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## The Relationship Between The Exchange Rate and The Price Elasticity of Demand for Some Imported Intermediate Goods in Iraq for The Period 2010-2021

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### Abstract:

The research provides several analyses, scientific evidence, and theoretical evidence, which clarify the relationship between the exchange rate in Iraq and the import of a group of intermediate goods for the period 2010-2021, as the research problem is represented by the problems and obstacles that caused a decline in the level of local production, and which contributed to an imbalance in output. GDP, and then an imbalance in the (non-oil) trade balance within the current account of the balance of payments. The research discussed the basic concepts of the exchange rate and its determination mechanism, price elasticity, intermediate goods and the relationship between these variables. After that, price elasticity coefficients were arrived at for three intermediate goods imported to Iraq: ordinary cement, resistant cement, and diesel oil for engines, according to the price elasticity formula, according to partial economic theory. The research aims to reveal the response of local demand for these goods through the effect of the exchange rate in Iraq, which translates the prices of these goods locally.

Moreover, a statement: Does the exchange rate in Iraq support local production by importing these goods? Is there a commitment to control border crossings and internal price control to prevent monopoly? What is the role of documentary credits as a tool for financing imports in Iraq? The research results showed that the exchange rate in Iraq needs to consider the necessity of these goods and their competition with local production.

### Paper Type: Research Paper.

Keywords: Exchange Rate, Price Elasticity of Demand, Imports, Intermediate Goods.

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#### 1. Introduction:

Determining the relationship between exchange rates and the elasticities of domestic demand for intermediate goods, in addition to imported consumer and capital goods, is a field of research, the scope of which has expanded over the past decades, and the forms of its analysis have become complex, and its scope has expanded, from the point of view of finding appropriate policies to reduce unnecessary imports. And supporting necessary imports, especially for developing countries (including Iraq). Increasing imports without studying the demand for them and clarifying the actual need for them negatively affects the local economy. It also depletes foreign reserves and causes a decline in local production and its competition, in light of the globalization of economies and trade openness. Developing countries seek to achieve economic development by maximizing the benefits from international trade, as most of them suffer from the problem of their increasing dependence on imports to fill the growing domestic demand gap, in light of the inflexibility of production, and the competition of imported goods for the local product, in addition to their export of primary goods. In most cases.

In fact, this situation applies to the Iraqi economy, which was limited to exporting oil and some simple commodities, with a decline in the rate of contribution of the rest of the sectors to the gross domestic product, which made the direction of the import structure depend on foreign exchange, which depends on revenues from oil exports, which is characterized by Prices fluctuate depending on global demand. Given the importance of imports in meeting local demand for goods, the research aims to clarify the most prominent challenges facing the Iraqi economy in reducing imports and enhancing what is commensurate with national production requirements. Since the exchange rate occupies a large position in the Iraqi economy, as a tool for dealing with the outside world. Monetary policy sought to maintain its stability to stabilize the general level of prices in the economy by following the fixed exchange rate system, and defending it with foreign reserves, in order to encourage local production, but imports are still increasing, such as intermediate goods, including ordinary cement - resistant cement - Diesel oil for engines. Iraq's production capabilities do not meet local demand without resorting to imports, which is reflected in the flexibility of demand for them, in addition to commodity dumping, competition with foreign goods, and the failure to activate laws to protect the local product.

the point is Exchange rates have a profound impact on domestic demand for imports of intermediate goods. This effect can be determined by applying price elasticity of demand to these commodities, to reach the goal of the research in determining appropriate economic strategies to reduce it, focusing on sectors of the national economy, and encouraging imports that are compatible with the strategies followed. According to certain criteria, the most important of which are the country's economic resources, which makes these strategies effective and applicable. This requires studying and analyzing the conceptual and applied foundations of the research variables, to clarify sound visions.

### 1.1 Literature review:

Many studies have dealt with the effect of exchange rate changes on imports, and other studies have dealt with the importance of imported intermediate goods in local production, including what has revealed their price elasticity. Among these studies are the following:

Shiha (2015) showed that Egypt's demand for imports of intermediate goods was affected by researching the price elasticity of demand for the relative prices of (14) groups of imported intermediate goods and showing the effect of the pound's devaluation on this demand. The effect of the reduction was weak. Because demand is low in elasticity relative to relative prices, this calls for adopting policies that increase production flexibility and rationalize imports.

Suleiman (2019) proposed activating a more appropriate exchange system for the Egyptian economy and reducing imports after this study showed the impact of exchange rate fluctuations on the components of the trade balance in the Republic of Egypt and the increase in imports exceeding exports during the period (2015-2019).

Tellaech and Mexico (2019) conducted a study on the local demand in Mexico for imports of intermediate goods. The role of actual exchange rates in the demand for these goods was clarified. After measuring the price elasticities of demand, the results showed a limited response amounting to (0.89): Mexico's dependence on importing intermediate goods Because it is unavailable locally. Here, industrial policies that support local producers and provide inputs from intermediate goods imported abroad are necessary because they will lead to increased industrialization rates and, thus, economic growth.

Silva and Hidalgo (2020) studied Brazilian import demand. They found that when extracting the price elasticities of imports, it is necessary to consider the quality of the imported product because ignoring quality leads to a bias in the price elasticity values. A better definition of data reflects the accuracy of the results, which helps economic decision-makers draw economic policies correctly.

Das (2021) recommended conducting further studies on the relationship between imports and the lack of quality of imported products in Turkey after analyzing the period (1982-2015), which concluded the effect of income and relative prices on import demand and preferences. Income elasticity was more significant than one, which is consistent with the literature Because Turkey is classified as a middle-income country. The price elasticity of demand was less than one, as the demand for imports increases whenever the relative prices of imported goods decrease.

Adewuyi et al. (2021) discussed the role of the exchange rate and relative prices in demand for imports of sawn wood as intermediate goods in a group of (30) countries in Africa during the period (1985-2016). The results of this study showed that all the relative import prices, the real effective exchange rate, and the foreign reserves of the importing country are essential determinants in the demand for these imports, as demand is relatively inelastic due to changes in exchange rates, reserves, and relative prices. A policy must be drawn up to manage the problem of the balance of payments.

Li et al. (2022) emphasized the effects of exchange rate fluctuations on importing intermediate goods inputs in China for producing and exporting firms that use imported inputs. High fluctuations in the exchange rate led to a decrease in imports of these goods, equivalent to an increase in cost due to the rise in the exchange rate. The study concluded by sharing profits and losses resulting from exchange rate fluctuations.

Sasaki et al. (2022), based on the effect of the actual exchange rate at the industry level, the producer price index, and import price indicators in Japan, concluded that changes in the actual exchange rates affect these indicators. The weakest link in being affected is the prices of imported goods, and thus producer prices, and thus affect the increase in the CPI.

Ranjbar et al. (2023) estimated import demand's income and price elasticity for five primary commodity groups in Iran (1992-2017). The results showed the dependence of the industry structure and consumption on imports and this impact on the consumer and the local producer, so imports must be reduced by stimulating increased production, encouraging innovations, and diversifying the market for imported goods in the long term, and using the results of income and price elasticities to guide economic policymakers, study priorities, and make pricing decisions for imported products, taking into account the importance of the good to producers and its preference to consumers.

Sobhi et al. (2023) showed the impact of foreign exchange rate fluctuations on imports and exports in Iraq in the event of reducing or raising the dollar/dinar exchange rate on imports, as raising the dollar/dinar exchange rate leads to reducing unnecessary imports, and vice versa when the exchange rate falls—dollar/dinar. As for the effect of the exchange rate on oil exports in particular, the results showed that the exchange rate does not affect it Because crude oil prices are determined globally.

The research problem lies in the increase or decrease in imports of intermediate goods in Iraq; without an objective study of the demand for the local product and the effect of the exchange rate on this demand, which is explained by the price elasticity of demand, without taking into account the local production of the same commodity, which constitutes confusion for the market locally, due to commodity dumping, which leads to a decline in domestic production due to competition on the one hand, and the depletion of foreign reserves on the other hand.

The objective of the research is to reveal the price elasticity of demand for a group of imported intermediate goods in Iraq, which include (ordinary cement - resistant cement - diesel engine oil), to clarify the effect of the exchange rate on imports to reach a strategy that limits the competition of imported goods for the local product and encourages the import of goods. Not available locally and essential for production. Moreover, the research hypothesis is that the exchange rate used in Iraq does not consider the price elasticity of demand for imported intermediate goods, according to their importance to the Iraqi product and the extent of their competition for production.

### Material and Methods:

The research adopted the approach of moving from general to specific (deductive approach) in explaining the impact of increasing merchandise imports on the trade balance and, thus, on local demand for intermediate goods and moving from the specific to the general (inductive approach) in clarifying the relationship between the exchange rates used in Iraq and the price elasticity of demand for a group of imported intermediate goods and what this reflects on the trend of imports. The research also used the price elasticity equation according to microeconomic theory to find elasticity coefficients from 2010-2021, using import data in the reports of the Iraqi Ministry of Planning.

## 2. 1. Conceptual framework of the exchange rate, price elasticity of demand and intermediate goods:

## **2.1.1.** The concept of the exchange rate, its types, the mechanism for determining it, and its relationship to imports:

It is called "the price of one currency compared to another at the exchange rate" (Mishkin, 2013), a relative price of two countries' currencies. The exchange rate of the local currency against the foreign currency: "It is the number of units of foreign currency required to purchase one unit of the local currency." (Dagher, 2019). The relative exchange rate, also called binary, is considered one of the most common exchange rates in the world. Pricing is done based on the target currency - for example - the exchange rate of the US dollar as a target currency, against the second currency, let it be the Australian dollar AUD: USD, in this case, An increase in the exchange rate of the Australian dollar means an increase in its value compared to the US dollar (the counter currency). From another angle, American goods are becoming relatively cheaper for Australians than before. If there is a decline in the value of the Australian dollar against the US dollar, the opposite is true. (Hamilton, 2018)

The real exchange rate reflects foreign prices in terms of local prices, and several statistical measures are used to calculate the real exchange rate, such as the standard calculation based on consumer price indices. However, it measures the purchasing power of consumer goods only, while the implicit deflator of the gross domestic product can be used for all Commodities. However, it is published with a delay (a more extended period), and in this case, it is not suitable for measuring the purchasing power of countries with high inflation rates. (Al-Abbas, 2003)

Previous concepts of the exchange rate referred to two opposite currencies, while there is a need to deal with other currencies due to the presence of trading partners and the different currencies that are dealt with. Within this context, cross-exchange rates refer to exchange rates calculated concerning a third currency. Alternatively, a basket of currencies relies on the Trade Weighted Index (TWI), which provides a broader measure of currency value trends, as this index takes the price of a local currency in terms of a weighted average (a basket of foreign currencies).

Currency weights are generally based on a country's major trading partners and the share of trade. It is referred to as the effective exchange rate, also called the effective real exchange rate, which is "the weighted geometric average of the real exchange rate of the national currency between trading countries", as it captures the movements of the national currency. Against the currencies of trading partners, its importance lies in the fact that it helps understand the commercial competitiveness of the country's economy, as it deals with actual variables by taking into account changes in the prices of local goods and services compared to foreign ones. (Hamilton,2018)

The change in the real exchange rate leads to a series of economic effects, and what concerns us in the field of research here is the effects that this change has on the trade balance in general and imports of intermediate goods (ordinary cement-resistant cement - diesel engine oil) in particular. The focus comes on its economic importance in covering the increasing and expanding demand, the decline in domestic production, and the widening gap between them (Majeed, 2023) for countries that suffer from insufficient supply to keep up with demand, as is the case with most developing (including Iraq).

When different exchange rates are applied to economic transactions, the exchange rate is multiple, with the government setting an official exchange rate and a preferential exchange rate for some current account transactions. Many countries have implemented this, such as Argentina in 2002 and Venezuela in 2003, as an alternative to central banks for the tools available to defend their currencies and avoid balance of payments crises, at least in the short term. (Avellan, 2005) To ensure that there is no speculation in multiple exchange rates, the exchange control system is relied upon, and documentary credits are used to finance imports to guarantee the rights of both the importer and the exporter of goods between the two countries where trade exchange occurs. The exchange rate is determined, like the price of any other commodity, by the interaction of the forces of demand for the foreign currency and the forces of supply in the internal market, and it is called the equilibrium exchange rate. (Al-Sarini et al, 2016), Moreover, how to determine the equilibrium exchange rate can be explained through the following figure:



Figure (1) shows the currency demand curve based on the inverse relationship between the exchange rate and the quantity of foreign exchange demanded. In contrast, the foreign exchange supply curve shows their direct relationship. The equilibrium exchange rate is determined by the intersection of the demand curve with the currency supply curve in the foreign exchange market; at this point, the quantity demanded equals the quantity supplied for the currency.

If the exchange rate is in equilibrium, there will be no reason to change it, and if one of the factors that were imposed constant at the time of determination changes, this affects the equilibrium. It is worth noting here that the demand for the local currency is a demand derived from the primary demand, which is the desire of foreign consumers and producers to buy exported local goods, or vice versa, that is, the desire of local consumers and producers to buy imported foreign goods, which expresses the extent of the response of the required quantity. Price changes, more precisely, the elasticity of demand for foreign exchange, which corresponds to the elasticity of demand for imports, which varies in degree according to the types of imported goods that make up the structure of imports. (Al-Taie, 1999)

The state of balance and imbalance in exchange rates is due to the exchange rate followed by the state, whether it is flexible or fixed. If the exchange rate is floating (flexible), it is sufficient for adjustment. However, in the case of a fixed exchange rate, the monetary authority intervenes in the foreign exchange market by buying or selling currencies, as the case may be, to maintain the equilibrium exchange rate. It is no secret that there is a spectrum of exchange rates between the fixed and floating systems. (Kutlu, 2013)

Exchange rates are essential, as they affect relative domestic and foreign prices. When the value of a country's domestic currency rises (an appreciation in value compared to other currencies), foreign countries' domestic goods become more expensive, and foreign goods become cheaper. Conversely, when the value of the domestic currency declines, foreign countries' goods become cheaper, and foreign goods to the domestic consumer become more expensive. (Mishkin, 2016) When the currency's value declines, it makes imported goods more expensive for a country that depends on meeting local demand through imported goods, such as developing countries (including Iraq) (Al-Anbaki, 2019). The lack of flexibility in the local production system makes local demand less elastic for imported goods due to the need for alternatives to local production.

### 2.1.2. The concept of price elasticity of demand and its relationship to imports :

The price elasticity of demand (EP) coefficient measures the percentage change in the quantity demanded of a good resulting from the percentage change in the price of the same good over a given period. Because price and quantity are inversely related (high prices reduce quantity demanded, and vice versa. (Salvatore, 2006), and the price elasticity formula can be arrived at as follows:

$Ep = \frac{\% \Delta Qd}{\% \Delta P} (1)$	Ep: Price Elasticity Coefficient
$Ep = \frac{\frac{\Delta Qd}{Q}}{\frac{\Delta P}{P}}  (2)$	P: Goods' Prices Qd: Quantity Demand
$Ep = \frac{\Delta Qd}{\Delta P} \cdot \frac{P}{Q} (3)$	$\Delta$ : Symbol of change

Formula No. (3) above represents relative elasticity, meaning relative, not absolute, changes in quantities and prices. (Al-Omari, 2022), the price elasticity coefficient is a number that determines the extent to which consumers or producers respond to changes in the price of a commodity. The value of this number provides the answer to whether demand is elastic or inelastic to price changes.

Elastic demand means that the required quantity of the good responds to price changes, but if demand is inelastic, then the required quantities of the good do not respond to changes in the price of the good. There are other spectra of price elasticities that fall between these two extremes. (Dilts, 2004), and the degrees of price flexibility vary, depending on the change in the price elasticity coefficient, depending on the changes in the quantities demanded of the goods affected by the change in their prices.

The price elasticity of demand can be studied for different types of goods produced locally or imported, and among these types are imported intermediate goods, and the demand for them is a demand derived from the demand for locally produced goods, as intermediate goods are considered inputs to the production of the production process. Finding the price elasticity coefficients depends on the response rate of the required quantities of the commodity to the prices of its imports. The importance of the relationship between price flexibility, imports, and the exchange rate comes from the fact that the effect of changes in the prices of imported goods is transmitted to local goods through exchange rates, in addition to the effect of other factors that enhance import demand, whether for intermediate goods, or the rest of the imported goods, such as the dependence of local demand on products. Local or imported, as well as the availability of alternatives, the economic conditions surrounding local production, in addition to customs barriers on some goods, and the extent of the impact of competition from imported goods on local goods, as countries intend, through their trade policies, to protect national products from foreign competition in the local market, Methods of protection include imposing customs duties on imports, and banning the import of goods that can be produced locally which affects demand. (Rahim, Ali, 2021)

## **2.1.3.** The concept of intermediate goods, their importance for local production, and their relationship to the exchange rate:

Intermediate goods are one of the types of goods that make up the structure of imports in the trade balance of visible Trade, which is affiliated with the current account in the balance of payments of any country. Intermediate goods are defined as semi-finished goods that are used in the production of other goods, which may be finished goods. One of the main aspects of intermediate goods is that they undergo transformation as part of the production process, leading to the production of final consumer goods, or other intermediate goods that are later used in other production. (Luther, 2022). In this case, intermediate goods represent links between raw materials, And the final goods in the production process, and they are viewed as inputs. (Intermediate goods, 2023) Among the industries that most use intermediate goods are electronics and means of transportation, as both industries use very complex intermediate goods, and require other intermediate goods that are included in the industry, such as metals and ceramics. There are many examples of intermediate goods, including electrical circuits for the electronics industry, navigational equipment used in transportation, metals and rubber used in the manufacture of machinery, fertilizers in agriculture, building materials such as cement, steel for building homes and bridges, wood for flooring and buildings, oils, such as diesel oil, in operating... Machinery...etc. (Gustafson, 2022). Given the importance of intermediate goods in local production, the demand for them increases when this production increases, and when these types of goods are not available locally, imports are resorted to to fill the gap in local demand for them, in this case Domestic demand follows imports of these goods from abroad when they are insufficient at home, and here local prices of imported goods are translated at the exchange rate. The response of local demand to types of imports, including intermediate goods, can be known by extracting their price elasticity. It is worth noting that the price is composite here. Because it includes the price of goods from the export country, and the price of the good in the import country, after being treated at the local exchange rate. In this case, the local market is subject to the conditions of that country, especially in times of crisis.

# **2.2.** The relationship between the exchange rate and the price elasticity of demand for some imported intermediate goods in Iraq

### 2. 2. 1. The reality of exchange rates in Iraq and their impact on imports

After the Central Bank gained its independence in 2004, it took upon itself, within the goal of monetary policy, to work to raise the value of the Iraqi dinar against the dollar, in addition to another goal, which is to achieve price stability at the level of the economy. The exchange rate in Iraq witnessed several changes starting from the year 2004-2007, as the value of the Iraqi dinar against the dollar gradually increased (1453-1469-1467-1255) dinar/dollar, respectively. Monetary policy, represented by the Central Bank of Iraq, continued to achieve the goal of raising the value of the Iraqi dinar against the dollar against the dollar from 2008 until 17/12/2020, and the exchange rates during this period reached (1193 - 1170 - 1170 - 1176 - 1166 - 1166 - 1186 - 1187 - 1190 - 1190 - 1190 - 1190) dinars/dollar respectively (The annual statistical bulletin of the Central Bank, for several years), then the exchange rate was determined on the basis of (1460) dollars/dinars according to the letter of the Department of Financial Operations and Debt Management No. 6/1/2440 dated 12/20/2020 As a result of the complex crisis that the Iraqi economy went through during that period, represented by the Corona pandemic and the decline in crude oil prices in global markets (Annual Monetary Policy Report, 2020)

The decision to change the exchange rate at the end of 2020 led to a decline in the value of the Iraqi dinar against the dollar by about 22% (Al-Janibi, Al-Kubaisi, 2023), due to the complex crisis, as Iraq faces a deficit in the current account of the balance of payments. Thus, it led to a deficit in the general budget (Hussein, Hamdan, 2020). The financial deficit worsened because of higher expenses compared to revenues, especially operating expenses. The decline in the exchange rate of the dinar against the dollar led to an increase in the prices of imported goods (Abdullah, Muhammad, 2023), including intermediate goods, without considering the importance of these goods for local production, which affected the local demand for them, which will be revealed through price elasticity coefficients. for a set of intermediate goods (Al-Khayyat, 2022). The reduction decision had a negative impact on the economy. Instead of supporting local production, import prices rose due to the lack of local alternatives, which greatly affected the living conditions of individuals (Al-Taweel, Rashid, 2020). Because the local production system is not flexible enough to dispense with imports in light of the change in the exchange rate. (Al-Kharboutli, 2017). Supporting and defending the exchange rate in Iraq through the currency window and low customs taxes makes continuous attempts to achieve price stability in the economy impossible, as local demand always collides with the absence of local response. Thus, the problem of structural imbalances turned into a chronic disease that led to an increase in unproductive consumer imports and an increase in imported inflation, which led to an increase in domestic prices of goods. The importer also bears additional costs as a result of changes in the currency of countries exporting to Iraq, which is reflected in local prices through the exchange rate. (Akkawi, Abdel Latif 2023).

# 2.2.2. The nature of imported intermediate goods, their importance, financing, and the nature of border crossings in Iraq.

The importance of intermediate goods stems from their interaction with the manufacture of consumer goods and capital goods. They are sometimes used as raw materials in consumer industries, such as raw vegetable oils, paper pulp, rubber and plastic, chemical materials, tires, wood, threads and yarn, iron sheets, plaster, bricks, and others. Such as important parts and materials of capital goods, such as spare parts for machines prepared for industrial purposes, materials used in industry as production inputs, such as mineral fuels. The structure of imports in Iraq has divided intermediate goods into four groups: chemical materials - oils and greases - mineral fuels - raw materials. Their trend can be traced for the period (2010-2021), according to the following figure (2):



- Figure 2: Main totals of intermediate goods imported into Iraq for the period (2010-2021). Source: From the researcher's work based on data on the structure of Iraqi imports for the period 2010-2021, issued by: the Ministry of Planning / Central Bureau of Statistics, Directorate of Foreign Trade Statistics.

Figure (1) below shows that mineral fuels outperform other valued materials due to their importance in the structure of local demand. The curve rose higher than the rest of the commodities. Then come chemicals used in agriculture, the petrochemical industry, and other purposes, then the import of oils and greases manufactured for cars and fuels manufactured for other purposes, as the latter two followed a steady and harmonious path during the same period. While the particular group takes the least valuable raw materials, it includes all goods that are imported into Iraq as raw materials such as iron, aluminium and other metal ores, and crude oils that are used in consumer industries such as palm oil and its fractions, linseed oil, corn oil, raw tobacco, olive oil. Olive. Glycerin. Which are used in various industries such as medicines, raw stones, raw wood, raw animal hides...etc. (Imports Report, 2018) The industry in Iraq faced several obstacles, which led to the cessation of most vital industrial facilities, including the cement industry, despite the return of local production for these facilities. It only meets some local demand, so it is imported from abroad. (Shamkhi et al, 2022) Alamuddin, 1996

These main groups of intermediate goods imported into Iraq, including the relevant sub-groups (ordinary cement - resistant cement - diesel engine oil), are of great importance, as they provide the primary inputs for production, and the import of necessary ones corresponds to the actual need for local production according to capacity. . . The ability of the local market to absorb these goods, especially those that support the productive private sector, leads to expanding the production base that will provide local alternatives if preferential exchange rates support them after knowing the price elasticity of demand for the goods. Among them are the prevention of dumping and strict control to prevent monopoly and class change-imported goods. Regarding disbursement and documentary credits in financing imports, Iraq relies on importing goods through external transfers due to the ease of its procedures compared to credits, as by opening the credit, the bank places at the contractor's disposal the means of payment within a specific quantity limits (Alimuddin, 1996). The preference for documentary credits over external transfers in financing imports is due to greater transparency, faster time, and a better possibility of following up, auditing, and tracking the entire import process, from the request for financing until the goods arrive in Iraq, compared to the current financing method. It contributes more effectively to combating money laundering and other illicit uses (Mahmoud and Mirza, 2017). Despite the issuance of Anti-Money Laundering Law No. 39 of 2015, money smuggled abroad under the name of importation as one of the channels for money laundering still exists

today. Therefore, documentary credit procedures must be facilitated and their fees reduced as one measure that limits money laundering.

As for controlling the border crossings, instructions for the Iraqi border crossings No. (3) of 2018 regarding the formations of the Border Ports Authority and its tasks were issued by the Council of Ministers based on the provisions of Article (11/Clause (Fourth)) of the Border Ports Authority Law No. (30) of the year 2016, under which the relevant government agencies were obligated to adopt electronic documents (documentary credits) in their transactions related to commercial activity at border crossings (Council of Ministers, 2018). Among the most important border crossings in Iraq are Safwan, Khor Al-Zubair, Trebil, Umm Qasr, Al-Qaim, and Al-Shalamjah., Al-Mundhiriya, Zurbatiyah, Al-Shaljiya, Mandali, Arar. The Khor Al-Zubair Port outlet received a percentage of (79.21%). The Umm Qasr Port obtained (19.90%), the two highest percentages for supplying merchandise exports to countries of the world, with a value of (3,666,661.2) million dinars for the Khor Al-Zubair Port and a value of (921,008.7) million dinars for the Umm Qasr Port outlet. (Iraqi Exports 2020). Despite the tasks assigned to the border crossings in Iraq, economic policies hurt the local products in Iraq, and customs brokers often smuggle goods into Iraq despite the laws issued by the Iraqi authorities that prevent their import. The type of these goods that harm the local product competes with it. It leads to a decline in local production, as different types of goods are imported at low prices, according to specific methods that may be intentional or unintended by external and internal parties that have flooded the Iraqi local market. Opening the borders to implement the laws of the International Monetary Fund in the phase of transition towards a market economy through the liberalization of trade for all different goods and products, without restrictions or conditions from low-cost origins, encouraged countries exporting to Iraq (including some neighbouring countries), in An attempt to monopolize the market and price discrimination, which was helped by raising customs taxes on many types of goods, which led to flooding the market with the same goods that can be produced locally, as is the case with vegetables and fruits and some goods used in the petrochemical industry, ordinary and resistant cement, and some Oils. It can be produced locally. The emergence of many infiltrators and speculators in the field of trade for the sake of quick profit and the ease of obtaining identities from the Baghdad Chamber of Commerce led to importing goods without customs controls or oversight in light of administrative procedures. Moreover, there is financial corruption that most border crossings suffer from. (Al-Barmani, 2019). The spread of corruption in these important places leads to the mismanagement of resources, which negatively affects the productive sectors such that they cannot expand their capabilities. (Al-Hayaly, 2022)

### 3. Discussion of Results :

## **3. 1.** Price elasticity of demand for some intermediate goods imported into Iraq according to prevailing exchange rates.

We start with the group's commodities (salt - dirt - stones), as two commodities were chosen (regular cement - resistant cement). These two commodities are considered among the essential commodities used in building and construction activity for the public and private sectors in the Iraqi economy, in addition to their entry into (large-medium industries. - Small), knowing that these two commodities are produced locally. However, the war conditions and the destruction of extensive facilities in 2003, on which local demand had previously relied entirely, caused significant damage to these industries. With the beginning of the reproduction stage, these industries faced dumping in the market for the same commodities at lower prices. (Sarawa, 2012), which prevented the development of these industries, and even the goods that could have been exported abroad declined. The local production of ordinary and resistant cement declined in large quantities, especially after the year 2016, then began to gradually recover after 2020, as the quantities of local production in 2016 amounted to (2,650,801)/ton and decreased until it reached (2,395,062)/ton in 2018, but in 2020 it increased. The quantity produced locally amounted to (5,537,269)/ton (commodity balances from 2016-2020).

Despite the intense competition for these two commodities, the amount of their production has increased in recent years because of increased demand on the one hand and the rise in the cost of importing them due to the rise in the exchange rate of the dollar/Iraqi dinar, whose value has declined.

The values of the price elasticity coefficients, which depend on the quantities of imports and the prices of these goods in dollars since they are imports, can be traced according to the price elasticity formula discussed in this research. In addition to the actual exchange rates for imports, which were arrived at by dividing the general total of merchandise import values in Iraqi dinars by their values in dollars, based on import reports issued by the Iraqi Ministry of Planning for the period 2010-2021, as in the following table (1), for the cement commodity. The normal, as an intermediate commodity, and the annual change rates for both quantities and prices to identify the reasons for the change in elasticity values over the years of research.

**Table 1:** The Value, quantity, and prices of imported ordinary cement, exchange rates, and values of price elasticity coefficients for the period 2010-2021

Years	Value/\$ (1)	Ex (2)	Qd/kg (3)	P /\$ (4)	$\begin{array}{c} \Delta Qd \\ (\Delta 3) \\ (5) \end{array}$	ΔΡ	ΔQd/ΔP (5/6) (7)	P1/Qd1 (4/3) (8)	$E_P$ (7*8) (9)
2010	228052506	1194	1744037783	0.131	-	_		—	—
2011	778014749	1182	3634625062	0.214	1890587279	0.083	22778159988	7.51131E-11	1.7
2012	173112997	1169	1746530669	0.099	-1888094393	-0.115	16418212113	5.88782E-11	1.0
2013	89368203	1170	981952351	0.091	-764578318	-0.008	95572289750	5.66838E-11	5.4
2014	100888470	1167	926915077	0.109	-55037274	0.018	-3057626333	9.26725E-11	-0.3
2015	108098201	1167	845794245	0.128	-81120832	0.019	-4269517474	1.17594E-10	-0.5
2016	39545138	1180	120216853	0.329	-725577392	0.201	-3609837771	1.51337E-10	-0.5
2017	31319153	1183	46326754	0.676	-73890099	0.347	-212939766.6	2.73672E-09	-0.6
2018	3651090	1186	15396770	0.237	-30929984	-0.439	70455544.42	1.4592E-08	1.0
2019	3533827	1187	19967430	0.177	4570660	-0.06	-76177666.67	1.53928E-08	-1.2
2020	2004518	1195	17972837	0.112	-1994593	-0.065	30686046.15	8.86444E-09	0.3
2021	5898765	1461	86052606	0.069	68079769	-0.043	-1583250442	6.23163E-09	-9.9

- **Source**: Prepared by the researcher based on the official reports of imports issued by the Ministry of Planning/Central Bureau of Statistics.

- Department of Foreign Trade - for the years 2010-2021. The price elasticity coefficients were extracted by the researcher according to the price elasticity equation mentioned in this research, after taking the change in the quantities required and dividing it by the change in prices, then multiplying it by the result of dividing the average price by the quantity.  $E_P$  Symbol for price elasticity of demand, Qd for quantity demanded, P for price,  $\Delta$  symbol for change.

Table (1) above shows, the price elasticity coefficient for ordinary cement has obtained low values, which indicates its importance and necessity in many years of research, as in the years 2014-2015-2016-2017, with a value of (-0.3) (-0.5) (-0.5) (-0.6) respectively. In 2019, its value reached (-1.2), as the decline in import prices for this group encouraged an increase in demand for this commodity, due to the increase in building, construction, and reconstruction activity in the western governorates of Salah al-Din, Anbar, and Mosul during the period 2014-2017. The Corona pandemic affected the import of these goods in 2020 as the quantities required of them decreased, despite the relative decline in import prices, in addition to the increase in local production of these goods.

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The value of the price elasticity coefficient reached (0.3) due to the Corona pandemic and the economic recession. Despite the decision to devalue the currency at the end of 2020 and the beginning of 2021, and the rise in the dollar/dinar exchange rate, the prices of these goods from countries exporting to Iraq decreased in 2021 compared to the previous year, which increased the price increase and the required quantity of these goods. The fluctuation of the price elasticity values of ordinary cement can be followed through the following figure (3):



- **Figure 3:** Trend in the values of the price elasticity coefficient for ordinary cement imported into Iraq for the period 2010-2021.

- **Source**: Prepared by the researcher based on the official reports on imports issued by the Ministry of Planning/Central Bureau of Statistics - Department of Foreign Trade - for the years 2010-2021.

The figure above shows the fluctuation of the values of the price elasticity coefficients for importing ordinary cement between positive values, which reached their highest value in 2013 at (5.4), because of the decrease in the required quantity of these commodities, despite the increase in their prices. Low import prices. The highest negative value for the price elasticity coefficient was in 2021 and amounted to (-9.9), as the rise in the dollar/Iraqi dinar exchange rate at that time did not reduce the demand for these goods. Due to the decline in import prices on the one hand, and the recovery of building and construction activity in the year 2021, which indicates the return of life to normal after the Corona pandemic. The demand for this commodity depends on a study of the market, its quantity available locally, current production capacities, and the possibility of stopping its import.

What applies to ordinary cement applies to resistant cement, as the rise in the values of the price elasticity coefficient in recent years, as in the year 2021 when it reached (-4.1), is an indication of the presence of local alternatives that have begun to gain local acceptance. The price elasticity values of resistant cement, changes in quantities and import prices, and the effect of exchange rate changes can be traced through the following table (2):

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	erasticity coefficients for the period 2010-2021									
years	Value/\$ (1)	Qd/kg (2)	\$P / (3)	2)ΔQd (Δ (4)	ΔP (Δ3) (5)	$\begin{array}{c} \Delta \mathrm{Qd}/\Delta \mathrm{P} \ (4/5) \\ (6) \end{array}$	P1/Qd1 (3/2) (7)	$E_P(6*7)$ (8)		
2010	25630043	291392633	0.088		_	—	—	_		
2011	117517124	988246776	0.119	696854143	0.031	22509893303	3.01851E-10	6.8		
2012	165267639	1416044024	0.117	427797248	-0.002	-1.94105E+11	1.20329E-10	-23.4		
2013	241401185	1049269962	0.230	-366774062	0.113	-3235621904	8.24203E-11	-0.3		
2014	142452288	1620920031	0.088	571650069	-0.142	-4020544565	2.19263E-10	-0.9		
2015	201741379	1778622658	0.113	157702627	0.026	6174242443	5.42183E-11	0.3		
2016	12540884	99048170	0.127	-1679574488	0.013	-1.27353E+11	6.37716E-11	-8.1		
2017	5803929	29457410	0.197	-69590760	0.070	-988311091.3	1.27831E-09	-1.3		
2018	5386419	26847889	0.201	-2609521	0.004	-724973388	6.68857E-09	-4.8		
2019	1100882	11943804	0.092	-14904085	-0.108	137421232.3	7.47274E-09	1.0		
2020	1795283	12026810	0.149	83006	0.057	1453654.342	7.71712E-09	0.01		
2021	2727729	36854717	0.074	24827907	-0.075	-329893403.4	1.24117E-08	-4.1		

**Table 2:** The Value, quantity and prices of imported resistant cement, and values of price elasticity coefficients for the period 2010-2021

- **Source:** Prepared by the researcher based on the official reports on imports issued by the Ministry of Planning/Central Statistical Organization - Department of Foreign Trade - for the years 2010-2021.

We note from table (2), Although the exchange rate mentioned in Table (1) was stable during the period 2010-2019 and the Central Bank defended it with foreign reserves, the demand for these goods remained volatile, as the stability of relative prices as a result of the stability of exchange rates did not encourage local production. This is a result of several reasons, the first of which is commodity dumping, competition from foreign goods, and the lack of a real study of market demand. The trend of the price elasticity coefficient values can be followed through the following figure (4):



**Figure 4:** Trend in the values of the price elasticity coefficient for Resistant cement imported into Iraq for the period 2010-2021.

- **Source**: Prepared by the researcher based on the official reports on imports issued by the Ministry of Planning/Central Bureau of Statistics - Department of Foreign Trade - for the years 2010-2021.

It is noted from Figure (4) that the price elasticity values of imported resistant cement fluctuated and reached the highest positive value in 2011 by (6.8), with the increase in the required quantity, despite the rise in import prices. This period witnessed a major reconstruction process as a result of the destruction of public facilities as a result of the 2003 war on the one hand, in addition to an increase in construction activity as a result of the improvement and rise in income after 2008 on the other hand. On the one hand, and on the other hand, rising oil prices and increasing oil revenues. The highest negative value for the price elasticity coefficient was in 2012, when it reached (-23.4), with an increase in the required quantities and a relative decrease in the import prices of this commodity. Imports of this commodity also witnessed a noticeable increase in 2021, compared to the decrease in relative import prices, and the value of the price elasticity coefficient reached (-4.1), as a result of the increase in import prices. After construction activity rebounded in 2021 because of the Corona pandemic. These two commodities are commodities whose classification requires broader fundamentals and criteria than just their analysis, and depend on local production, production capacities, and the size of future demand expectations. Then reach the appropriate dollar/dinar exchange rate to import this commodity.

One of the very important groups of imported intermediate goods is (mineral fuels and oils), as the goods of this group are used as fuel for engines, machinery and equipment, and they are capital goods. It is used in infrastructure, such as paving roads, bridges, etc., and is used in many industries. It is indispensable, despite the possibility of producing many of this group's goods locally. Because most of them are derivatives of crude oil, they are imported, and this is one of the disadvantages of importing. The commodity (diesel engine oil) was chosen due to its importance in local production.

The value of the price elasticity coefficient for diesel engine oil took varying values, sometimes low and other times high, followed by movements in import prices in dollars, local prices, and local production of this commodity. This is shown in the following table:

years	Value/\$ (1)	Qd/kg (2)	P/\$ (3)	$\begin{array}{c} \Delta \mathrm{Qd} \ (\Delta \ 2) \\ (4) \end{array}$	ΔP (Δ 3) (5)	ΔQd/ΔP (4/5) (6)	P1/Qd1 (3/2) (7)	$E_P$ (6*7) (8)
2010	307018	505290	0.608	_			_	—
2011	12475154	13034334	0.957	12529044	0.349491945	35849306.92	1.20249E-06	43.1
2012	16172167	26198447	0.617	13164113	-0.339804585	-38740245.37	7.34291E-08	-2.8
2013	43603378	57662193	0.756	31463746	0.138891733	226534332	2.35623E-08	5.3
2014	31467524	32945622	0.955	-24716571	0.198948617	-124235952.9	1.31141E-08	-1.6
2015	15425030	25510546	0.605	-7435076	-0.350482151	21213850.64	2.89913E-08	0.6
2016	24652460	13212366	1.866	-12298180	1.26120956	-9751099.569	2.37021E-08	-0.2
2017	20139202	9186034	2.192	-4026332	0.326509179	-12331451.16	1.41221E-07	-1.7
2018	15086625	27826594	0.542	18640560	-1.650206105	-11295898.1	2.38664E-07	-2.7
2019	17400509	74395030	0.234	46568436	-0.308272273	-151062680.8	1.94837E-08	-2.9
2020	16053606	20208963	0.794	-54186067	0.56048706	-96676749.33	3.14394E-09	-0.3
2021	10242506	40121691	0.255	19912728	-0.539094494	-36937361.14	3.93083E-08	-1.5

**Table 3:** The value, quantity and prices of imported diesel engine oil and the values of price elasticity coefficients for the period 2010-2021

- **Source:** Prepared by the researcher based on the official reports on imports issued by the Ministry of Planning/Central Statistical Organization - Department of Foreign Trade - for the years 2010-2021.

Table (3) above shows that the value of the price elasticity coefficient in 2016 amounted to (-0.2), as the quantity demanded decreased from 2015, for two reasons: The first is the decrease in the quantity required because of the increase in the import prices of this commodity, and thus it is translated into local prices through the Exchange rate. The second is the extension of the impact of the complex crisis (the security situation in the western provinces of Iraq - the decline in global oil prices) on the local demand for this commodity, despite its necessity.

Import prices for this commodity increased in 2020 due to the Corona pandemic, which led to a decrease in the quantity required for the same year, and the value of the price elasticity coefficient reached (-0.3). Import prices for this commodity also decreased in 2021, despite the increase in the dollar/dinar exchange rate in 2021, which led to an increase in the quantity required. Note that the value of the price elasticity coefficient was (-1.5) for the same year. In fact, choosing the appropriate dollar/dinar exchange rate for this commodity depends on the importer's ability to compensate it with local production now or in the future. According to expected local demand and expected production capacity. The fluctuation of the price elasticity coefficient values during the period 2010-2021 can be.

followed through the following figure (5): (5):



- **Figure 5:** Trend of price elasticity coefficient values for imported diesel engine oil in Iraq for the period 2010-2021.

- **Source**: Prepared by the researcher based on the official reports on imports issued by the Ministry of Planning/Central Bureau of Statistics - Department of Foreign Trade - for the years 2010-2021.

It is noted from the above figure, the rise and fall in the values of the price elasticity coefficient, for the period 2010-2021, and although the microeconomic theory has neglected the sign of the elasticity coefficient, the research has clarified this sign to know the causes and direction of price movements and the required quantities of these commodities, and the effect of prices on demand, Translated at exchange rates.

#### 4. Conclusion:

The research showed the effect of the exchange rate followed in Iraq during the period 2010-2021 on the local demand for a group of intermediate goods imported into Iraq, which included three intermediate goods that included: ordinary cement - resistant cement - diesel engine oil, through the price elasticity of demand, as shown. The exchange rate specified by the Central Bank of Iraq needs to consider the importance of these goods for local production and the extent of their competition with local production due to dumping the local market. With the same products, local production can be increased, and self-sufficiency can be achieved. In addition to the impact of other economic conditions, most notably the reliance on exported oil revenues as it is almost the only commodity that feeds the economy, the decline in domestic production for the rest of the sectors and its lack of diversification. With many measures taken to limit imports that can be produced locally, corruption has become rampant at border crossings. He had a role in smuggling goods into the country to evade customs duties and laws preventing and restricting the import of these goods. Here, the demand for these goods has become dependent on the economic policies followed by countries exporting to Iraq and is affected by their economic conditions and price changes. Despite the price rise in some years of research, the demand for their import has increased. Due to insufficient local production of these goods. This was reflected in the increase in imports and the depletion of foreign reserves that covered the stability of the exchange rate followed, which was supposed to move towards increasing the local production capabilities of these goods and reducing their imports.

#### **Authors Declaration:**

Conflicts of Interest: None

-We Hereby Confirm That All The Figures and Tables In The Manuscript Are Mine and Ours. Besides, The Figures and Images, Which are Not Mine, Have Been Permitted Republication and Attached to The Manuscript.

- Ethical Clearance: The Research Was Approved By The Local Ethical Committee in The University.

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## العلاقة بين سعر الصرف ومرونة الطلب السعرية لبعض السلع الوسيطة المستوردة في العراق

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#### مستخلص البحث:

يقدم البحث عدداً من التحليلات والدلائل العلمية، والشواهد النظرية، التي توضح العلاقة بين سعر الصرف في العراق واستيراد مجموعة من السلع الوسيطة، للمدة 2010-2021، اذ تتمثل مشكلة البحث بالمشاكل والمعوقات التي سببت تراجع في مستوى الإنتاج المحلي، والتي ساهمت في خلل في الناتج المحلي الإجمالي، ومن ثم خلل في جانب الميزان التجاري (غير النفطي)، ضمن الحساب الجاري لميزان المدفوعات. ناقش البحث المفاهيم الأساسية لسعر الصرف وآلية تحديد، والمرونة السعرية، والسلع الوسيطة والعلاقة بين هذه المتغيرات، بعد ذلك تم المفاهيم الأساسية لسعر الصرف وآلية تحديد، سلع وسيطة مستوردة للعراق وهي: الاسمنت العادي، الاسمنت المقاوم، وزيت الديزل للمحركات، وفق صيغة المرونة السعرية، حسب النظرية الاقتصادية جزئية. يهدف المحني الاسمنت المقاوم، وزيت الديزل للمحركات، وفق صيغة المرونة من خلال استيرادة للعراق وهي: الاسمنت العادي، الاسمنت المقاوم، وزيت الديزل للمحركات، وفق صيغة المرونة منعر السعرية، حسب النظرية الاقتصادية جزئية. يهدف البحث الكشف عن استجابة الطلب المحلي على هذه السلع، من خلال تأثير من معر الصرف في العراق، الذي يترجم أسعار هذه السلع محليا. وبيان هل ان سعر الصرف في العراق تدعم الإنتاج المحلي، من خلال استيراد هذه السلع؟ وهل هناك التزام في الرقابة على المافذ الحدودية، والرقابة السعرية المحلي، وما من خلال استيراد هذه السلع؟ وهل هناك التزام في الرقابة على المافذ الحدودية، والرقابة السعرية الداخلية منعاً للاحتكار؟ وما من خلال استيراد هذه السلع؟ وهل هناك التزام في الرقابة على المافذ الحدودية، والرقابة السعرية المعرف في العراق تدعم الإنتاج المحلي هو دور الاعتمادات المستندية كأداة لتمويل الاستيرادات في العراق؟ وأظهرت نتائج البحث أن سعر الصرف في العراق لا

> **نوع البحث:** ورقة بحثية. **الكلمات الرئيسة:** سعر الصرف، مرونة الطلب السعرية، الاستيرادات، السلع الوسيطة.

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