared by the researcher

5.2 Stability Test (ADF) for the Research Variables

In order to know the stability of the time series or not, for the research variables, we will test the stationarity of the time series values to avoid spurious regression using the program (Eviews.10) (Gujarat, 2015: 157), so the test was conducted based on the expanded Dickey-Fuller test, and the results shown were reached. In Table (6).

5.3 Estimating and Analyzing Variables According to the (VAR) model

5.3.1 1- Model evaluation

After determining the degree of slowness of the model, then comes the stage of estimating parameters and determining statistical significance. Accordingly, the test was conducted according to the (VAR) model, following its basic steps and according to the following results of Table (7).

From the data in Table (7), it is clear that the results of estimating the VAR model, explained by the coefficient of determination (R2), amounted to (0.69), meaning that some of the changes that occur in the exchange rate of the Iraqi dinar for the parallel market are sourced from changes in the volume of foreign trade of the most important trading partners with Iraq. As for other changes, they occur as a result of other factors, including the lack of control over foreign transfers and the smuggling of hard currency despite the deterrent measures by the monetary authority, especially after the adoption of Money Laundering Law No. (39) of 2015. As for the value of (F), it reached (3.0), in order to ensure the stability of the model, the following test must be conducted:

Through Fig. (5), it is clear that the roots are all within one circle, and therefore it is possible to

conduct many tests to measure the relationship between the (parallel) Iraqi dinar exchange rate and the volume of trade exchange of the most important trading partners with Iraq.

Table 6. Testing the stability of time series of research variables

		Augmented Dickey-Fuller test statistic					
Variables	Estimated Value	Critical Val			Prop	Lev	1St Difference	2St Difference
P	3.380478-	2.728252-	1.966270-	1.605026-	0.0024			***
V	3.549108-	2.717511	1.964418-	1.605603-	0.0015		**	

Source: Prepared by the researcher based on the program (E-Views10)
(*) is stable at the level (**) is stable at the first difference (***) is stable at the second difference

Table 7. Estimating the model according to the VAR methodology

Vector Autoregression Estimates		
Date: 09/09/23 Time: 16:05		
Sample (adjusted): 2006 2021		
Included observations: 16 after adjustments		
Standard errors in ( ) & t-statistis in [ ]		
Vector Autoregression Estimates	V	P
P(-1)	0.852957	-84.29788
	(0.37667)	(119.941)
	[2.26446]	[-0.70283]
P(-2)	-0.365565	-46.20481
	(0.38596)	(122.898)
	[-0.94716]	[-0.37596]
V(-1)	-0.001323	0.563841
	(0.00097)	(0.30761)
	[-1.36965]	[1.83295]
V(-2)	0.001355	-0.257283
	(0.00090)	(0.28677)
	[1.50426]	[-0.89718]
C	649.4719	233926.8
	(449.912)	(143262.)
	[1.44355]	[1.63285]
R-squared	0.**69**5702	0.796517
Adj. R-squared	0.543553	0.692645
Sum sq. resids	57558.47	5.84E+09
S.E. equation	72.33663	23033.67
F-statistic	3.089221	3.314168
Log likelihood	-88.20676	-180.4209
Akaike AIC	11.65084	23.17761
Schwarz SC	11.89228	23.41904
Mean dependent	1254.938	99466.44
S.D. dependent	90.26514	29290.92
Determinant resid covariance (dof adj.)	2.71E+12	
Determinant resid covariance	1.28E+12	
Log likelihood	-268.4451	
Akaike information criterion	34.80564	
Schwarz criterion	35.28851	
Number of coefficients	10	

Prepared by the researcher based on the outputs of the (E-Views10.) program

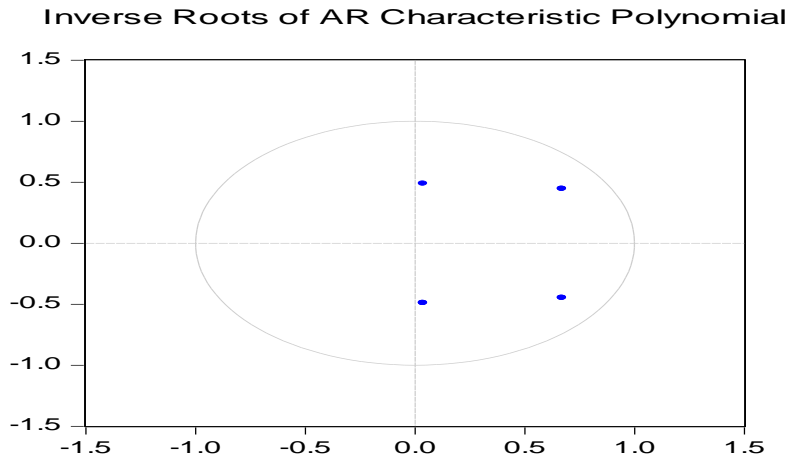Inverse Roots of AR Characteristic Polynomial

Fig. 5. Model stability

5.3.2 Converting the estimated model into a system

After the steps of estimating the variables for the dependent and independent variables and conducting a stability test for the model, the model was converted into a system, as shown in Table (8).

5.3.3 Analysis of response functions for variables

For the purpose of tracking the time course of sudden changes and shocks to which the model may be exposed, and the extent to which other variables respond to any change, we resort to this test, according to the results shown in Table (9).

From the data in Table (5), it is clear that the extent of the response of the dependent variable (P), the parallel Iraqi dinar exchange rate, to sudden changes was large in the first year, while

the independent variable (V), which is related to the volume of trade exchange, had a very low rate, after which it took an oscillating path, as shown. In Fig. (6).

5.3.4 Analysis of variance for variables

After conducting the analysis of the response functions, we conduct the analysis of variance, which is a tool to determine the amount of variance in the prediction of the research variables and to identify the explanatory power of the dependent and independent variables, the percentage of errors, as well as sudden changes in the model variables, according to Table (10).

5.3.5 Causal analysis of the research variables

From the results of the Granger test shown in Table (11), it is clear that the best lag period is (4). Therefore, there is a causal relationship
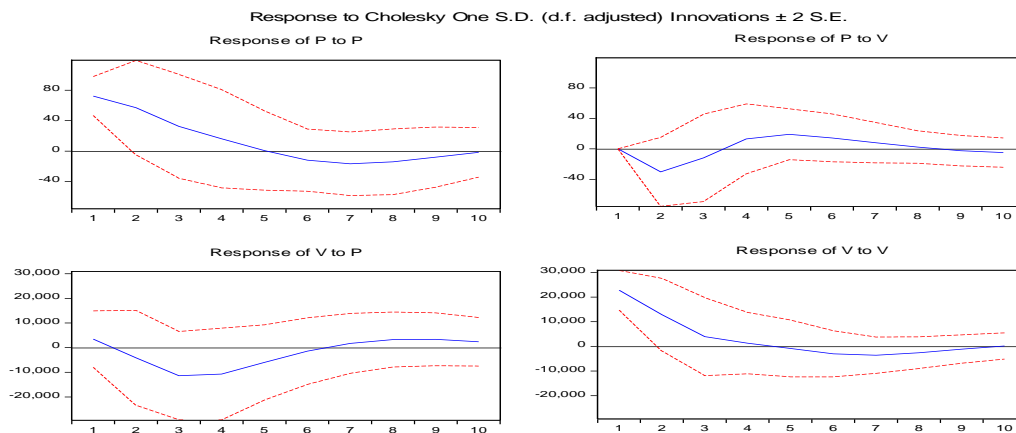

Fig. 6. Response function

between the two variables (the parallel Iraqi dinar exchange rate, the volume of foreign trade exchange), and therefore we reject the alternative hypothesis and accept the null hypothesis.

Table 8. Converting formulas into a system

System: UNTITLED				
Estimation Method: Least Squares				
Date: 09/15/23 Time: 04:11				
Sample: 2006 2021				
Included observations: 16				
Total system (balanced) observations 32				
	Coefficient	Std. Error	t-Statistic	Prob
C(1)	0.852957	0.376670	2.264464	0.0337
C(2)	-0.365565	0.385958	-0.947162	0.3538
C(3)	-0.001323	0.000966	-1.369652	0.1846
C(4)	0.001355	0.000901	1.504260	0.1467
C(5)	649.4719	449.9121	1.443553	0.1630
C(6)	-84.29788	119.9406	-0.702830	0.4895
C(7)	-46.20481	122.8980	-0.375961	0.7105
C(8)	0.563841	0.307613	1.832955	0.0804
C(9)	-0.257283	0.286768	-0.897182	0.3793
C(10)	233926.8	143262.5	1.632855	0.1167
Determinant residual covariance		E+12**1.28**		
Equation: P = C(1)*P(-1) + C(2)*P(-2) + C(3)*V(-1) + C(4)*V(-2) + C(5)				
R-squared	0.529047	Mean dependent var		1254.938
Adjusted R-squared	0.357791	S.D. dependent var		90.26514
S.E. of regression	72.33662	Sum squared resid		57558.46
Durbin-Watson stat	1.597299			
Equation: V = C(6)*P(-1) + C(7)*P(-2) + C(8)*V(-1) + C(9)*V(-2) + C(10)				
R-squared	0.546516	Mean dependent var		99466.44
Adjusted R-squared	0.381613	S.D. dependent var		29290.92
S.E. of regression	23033.67	Sum squared resid		5.84E+09
Durbin-Watson stat	2.077116			

Prepared by the researcher based on the outputs of the (E-Views10.) program

Table 9. Response functions for variables

Response of P:		
Period	**P**	**V**
1	72.33663	0.000000
2	57.12296	-30.13143
3	32.45354	-11.83989
4	16.24634	13.12290
5	0.763396	19.11632
6	-11.89771	14.37246
7	-16.64601	8.137952
8	-14.03923	2.334193
9	-7.925465	-2.408412
10	-1.635502	-4.948281

Prepared by the researcher based on the outputs of the (E-Views10.) program

Table 10. Analysis of variance

Variance Decomposition of P:			
Period	**.S.E**	**P**	**V**
1	72.33663	100.0000	0.000000
2	96.97177	90.34507	9.654926
3	102.9414	90.10954	9.890463
4	105.0385	88.93967	11.06033
5	106.7666	86.08899	13.91101
6	108.3847	84.74280	15.25720
7	109.9570	84.62829	15.37171
8	110.8742	84.83724	15.16276
9	111.1832	84.87448	15.12552
10	111.3053	84.70999	15.29001

Prepared by the researcher based on the outputs of the (E-Views10.) program.

Table 11. Granger causality test for the relationship between variables

Null Hypothesis	Towards the relationship	F-Statistic	Prob	Lag
V does not Granger Cause P	→	11.8520	0.0092	4
P does not Granger Cause V	→	5.35944	0.0471	

Prepared by the researcher based on the outputs of the (E-Views10.) program

6. CONCLUSIONS

1- The weakness of local production has opened the door to imports of foreign goods to invade the local market, and this in turn will lead to the exit of hard currency to cover the value of large imports that mostly include consumer goods that contribute to keeping the non-oil merchandise trade balance in a state of continuous deficit.

2- During the research period, most of the exports in the period (2004-2010) headed to the countries of the Americas, in addition to imports, but after that they headed towards the Asian countries.

3- The results of the VAR model showed that there was an effect of the volume of foreign trade on the exchange rate of the parallel Iraqi dinar during the research period.

4- According to the Granger causality test, it was found that there is a causal relationship between the volume of foreign trade and the exchange rate of the parallel Iraqi dinar.

7. RECOMMENDATIONS

1- Bold steps must be taken that contribute to boosting the economy, addressing the structural imbalance that Iraq has suffered through successive crises, and activating the role of other sectors to address the imbalance in the trade balance.

2- Focusing imports on essential goods, especially investment goods, and not following the policy of dumping consumer goods that can be produced locally.

3- Stimulating investment by activating investment channels, especially in non-oil fields and employing a policy of customs and tax exemption.

4- The monetary authority in Iraq must take effective steps commensurate with the volume of demand for the dollar, especially in the currency sales window and include small traders in the transactions that take place through the electronic platform to stabilize the exchange rate of the Iraqi dinar against the dollar and bridge the gap between the official and parallel exchange rates

COMPETING INTERESTS

Author has declared that no competing interests exist.

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APPENDIX

Economic reports:

1- Republic of Iraq, Central Bank of Iraq, Economic Report, various years (2004-2021).
2- Republic of Iraq, Central Bank of Iraq, Statistical Bulletin, various years (2004-2021).
3- Republic of Iraq, Central Bank of Iraq, Financial Stability Report, various years (2010-2021).

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