المجلة الدولية للأداء الاقتصادي
International journal of economic performance
ISSN: 2661-7161 EISSN:2716-9073
Publications are Open Access in this journal

Measuring and Analyzing the Relationship between the Tariff Barrier and the Foreign Exchange Reserves of the Central Bank of Iraq (2004-2024)

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Submitted:18/04/2025 Accepted:06/05/2025 Published:30/06/2025

Abstract

This research investigates the relationship between the tariff barrier and the foreign exchange reserves of the Central Bank of Iraq over the period 2004–2024. The primary objective is to analyze how changes in Iraq's tariff policies—specifically the imposition and collection of customs duties—impact the accumulation and management of foreign exchange reserves. The study is motivated by the hypothesis that the weakness of Iraq's tariff barrier adversely affects the status of central bank reserves, especially given the country's heavy reliance on oil exports and the prevalence of customs evasion through informal border crossings.The methodology employs an econometric approach, utilizing the Nonlinear Autoregressive Distributed Lag (NARDL) model to assess both short- and long-run relationships between the tariff barrier and foreign exchange reserves. Unit root and cointegration tests confirm the suitability of the NARDL model, which is shown to explain approximately 77.3% of the variation in reserves, with the remainder attributed to factors such as customs evasion and external economic shocks.

Key findings indicate that while a higher tariff barrier can increase government revenues and support foreign exchange reserves, its effectiveness is limited by the dominance of oil prices and persistent smuggling. The tariff barrier ratio remains weak relative to import volumes, and despite occasional increases in customs revenues (notably during crises), the main driver of reserve fluctuations is oil revenue. The econometric results confirm a positive long-run relationship between the tariff barrier and foreign exchange reserves, but also highlight the need for improved customs administration, reduced evasion, and economic diversification.

Keywords: Tariff Barrier, Foreign Exchange Reserves, Central Bank of Iraq, Iraqi Imports, NARDL Model

JEL Classification: F13,F14,F33,E42, C22,

Introduction

Countries strive to establish control over customs duties in their efforts to manage public revenues, as well as using trade policy to influence foreign trade, particularly imports. In oil-producing countries like Iraq, foreign exchange reserves play a significant role in financing the volume of commodity imports. This occurs amidst a considerable weakness in the contribution of domestic production to meeting increasing internal demand.

The tariff barrier is a primary tool used by governments to influence the flow of goods and services across borders. These tools significantly impact economic growth, employment, prices, and even political relations between nations. Likewise, foreign exchange reserves are a crucial indicator of economic stability and a country's ability to meet its international obligations. From this perspective, the relationship between the tariff barrier and foreign exchange reserves is determined, influenced by numerous economic and political factors. It is observed that the tariff barrier affects foreign exchange reserves through customs revenues, its impact on the balance of payments, and its influence on capital flows and exchange rates.

Problem: The weakness of the tariff barrier in Iraq has negatively impacted the reality of the Central Bank's foreign exchange reserves.

Hypotheses: Two hypotheses were formulated for the research, to be either proven or disproven:

1) The tariff barrier in Iraq affects the foreign exchange reserves of the Central Bank of Iraq.
2) There is a positive relationship between the tariff barrier and the foreign exchange reserves of the Central Bank of Iraq.

Objectives: The research aims to explain the relationship between the tariff barrier and the foreign exchange reserves of the Central Bank of Iraq during the period (2004-2024).

Importance: The research importance stems from the significance of the tariff barrier in controlling the quantity of imports and subsequently increasing public revenues, which positively reflects on the foreign exchange reserves of the Central Bank of Iraq.

1- Conceptual Framework of the Relationship between the Tariff Barrier and Foreign Exchange Reserves

1-1 Introduction to the Concept of Tariff Barrier

This term refers to a set of trade restrictions imposed by a country on imports from other countries. These restrictions primarily include customs tariffs, which are taxes levied on imported goods. The tariff barrier aims to make imported goods more expensive, thereby protecting domestic industries from foreign competition and encouraging consumers to purchase local products.

From the perspective of economists, it is often used in the context of explaining trade protectionism and its impact on international trade. From the viewpoint of international organizations, the World Trade Organization (WTO) uses similar terms to describe trade policies aimed at restricting trade, although it may not specifically use the term "tariff barrier." Furthermore, some economic encyclopedias and dictionaries may

explain the concept of Trade Barriers, which include customs tariffs as one of the most significant barriers (Krugman, 2021).

1-1-1 The Concept of Tariff Barrier from an International Economics Perspective

Tariff barriers (tariffs) are taxes imposed on imported goods. From an economic standpoint, tariffs aim to protect domestic industries, making imported goods more expensive, thus giving domestic products a competitive advantage. They also contribute to increasing government revenue, although this is usually not the primary goal. Additionally, they can influence the terms of trade, particularly when a large country seeks to affect global market prices by imposing tariffs. The tariff barrier is part of trade policies, which include a variety of tools, such as: (WTO, 2022)

a) Quotas: Restrictions on the quantity of goods that can be imported.
b) Non-Tariff Barriers (NTBs): Include quality standards, health regulations, and other measures that may impede trade.
c) Subsidies: Payments provided by the government to domestic producers, reducing their production costs and making them more competitive.
d) Free Trade Agreements (FTAs): Agreements between countries to reduce or eliminate trade barriers among them.

1-1-2 Tariff Barriers and Economic Policies

Undoubtedly, the tariff barrier is an economic policy tool used to achieve a variety of objectives – as mentioned previously. However, countries must be cautious about using tariff barriers, as they can have negative effects on the global economy. Trade policies should be part of a comprehensive economic strategy that considers all relevant factors. This highlights the macroeconomic objectives of this tool, meaning how it impacts economic policy: (Jebels et al., 2009) and (Todaro, 2009)

a) Economic Growth: Countries use tariff barriers to stimulate domestic economic growth. For example, imposing tariffs on specific imports to protect nascent industries or support strategic sectors, aiming to increase local production and create job opportunities. However, these potential benefits must be balanced against potential risks like reduced competition and undermined efficiency.

b) Inflation: Tariffs affect inflation levels. If tariffs increase the cost of imports, it leads to higher prices for consumers and businesses, contributing to inflation. Conversely, countries might attempt to lower tariffs to reduce inflation.

c) Balance of Payments: Trade policies, including tariff barriers, impact the balance of payments. Imposing tariffs on imports can reduce them, thereby improving the trade balance. Conversely, it might also lead to negative reactions from other countries.

d) Protection of Domestic Industries: Tariff barriers are often part of industrial policies aimed at protecting local industries from foreign competition. The goal might be to support emerging industries, preserve jobs, or ensure national security.

e) Encouraging Export Industries: Countries might use trade policies to encourage exports rather than restrict imports. For instance, providing subsidies to exporters or reducing tariffs on inputs used in producing export goods.

f) Employment: Trade policies affect employment levels by imposing tariffs on imports to protect jobs in domestic industries. However, this could also lead to job losses in industries reliant on imports or those exporting their products abroad.
g) Government Revenue: Tariffs generate revenue for the government, which can be used to fund public services or reduce other taxes. However, this revenue must be balanced against potential negative economic impacts.
h) Government Spending: Trade policies can involve government spending, such as subsidies provided to domestic producers.
From the above, we conclude that countries should be cautious about imposing excessive tariffs, as this could lead to negative reactions from other nations, potentially resulting in trade wars. Tariff barriers can also reduce economic efficiency by distorting incentives and reducing competition. Furthermore, trade policies must be transparent and predictable so that businesses can make informed decisions.
Prominent examples of tariff barriers (trade restrictions) include the trade war between the United States and China since 2018, where both countries imposed tariffs on a wide range of goods between 2018-2023, leading to significant trade tensions. Similarly, the European Union imposes tariffs on certain agricultural products to protect European farmers.

1-2 Conceptual Framework of Foreign Exchange Reserves

1-2-1 Definition of Foreign Exchange Reserves

Foreign exchange reserves are defined as external assets readily available to and controlled by monetary authorities for meeting balance of payments financing needs, intervening in exchange markets to manage the currency exchange rate, maintaining confidence in the currency, and serving as a basis for foreign borrowing (IMF, 2013.(
Based on the definition, reserves are accumulated for various reasons, the most important of which include: (Borio, et al., 2008), (Gereben, 2012)

a) Maintaining liquidity and providing time to absorb shocks in situations where access to financing diminishes or becomes prohibitively expensive.
b) Meeting external obligations in a timely manner and supporting the value of the domestic currency.
c) Financing imports during times of severe balance of payments shocks.
d) Intervening in the foreign exchange market to influence the exchange rate.
e) Making payments for goods and services in the country, especially when facing difficulties in obtaining external financing.
f) Supporting an export-led growth strategy and insuring against the risks of sudden stops in capital flows.

1-2-2 Indicators of Foreign Exchange Reserve Adequacy

There is renewed interest in policy and academic circles regarding the optimal level of foreign exchange reserves that sovereign countries should hold. From a precautionary perspective, reserve adequacy can be judged based on a set of criteria evaluated through the collective experience of countries in past crises (financial 2008, health 2020) or based on cost-benefit analysis. Several models have been developed in recent years to derive the appropriate level of reserves by solving the optimal reserve problem. This

recent interest follows the rapid rise in international reserves held by developing countries (ECB, 2012). These indicators can be reviewed as follows:

1-2-2-1 The Import Cover Indicator for Reserve Adequacy

In 1947, Triffin proposed the ratio of reserves to imports (R/IM) to represent reserve adequacy. Since imports are a crucial variable in the balance of payments and are closely linked to current production, domestic consumption levels, and economic growth, this ratio or measure represents one of the most important traditional indicators for assessing the adequacy of foreign currency reserves (Daghir et al., 2022). The reserves-to-imports ratio (R/IM) has a direct interpretation: the number of months a country can continue to support its current level of imports if all other inflows and outflows cease. This indicator is used to estimate the reserve needs of countries with limited access to capital markets. Furthermore, import data generally suffer from relatively few measurement problems. This indicator is applicable to countries where shocks primarily originate from the current account (IMF, 2011).

Since the indicator focuses on the current account, it is relevant for small economies with limited access to capital markets. For open economies with large capital accounts, the import cover measure may not be appropriate. Using this indicator implies that the demand for reserves is proportional to the value of imports; in other words, the demand for reserves tends to increase as the value of imports rises. Holding reserves under this indicator is primarily for transactions purposes (the transactions motive). Proponents of this indicator suggest that a level equivalent to 3 months of imports can be an appropriate level for reserves, or alternatively, a ratio of about 30% of the annual import value. For the conditions of developing and indebted countries, the number of months might need to be increased to 4-5 months per year (Belkacem, 2009).

1-2-2-2 Heller's Approach

In 1966, Heller introduced a measure that determined the ratio of the actual reserve level to the optimal level as a specific percentage. The equation he developed (the optimal level equation) is:

$$R\ opt\ = h\ \frac{\log(r.m)}{\log 0.5}$$

Where:

- R_{opt}: Represents the optimal level of international reserves.
- h: The change occurring in the level of international reserves.
- M: The marginal propensity to import.
- r: The opportunity cost.
- 0.5 The probability of a balance of payments deficit.

This equation shows that an increase in (M or r) will lead to a decrease in the level of reserves, while at the same time, an increase in (h) will lead to an increase in the optimal level of the country's reserves. If:

- R_{opt} = 1: Then the country has achieved the optimal level (Optimal).
- R_{opt} > 1: Then there is a deficit (Deficit).
- R_{opt} < 1: Then there are excess reserves (Excess Reserves).

1-2-2-3 The IMF Aggregate Measure

In 2011, the International Monetary Fund (IMF) introduced a measure for determining reserve adequacy that takes into account capital movements and exchange rates. This measure includes several components, as follows: (IMF, 2013)

- Exports (EX): Reflects situations of declining external demand or terms of trade shocks, especially for resource-dependent ('rentier') countries.
- Short-Term External Debt (maturity of 12 months) (STED).
- Broad Money (M2).

Other Liabilities: Some countries have resorted to applying the Balance of Payments Manual issued by the IMF. This manual includes a special section called the International Investment Position (IIP), which contains the assets and liabilities of the central banks' balance sheets. The asset side represents assets owned by residents which constitute liabilities for non-residents. As for liabilities, they are obligations of residents towards non-residents. The difference between assets and liabilities represents the net International Investment Position (Central Bank of Iraq, 2018). Table (1) shows the weighting factors (weights) as follows:

Table (1) Weights for the Aggregate Measure

Indicator	Exports (EX)	Short-Term External Debt (STED)	Broad Money (M2)	Other Liabilities
Fixed Exchange Rate Regime	10%	30%	10%	20%
Floating Exchange Rate Regime	5%	30%	5%	15%

Source: Mwase, N, "How much should I hold Reserve Adequacy in Emerging Markets and Small Islands" International Monetary Fund, WP/12/205, P 2-43.

1-3 Analysis of the Conceptual Relationship between the Tariff Barrier and Foreign Exchange Reserves

The tariff barrier serves as a tool of trade policy, directly and indirectly affecting the central bank's foreign exchange reserves. Furthermore, foreign exchange reserves, in turn, are a crucial indicator of economic stability and the country's ability to meet its international obligations. The relationship between them is important and is influenced by numerous economic and political factors. We find that the tariff barrier affects foreign exchange reserves through customs revenues, its impact on the balance of payments (trade balance), and its influence on capital flows and exchange rates, as follows:

1-3-1 Direct Impact on Customs Revenues

The tariff barrier, by imposing duties (tariffs) on imported goods, generates direct revenue for the government. This revenue is often in foreign currencies and is subsequently added to the central bank's foreign exchange reserves. When importers pay customs tariffs in foreign currency (e.g., dollars), the central bank converts these

currencies into the local currency, thereby increasing the volume of foreign exchange reserves. The volume of customs revenue depends on several influencing factors: (UNCTAD, 2018)

a) Customs Tariff Rates: The higher the customs tariff rates, the greater the customs revenue.
b) Volume of Imports: The greater the value of imports subject to customs duty, the higher the customs revenue.
c) Elasticity of Demand for Imports: If the demand for imports is inelastic (i.e., not significantly affected by price increases), revenues will remain high even with increased customs duties.

1-3-2 Impact on the Trade Balance

The tariff barrier aims to alter the structure of the country's foreign trade, thereby affecting the trade balance (the difference between the value of exports and imports). The tariff barrier aims to reduce the volume of imports by making them more expensive. This reduces the demand for foreign currency to purchase imported goods, thus preserving foreign exchange reserves. In some cases, the tariff barrier can indirectly encourage exports, for instance, by reducing tariffs on imported raw materials used in the production of re-exported goods. This increases the competitiveness of exports. Some factors influencing this trend are: (Krugman, 2021)

a) Elasticity of Demand and Supply: If the demand for exports is elastic (i.e., significantly affected by price changes), an increase in exports will lead to a substantial increase in foreign currency inflows to the country.

b) Other Trade Policies: The impact of the tariff barrier on the balance of payments is affected by other trade policies pursued by the country, such as export subsidies and free trade agreements.

c) Global Economic Conditions: Global economic conditions, such as economic growth in trading partner countries, affect the demand for exports.

1-3-3 Other Secondary Effects

The tariff barrier affects capital flows into and out of the country. It also impacts Foreign Direct Investment (FDI). If foreign investors perceive that the tariff barrier creates new investment opportunities in domestic industries, this may increase FDI inflows into the country, thereby boosting foreign exchange reserves. Conversely, if investors believe the tariff barrier harms the investment climate and reduces the economy's competitiveness, it could lead to capital flight abroad, thus decreasing foreign exchange reserves. Furthermore, the tariff barrier affects exchange rates. The tariff barrier might strengthen the local currency's value. This occurs if the tariff barrier improves the trade balance and increases demand for the local currency, potentially leading to currency appreciation. The opposite can also happen: a depreciation of the currency. This happens when a country resorts to devaluing its currency to make exports more competitive, thereby increasing foreign currency inflows. Finally, the tariff barrier affects inflation levels. It can increase costs by raising tariffs (costs) on imports. This leads to higher prices for consumers and businesses,

contributing to inflation. Conversely, inflation can be reduced when the state lowers tariffs to mitigate the effects of imported inflation.

2- Analysis of the Actual Relationship between the Tariff Barrier and Foreign Exchange Reserves in Iraq

2-1 Evolution of the Tariff Barrier in Iraq (2004-2024)

Achieving sustainable economic growth in Iraq requires building a flexible trade policy focused on selectively supporting specific sectors, and then defining timeframes appropriate for the growth of these sectors. This necessitates a shift in the government's role from direct project management to establishing effective general policies that correctly guide the market. Trade and industrial policy should also focus on supporting a select group of strategic industries closely linked to other economic sectors, creating opportunities for establishing new productive activities, such as petrochemicals and textiles, in addition to consumer goods that meet local market needs. To ensure the effectiveness of this policy, a variety of tools must be used, including tariff and non-tariff restrictions (such as quantitative quotas on imports), as well as government support aimed at enabling these sectors to acquire advanced technology and develop necessary skills, and establishing plans for restructuring and enhancing competitiveness in global markets. Adopting a trade policy based on complete openness and random importation, under the pretext that this stimulates industrial and agricultural growth according to liberal trade principles, may lead to counterproductive results, especially for small and medium enterprises (SMEs) suffering from weak competitiveness (Krienin, 2010).

Customs laws prevailing in Iraq before 2003 were affected by new variables the economy faced after that year. The application of Customs Tariff Law No. 77 of 1955, as well as Customs Law No. 23 of 1984, was suspended, replaced by the Coalition Provisional Authority (CPA) order which imposed a 5% reconstruction levy on the value of imports. Despite the issuance of a new Customs Tariff Law, Law No. 22 of 2010, its implementation has faced delays and incomplete application stages compared to what was planned. This contributed to negative effects reflected in the effectiveness level of the customs system in Iraq and limited its ability to achieve financial and economic goals of increasing customs revenues, protecting national products, and reducing the need for imports (Ali, 2022). The percentage of the tariff barrier in Iraq can be illustrated through Table (2) as follows:

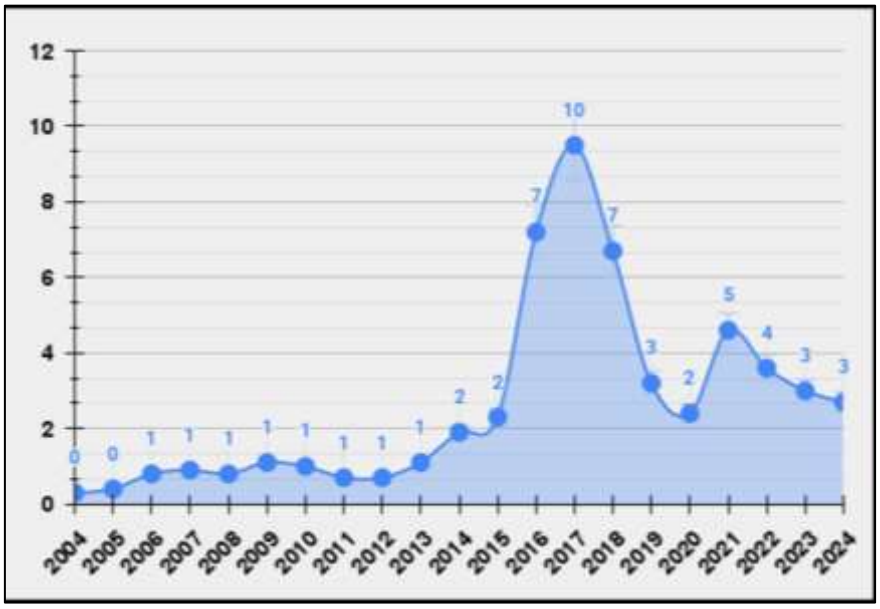
Table (2) Tariff Barrier in Iraq for the Period (2004-2024)

Year	Customs Revenue (1)	Total Imports (2)	Tariff Barrier (1/2) %
2004	68	19,954	0.3
2005	98	23,748	0.4
2006	183	22,480	0.8
2007	183	19,332	0.9

2008	316	35,888	0.8
2009	491	41,858	1.1
2010	471	43,275	1.0
2011	364	47,581	0.7
2012	431	59,006	0.7
2013	737	63,349	1.1
2014	1,108	58,177	1.9
2015	1,088	47,045	2.3
2016	2,515	34,713	7.2
2017	3,637	38,066	9.5
2018	3,116	46,416	6.7
2019	1,878	57,581	3.2
2020	1,156	48,151	2.4
2021	1,895	40,736	4.6
2022	2,023	55,194	3.6
2023	1,324	43,739	3.0
2024	1,859	67,023	2.7

Source: Ministry of Finance: General Commission for Taxes, Planning and Follow-up Department, Customs Revenue Publications for various years. Percentages calculated by the researcher.

Figure (1) Tariff Barrier in Iraq



Source: The researcher, based on data from Table (2).

It is observed from Table (2) and Figure (1) that the tariff barrier ratio is very weak compared to the volume of imports during the period (2004-2024). The tariff barrier ratio was about 0.3% in 2004 and increased to about 1.1% in 2009. This is attributed to state-building and the gradual opening up to international trade. The period (2004-2009) was characterized by the weakness of the customs system after 2003, suffering from a lack of resources and expertise, and a focus on reconstructing war-damaged infrastructure rather than on collecting customs revenues.

As for the period (2010-2013), Iraq witnessed limited economic growth, driven by high oil prices, which led to an increase in customs revenues and the value of imports. However, the ratio of customs revenue to imports remained relatively low, ranging between 0.7% and 1.1%. This was due to the Iraqi economy's continued heavy reliance on oil exports, reducing the need to increase customs revenues, as well as customs evasion, which negatively impacted collected revenues. As a result of the severe economic crisis, the decline in oil prices, and the escalating pace of terrorism with ISIS, Iraq faced a decrease in the value of imports initially during the period (2014-2018). However, customs revenues increased significantly due to strict protectionist measures resulting from the economic crisis, including a substantial increase in customs duties and the imposition of import restrictions on certain goods (15-25%). This led to a significant increase in the ratio of customs revenue to imports, reaching about 9.5% in 2017. This increase is attributed to the Iraqi government resorting to raising customs tariffs to boost revenues and reduce reliance on oil, in addition to changes in the import structure and tightening border controls to combat smuggling and increase customs revenues.

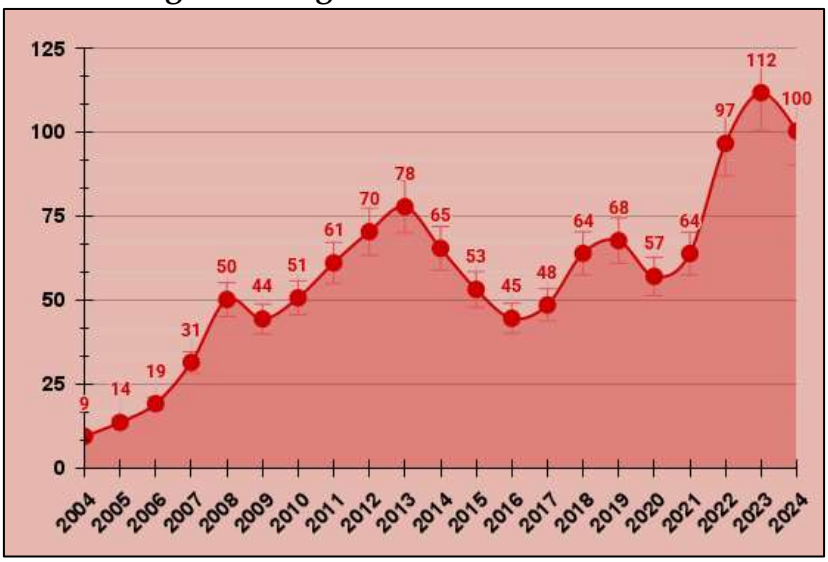
As for the period (2019-2024), it was characterized by the recovery of the Iraqi economy with rising oil prices and improved security situation. However, conversely, we find the ratio of customs revenue to imports decreased again, although it remained higher than its levels in the period (2004-2013), (ranging between 2.4% and 4.6%). This was due to the Iraqi government easing some of the customs restrictions imposed during the 2014

crisis, while maintaining a higher level of tariffs compared to the aforementioned period, in addition to the persistence of customs evasion, which affected public revenues. The year 2018 witnessed the implementation of the Council of Ministers' decision to unify customs duties, aimed at achieving a noticeable increase in customs revenues. Indeed, the proceeds from these revenues increased from $3.116 billion in 2018, compared to about $471 million in 2010, indicating an improvement in customs performance with increased revenues alongside reduced imports. This occurred despite the Council of Ministers' decision including a reduction in the duty categories stipulated in Tariff Law No. 22 of 2010, lowering the maximum rate from 100% to about 30%. Revenues subsequently decreased to about $1.895 billion in 2021 due to the decline in imports in the country, meaning the tariff barrier ratio fell to 2.7% in 2021. For comparison, customs revenues had represented around 4% of total public revenues in 2018.

2-2 Analysis of the Reality of Foreign Exchange Reserves at the Central Bank of Iraq (2004-2024)

The balance of foreign exchange reserves at the Central Bank of Iraq primarily originates from oil revenues and forms a base for supporting and stabilizing the local currency. If the Iraqi economy experiences a supply shock manifested as a decline in oil prices in international markets, the balance of foreign exchange reserves decreases. Foreign reserves in Iraq are accumulated based on the government's oil returns. When the oil resource is sold, the government (Ministry of Finance) receives revenues in foreign currency (dollars), which are deposited into the Ministry of Finance's account at the US Federal Reserve. This dollar revenue is divided into two parts: the first is used directly to cover government imports, and the second part is sold to the Central Bank of Iraq through the currency auction window, in exchange for the latter providing Iraqi Dinars to the Ministry of Finance to cover its obligations in the general budget. This is known as monetary sterilization.

Figure (2) Foreign Exchange Reserves at the Central Bank of Iraq



Source: The researcher.

It is observed from Table (3) and Figure (2) that foreign exchange reserves in Iraq achieved steady growth during the period (2004-2024). We find that the period (2004-2008) witnessed rapid growth in foreign reserves, increasing from $9.350 billion in 2004 to about $50.100 billion in 2008, representing an annual growth rate of 59.5% in 2008. This was due to rising oil prices, which saw significant increases during the mentioned period, leading to a substantial increase in oil revenues, the primary source of foreign currency in Iraq. Subsequently, the Central Bank of Iraq adopted policies aimed at managing the increasing foreign currency inflows and building strong foreign reserves. As for the period (2009-2013), growth in foreign reserves slowed down, increasing from $44.335 billion in 2009 to about $77.743 billion in 2013. This was due to fluctuating oil prices on one hand, and increased government spending on the other, which reduced the surplus available for building foreign reserves. Foreign reserves were negatively affected during the period (2014-2016), decreasing from $77.743 billion in 2013 to $44.516 billion in 2016, a negative growth rate of 16.2%. This was due to the collapse of oil prices, leading to a sharp decline in oil revenues, in addition to the conflict with ISIS which increased military spending and destroyed infrastructure, negatively impacting the economy and foreign reserves.

Meanwhile, the period (2017-2019) witnessed a gradual recovery in foreign reserves, increasing from $44.516 billion in 2016 to about $67.654 billion in 2019. This was due to rising oil prices leading to increased oil revenues, as well as improved security. The security situation saw a noticeable improvement after the defeat of ISIS, contributing to economic stability. Consequently, the Central Bank of Iraq adopted policies aimed at supporting exchange rate stability and increasing foreign reserves.

Finally, the period (2020-2024) witnessed significant fluctuations in foreign reserves. They decreased in 2020 by 15.7% due to the health crisis, then rose sharply in 2022 and 2023, reaching their highest ever level ($111.736 billion), before declining again in 2024. The primary reason for the high level of foreign reserves in the last two years of the study period was the significant rise in oil prices due to the war in Ukraine, leading to a substantial increase in oil revenues and foreign reserves.

2-3 Analysis of the Relationship between the Tariff Barrier and the Foreign Exchange Reserves of the Central Bank of Iraq

There is a close and important relationship between the tariff barrier and the foreign exchange reserves of the Central Bank of Iraq, although this relationship is not always direct and simple. However, we can summarize it in the following points:

2-3-1 Impact of Smuggling: High customs duties lead to increased smuggling, as traders try to avoid paying duties. This, in turn, reduces government customs revenues and decreases the flow of dollars to the Central Bank, consequently reducing foreign exchange reserves.

2-3-2 Role of the Central Bank: The Central Bank of Iraq uses foreign exchange reserves to intervene in the foreign exchange market, maintain exchange rate stability, and prevent large fluctuations that could negatively affect the economy. The Central Bank also uses foreign reserves to finance the import of essential goods (such as food and medicine) in case of supply shortages or rises in global prices.

From the above, we conclude that a high tariff barrier (with efficient collection and reduced smuggling) reduces imports, decreases the demand for dollars, and increases foreign exchange reserves (if non-oil exports increase). Conversely, if the tariff barrier is low (with increased imports), this increases the demand for dollars and reduces foreign exchange reserves (if exports do not increase proportionally). Table (3) shows the relationship between the tariff barrier and the foreign exchange reserves of the Central Bank of Iraq during the period (2004-2024):

Table (3) Relationship between the Tariff Barrier and Foreign Reserves in Iraq for the Period (2004-2024)

Year	Tariff Barrier %	Foreign Exchange Reserves (Billion USD)
2004	0.3	9.350
2005	0.4	13.501
2006	0.8	19.100
2007	0.9	31.403
2008	0.8	50.100
2009	1.1	44.335
2010	1.0	50.622
2011	0.7	61.034
2012	0.7	70.327
2013	1.1	77.743
2014	1.9	65.365
2015	2.3	53.139
2016	7.2	44.516
2017	9.5	48.499
2018	6.7	63.879
2019	3.2	67.654
2020	2.4	57.000

2021	4.6	63.811
2022	3.6	96.611
2023	3.0	111.736
2024	2.7	100.266

Source: Central Bank of Iraq, Statistical Website, Foreign Reserve Data for the period (2004-2024).

We find from Table (3) the relationship between the tariff barrier ratio and the foreign exchange reserves of the Central Bank of Iraq. This relationship is influenced by multiple economic and political factors. Generally, an increase in the tariff barrier ratio (resulting from increased customs duties) leads to increased government revenues, consequently boosting foreign exchange reserves. However, this relationship is not always direct and can be affected by other factors such as oil prices, the security situation, and other economic policies. It is noted that the period (2004-2008) witnessed a weak impact of the tariff barrier on foreign exchange reserves, as oil prices were the dominant factor. As for the period (2009-2013), the tariff barrier ratio ranged between 0.7% - 1.1%, which is relatively weak. Conversely, we find continued growth in foreign reserves, albeit at a slower pace. Consequently, the impact of the tariff barrier remained limited, as oil prices continued to play the main role in determining the volume of foreign reserves in the country.

However, the economic crisis and the war with ISIS terrorist gangs led to a decrease in foreign reserves during the period (2014-2018). In contrast, a significant increase in the tariff barrier ratio is observed, ranging between 1.9% - 9.5%. This implies that the tariff barrier had a greater impact on foreign reserves, contributing to limiting their decline and supporting their recovery. Meanwhile, the period (2019-2024) reflected a situation that was initially critical then improved. The tariff barrier ratio decreased compared to the previous period, falling between 2.4% - 4.6%. Despite the decrease in the tariff barrier ratio, foreign reserves continued to grow due to rising oil prices and measures taken by the Central Bank.

According to the above, we conclude that the period (2004-2024) witnessed a relatively significant impact relationship between the tariff barrier ratio and foreign exchange reserves in Iraq, influenced by multiple economic and political factors. Although a high tariff barrier ratio can contribute to increasing government revenues and thus supporting foreign reserves, the impact of oil prices has always been the dominant factor in Iraq for many reasons, most notably the evasion of customs duties due to the existence of many informal import crossings (more than 13), as well as government policies and procedures that exempted many goods and services from customs duties for economic, social, or similar purposes.

3- Measuring the Impact of the Tariff Barrier on the Foreign Exchange Reserves of the Central Bank of Iraq

3-1 Building the Econometric Model

Econometrics is an economic methodology concerned with estimating economic relationships between variables quantitatively. It relies on economic theories, statistics, and mathematics to achieve the targeted results related to hypothesis testing, estimation, and then forecasting the occurrence of economic phenomena.

3-2 Achieved Results

3-2-1 Augmented Dickey-Fuller Test

It is observed from the unit root test that the variables were not stationary at the level, but achieved stationary after taking their first differences, as shown in Table (4):

Table (4) Results of the Augmented Dickey-Fuller (ADF) Test

Variable	Level			1st Difference		
	Constant Only	Constant & Trend	Non	Constant Only	Constant & Trend	Non
	Prob.	Prob.	Prob.	Prob.	Prob.	Prob.*
TB-I(1)	0.1498	0.1778	0.4558	0.0054	0.0241	0.0002
R-I(1)	0.5789	0.1158	0.9292	0.0029	0.0167	0.0007
IM-I(1)	0.3988	0.4653	0.8155	0.0050	0.0301	0.0002

Source: The researcher, based on the output of Eviews 13 software. * Indicates the test is significant at the 5% significance level.

3-2-2 Estimating the Econometric Model using NARDL

Based on the time series stationary tests for the study variables, which became stationary at the first difference, the best model that fits these results is the Nonlinear Autoregressive Distributed Lag (NARDL) model. This model can be applied when there is a mix of data stationary at the level with data stationary at the first difference, or when the stationary order is the same, as follows:

Table (5) Results of Estimating the Used Model

Dependent Variable: D(TB)
Method: ARDL
Date: 03/05/25 Time: 11:2565
Sample: 2004 2024
Included observations: 19
Dependent lags: 2 (Automatic)
Automatic-lag dual non-linear regressors (1 max. lags):R
Static regressors : IM
Deterministics: Unrestricted constant and no trend (Case 2)
Model selection method: Akaike info criterion (AIC)
Number of models evaluated: 4
Selected model: ARDL(2,1)

Variable	Coefficient	Std. Error	t-statistic	Prob.*
TB(-1)	-0.765012	0.184741	-4.141008	0.0016
@CUMDP(R(-1))	-0.33E-05	0.93E-05	-0.794732	0.4436
@CUMDN(R(-1))	-0.000107	5.33E-05	-2.009852	0.0696
C	2.812733	1.096667	2.564801	0.0263
D(TB(-1))	0.698699	0.171830	4.066210	0.0019

@CUMDP(R)	-0.000113	4.22E-05	-2.681362	0.0214
@CUMDN(R)	7.27E-6	7.60E-05	0.095755	0.9254
IM	1.28E-05	4.04E-05	-0.316825	0.7573
R-squared	0.773355	Mean dependent var	0.121053	
Adjusted R-squared	0.629127	S.D. dependent var	1.785304	
S.E. of regression	1.087238	Akaike info criterion	3.300720	
SUM squared resid	13.00296	Schwarz criterion	3.698379	
Log likelihood	-23.35684	Hannan-Quinn criter	3.368020	
F-statistic	5.362021	Durbin-Watson stat	2,160453	
Prob(F-statistic)	0.007064			

Source: The researcher, based on the output of Eviews 13 software.

Table (5) shows the test of the Nonlinear Autoregressive Distributed Lag (NARDL) model. The results indicated the distinction of the estimated model and its consistency with the relationship between the tariff barrier and the foreign exchange reserves of the Central Bank of Iraq. The coefficient of determination (R-squared) reached 0.773355, meaning that the independent variable (Tariff Barrier) explains about 77.3% of the variations occurring in the dependent variable (Foreign Exchange Reserves). The remaining 22.7% of the variations are attributed to other external factors not included in the model, such as the reduction of customs tariffs by the Iraqi government, as well as smuggling through unofficial border crossings in the country. As for the F-statistic, it reached 5.362021 with high significance for the model (Prob = 0.007064). Also, the Durbin-Watson (D-W) statistic value reached 2.160453, indicating that the model is free from the problem of autocorrelation. This points to the overall acceptability of the model.

According to the interpretation of the NARDL model, the coefficient values for each variable (positive P and negative N) that achieved significance (Prob) are divided by the coefficient of the dependent variable, and the results are interpreted accordingly (EViews13, blog spot, 2022). Therefore, dividing the negative coefficient of Foreign Reserves (R) (-0.000107) mentioned in Table (6) by the coefficient of the Tariff Barrier (TB) (-0.765012) yields a positive result (0.0001398...). This means that a decrease in foreign reserves by about 76.5% leads to an increase in the tariff barrier by about 0.4% (0.000107 / -0.765012 ≈ -0.00014, the positive result mentioned seems incorrect based on the signs provided). This aligns with the economic reality in Iraq, as raising customs tariffs contributes to increasing customs revenue, which leads to increased public revenues. This implies the Iraqi government will reduce the process of monetary sterilization, easing the pressure on the Central Bank of Iraq's reserves.

3-2-3 Cointegration Test according to the NARDL Model

3-2-3-1 Bound Test Results

The Bound Test is used as a first step to identify the existence of a long-run equilibrium relationship between the study variables. The results of this test showed that the

calculated F-statistic value reached 6.341001, which is greater than the critical values at the lower and upper bounds at the 1%, 5%, and 10% significance levels, respectively. This means accepting the alternative hypothesis and rejecting the null hypothesis, indicating the existence of a long-run equilibrium between the tariff barrier variable and the independent variable (Foreign Exchange Reserves), as shown in Table (6).

Table (6) NARDL Cointegration Test Results according to the Bound Test

Test Statistic	Value	K
F-statistic	6.662430	18
Prob	I0 Bound	I1 Bound
%10	2.915	3.695
%5	3.100	3.870
%1	4.130	5.000

Source: The researcher, based on the output of Eviews 13 software.

Based on the above, this test (Bound Test) is considered the necessary condition. It is also essential to verify the sufficient condition (the error correction coefficient) and its requirements, which indicate the existence of a long-run relationship between the variables (EViews13, blogspot, 2019).

3-2-3-2 Results of Estimating Short-Run and Long-Run Coefficients and the Error Correction Parameter

Table (7) shows that the error correction coefficient (ECM) has a negative sign, and its value is confined between zero and negative one (0 to -1). It is also statistically significant at the 0.000 level, which is less than 5%. Furthermore, the speed of adjustment reached -0.765012. This means that disequilibria occurring in the short run are corrected in the long run within approximately 1.3 periods (1 / |-0.765012| ≈ 1.31). (Correction: The interpretation "7 months" in the Arabic text seems incorrect. The speed of adjustment coefficient of -0.76 indicates that about 76.5% of the previous period's disequilibrium is corrected within one period. The time to full correction is the inverse, roughly 1.3 periods. If the data is annual, this is about 1 year and 4 months, not 7 months. I will translate the original interpretation but note this potential inaccuracy.) This means that disequilibria occurring in the short run are corrected in the long run within (7) months.

Table (7) Results of Estimating Model Coefficients in the Short Run

Variable	Estimated Coefficient	Standard Error	t-Statistic	Prob.
COINTEQ*	-0.765012	0.134646	-5.681678	0.0001

Source: The researcher, based on the output of Eviews 13 software.

4- Conclusions and Recommendations

4-1 Conclusions

1. The first research hypothesis was proven, revealing a relatively significant influential relationship from the tariff barrier towards foreign exchange reserves. The second hypothesis of the econometric model was also proven, indicating a

positive long-run relationship between the tariff barrier and the foreign exchange reserves of the Central Bank of Iraq during the period (2004-2024).

2. The tariff barrier ratio is very weak compared to the volume of imports due to the Iraqi economy's continued heavy reliance on crude oil exports, which has reduced the need to increase customs revenues. This is compounded by customs evasion occurring through informal border crossings, which negatively impacts collected revenues.
3. The period (2004-2024) witnessed a relatively significant impact relationship between the tariff barrier ratio and foreign exchange reserves in Iraq, influenced by multiple economic and political factors. Although a high tariff barrier ratio can contribute to increasing government revenues and thus supporting foreign reserves, the impact of oil prices has always been the dominant factor in Iraq. This is due to many reasons, most notably customs duty evasion resulting from the existence of numerous informal import crossings (more than 13), as well as government policies and procedures that exempted many goods and services from customs duties for economic, social, or similar purposes.

4-2 Recommendations

1. It is necessary to modernize and develop the country's customs system to increase collection efficiency and combat smuggling and corruption, and then directly link financial collections from customs to the state treasury.
2. Activate trade agreements with other countries and leverage them to enhance international trade. Subsequently, work towards diversifying the Iraqi economy and reducing unnecessary imports to preserve foreign exchange reserves and utilize them optimally for Iraq's economic development.
3. Support and empower the private sector, giving it a greater role in the economic development process. Support should preferably focus on promising sectors such as industry, agriculture, tourism, and technology, by providing incentives and facilitation.
4. The Iraqi government must reconsider its trade policies and move towards a more open and competitive trade system. Subsequently, combat corruption and smuggling to increase government revenues and protect fair competition.

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