

Impact of Exchange Rate Policies on Sudan's Trade Balance Analytical Study for The period 1995- 2020

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Abstract

The study aimed to measure the impact of the exchange rate on the trade balance in the Sudan during the period (1995-2020). The study relied on the standard quantitative approach with the aim of estimating the milestones of a simple decline between the trade balance as a dependent variable and the exchange rate as an independent variable, by testing the stillness and joint integration of the time chains of the variables studied using the self-declining methodology of



ARDL. The study found a statistically significant inverse relationship between the balance of trade and the short and long-term exchange rate, as well as a long-term complementary balance between the balance of trade and the exchange rate. Through the results of the benchmark analysis, the flexibility of the exchange rate has reached (EX) in the short and long term -0.12 and -0.03 respectively, this means that an exchange rate increase of 1% will lead to a 17% decline in the balance of trade, 3% If other independent variables are stable, this . The study recommended the importance of increasing the value of exports by raising their quality and improving their competitiveness in foreign markets by reducing production costs and using modern technology, pursuing import substitution policy by creating domestic industries to produce goods imported from abroad and employing economic policies to protect and support emerging national industries

Keywords: Balance of Trade; Exchange rate; Exports; Import substitution; Economic policies; Domestic Industries.

Chapter I: Introduction

The exchange rate originated as a result of international exchanges of goods and services between States, as no State in the world was fully economically closed (Closed Economy) States usually specialize in the production of goods and services that are highly resourced. For example, the Sudan produces agricultural goods that are resourced from arable water and land. Thus, the relative cost of production is lower compared to countries that do not have such resources. Hence the need for States to specialize in exports and imports. While payments are generated to the importing State from the outside world, such transactions between States are settled using the exchange rate and exchange rate is one of the most important instruments of monetary policy, as



it affects other financial and economic indicators. In addition to being affected by internal and external conditions, monetary authorities pay considerable attention to exchange rate policies, especially those countries with scarce foreign exchange resources, because the strength and stability of a country's national economy is closely linked to its national currency exchange rate to other foreign currencies.

The importance of the exchange rate stems from the requirement of every country's national foreign exchange economy as the primary source of State reserves, import finance, and payment of its external obligations. The importance of emerging countries' exchange rate systems stems from their role in contributing to the short-term success of economic reform programs on the one hand, and working towards the continuation of long-term outcomes of economic liberalization policies on the other. Exchange rate policies have a direct impact on lowering inflation and lowering the real cost of economic reform and structural adjustment for various sectors. The Sudan has for long periods experienced structural imbalances in the balance of payments which has led to a multiplicity of exchange rates and a deterioration in the value of the national currency and has adversely affected the country's overall economic performance, As a result, exchange rate fluctuations in the short term led the Bank of the Sudan, in cooperation and coordination with the Ministry of Finance, the National Economy and related entities, to make efforts to create mechanisms that would help stabilize the exchange rate in the long term.

Volatility in quantitative economic policies is one of the most important factors contributing to the multiplicity of exchange rates and hence long-term instability, and the exchange rate is negatively or positively affected by changes in GDP, real growth rate, inflation rate, foreign exchange reserves and terms of trade. Monetary authorities have implemented numerous exchange rate economic policies aimed at correcting the imbalance in the balance of payments by increasing the competitiveness of Sudanese exports and expanding Sudan's export capacity, one of which was



the liberalization of the exchange rate in 1992. As a result of the significant supply and demand in the foreign currency market, the prevailing exchange rate became the free rate.

1-1 search problem:

For long periods, the Sudan continued to suffer from imbalances in the balance of payments and the trade balance in particular. This means that there is a deficit in free currency resources. However, the real deficit did not appear. This deficit was covered by cash flows, represented by aid, grants and loans. However, after the aid was interrupted, the real gap emerged and to address this imbalance, monetary authorities have been able to develop many foreign exchange and exchange rate policies, and this attempts to answer two questions:

- To what degree does the 1995-2020 exchange rate policy affect the trade balance?

- Does lowering the exchange rate boost exports while decreasing income?

1-2 objectives of the research are:

- The research aims to determine the impact of exchange rate policies on the balance of trade and their important role in addressing imbalance.
- Analysis of the implications of different exchange rate policies during the period 1995-2020,
- Identification of imbalances and deficiencies in these policies, including access to the most appropriate policies in addressing the trade deficit

1-3 research hypotheses:

- A reduction in the national currency's exchange rate increases the short-term trade balance deficit.

- The reduction of the national currency's long-term exchange rate increases the volume of exports, decreases the volume of imports and thus improves the balance of trade



1-4 research methodology:

The research curriculum is analytical, based on a practical study of the impact of the exchange rate on the balance of trade, by building a standard model of quantitative economic variables that play an important role in exports and imports. The data used in the form were obtained from the Bank of the Sudan, the Ministry of Finance, the Ministry of Commerce and the World Bank. In order to determine the extent to which the balance of trade is affected by changes in the exchange rate of the Sudanese pound through the formulation of a standard model that incorporates both the exchange rate as an independent variable and the balance of trade as a dependent variable, using the self-degradation methodology of time gaps distributed for joint integration (ARDL) in the estimate through the Eviews-9 program.

1-5 sources of information:

Research is based on relevant secondary sources such as the reports of the Ministry of Finance, the Ministry of Commerce, the Bank of the Sudan and the World Bank

1-6 Research Organization :

The research consists of four chapters and a conclusion

chapter I: Introduction and includes preparation, research problem, study objectives and hypotheses, study methodology and information sources.

Chapter II: Theoretical framework for exchange rate and trade balance.

Exchange in terms of the concept, types, determination and systems of the exchange rate, the trade balance defined, its components, as well as the role of the exchange rate in addressing the trade balance deficit, while the third analytical chapter is concerned with analyzing the impact of changes in the national currency rate on the trade balance during the period 1995-2020. The conclusion summarized the main findings and recommendations



1-7 Previous studies:

Al-Bur study (2002): The study aimed to make a comparison between policies of restricting the exchange rate and policies of liberalizing it in Sudan and to highlight the effects of each of them on the trade balance for the period from (1957-1998). The study concluded that most of Sudanese exports are agricultural commodities, which means weak Its response to the exchange rate is low, as it is affected more by natural factors and internal and external economic factors. Sudanese exports are affected by a number of other variables, such as the general level of local prices. The higher the local prices, the greater the volume of exports. They are also affected by the level of the gross domestic product, as it is a direct relationship. The higher it is, the greater the exports.

The study by Satis Chandra Devkota (2004) aimed to determine whether a change in the exchange rate, especially currency devaluation, is the best solution to address the deficit in the foreign trade balance. The country of Nepal faces a permanent deficit in the foreign trade balance, and the government has taken many policies at different times, but most These policies have failed. The study concluded that reducing the exchange rate leads to an increase in exports and a decrease in imports. The Marshall-Lerner condition was met, but the gap between exports and imports did not decrease. Therefore, the balance of foreign trade is impossible to correct through reduction alone. The study recommended that exports must be increased by exploiting local resources, and imports must be reduced using financial tools by increasing the efficiency of tax administration by establishing an import substitution policy for a specific type of industry.

Al-Faki's study (2005): The study aimed to identify the effects of exchange rate policies on the balance of payments and ways to address the negative effects and the policies of the International Monetary Fund in this field. The problem of the study was the presence of an excess demand for foreign currencies, which leads to the problem of rising prices against the Sudanese



currency, which negatively affects Sudanese exports and thus creates a deficit in the balance of payments. The study concluded that policies of reducing the exchange rate do not lead to encouraging exports or reducing of imports, this is due to the role played by the elasticities of demand for exports and imports in influencing the results of the exchange rate. Perhaps the reduction policy may be more beneficial for developed countries due to the sufficient flexibility in their economic structure. The general budget in light of multiple exchange rates is better off than if the state follows a policy of reducing, raising, floating, or stabilizing the exchange rate, especially in developing countries.

Study by Mahmoud (2009): It aimed to discuss the effects of exchange rate changes on the Algerian trade balance. The study concluded that the conditions for a successful policy of devaluation of Algerian dinars to increase exports and limit imports were completely absent in the case of the Algerian economy because Algerian imports were not affected by the exchange rate. They were inflexible because they represented a high proportion of consumer goods and Algerian exports were highly sensitive to changes in oil prices because they were concentrated around a single source of oil revenues. and exchange rate reductions were not rational, sudden and close, and even the reduction ratios were insufficiently considered.

Abdalla Study (2013): The study aimed to clarify the concept of exchange rate and its evolution and to learn the impact of Exchange rate policies on the world's balance of payments and how to remedy imbalances in the balance of payments through the exchange rate. The study found that the exchange rate reduction policy did not lead to an increase in exports and a reduction in imports, as there was no requirement for flexibility in demand and supply of exports and imports. Therefore, exchange rate reduction policies did not increase exports but resulted in a continued decline in the exchange rate.

Study (Obaidalla, 2014): The study aimed to measure the impact of exchange rate fluctuations on Sudan's macroeconomic performance, focusing on three key indicators: economic



growth, foreign direct investment and the trade balance, during the period (1979-2009). The study measures the volatility of the real actual exchange rate using the self-degradation model conditional on heterogeneity (ARCH) The results of the two-stage micro-square method have revealed that real actual exchange rate volatility has a negative impact on economic growth and foreign direct investment flows into Sudan. The results also indicate that exchange rate volatility has had a positive impact on the balance of trade, meaning that exchange rate fluctuations enhance the balance of payments capacity to respond to international shocks. The study made some recommendations on the management of Sudan's exchange rate policy, as well as proposals for further consideration on this subject.

Rofai Study (2017): The study aimed to clarify the explanatory formulas, policies and theories of the exchange rate, to learn the relationship between exchange rate policy and trade balance setting and to indicate the impact of the exchange rate on exports and imports from 2005 to 2015. One of the most important findings of the study is that there is a very strong reverse relationship between exchange rate policy and the trade balance and that continuous exchange rate change leads to weak competitiveness of Sudanese exports. The study made a series of recommendations, the most important of which: diversifying the composition of exports with a focus on industrialization rather than exporting ore, as well as developing policies that stimulate the entry of new investments and capital, especially agricultural investments.

Chapter II: Theoretical Framework for Exchange Rate and Trade Balance 2-1 theoretical framework for the exchange rate.

Preface:

What distinguishes international trade from internal trade is the monetary systems of both. Domestic trade is subject to a single monetary system, namely a State's national currency. In international trade, there are various money and exchange systems as a result of the absence of a



common monetary unit at the global level, and it may be acceptable to deal within each State only in its national currency with which it is traded. Hence, all exporters of all kinds of commodities dealing with them who sell goods abroad must convert the currencies received for their commodity exports into the local currency. Importers who buy goods from international markets must convert the national currency into foreign currency to obtain the value of their imports. All previous transactions take place in the so-called foreign exchange market which is concerned with selling the purchase of different currencies. The main function of this market is to facilitate the exchange of foreign currencies between international markets through the pursuit of systems and exchange rates. When international trade arises, there is a need for conversion ratios on the basis of a State's currency to the currencies of other States and thus the prices of goods and services from each State to the different units of money of other States.

Exchange rate concept:

Money is a means of trading and there must be currency for each country. In England, sterling is used and so for most of the world's countries, this national currency is a tool for domestic economic transactions. In the case of economic transactions with abroad, i.e. in the case of international exchange, there is a kind of comparison between at least two currencies and on the basis of this comparison the value of each currency to the other, the exchange ratio between a national monetary unit and foreign monetary units is defined at the exchange rate (Afifi, 1991). The exchange rate is defined as the number of units of national currency that pay for a unit of foreign currency or is the price of a State's currency in exchange for another State's currency. The higher the exchange rate, the higher the price of goods in the other State, which limits its external competition because its cost becomes higher. Thus, the exchange rate can be viewed from two primary angles: It is the number of units of national currency that pay a price for one unit of foreign



currency and from a second angle the exchange rate can be seen as the number of foreign currency units that pay a price for one unit of national currency) The exchange rate not only determines the rate of a currency expressed in units of another currency, but also serves as an intermediary to convert the prices of goods and services given in a currency into rates expressed in another currency (John & Mark, 1987).

Exchange rate systems:

Fixed exchange rate system:

The exchange rate has been stabilized over a prolonged period of time under the international gold base payments system and requires three conditions: fixed value of the national currency in gold and assurance of the unrestricted national currency of a gold bank and free export and import of gold. This system has been working efficiently and automatically in correcting balance-of-payments imbalance but on Calculating the State's internal economic situation because the fixed exchange rate system depends on changing the structure of internal prices to restore balance. The exit of gold from countries with balance-of-payments deficits reduces cash supply. Therefore, both prices and incomes decrease and the contraction effects continue until payments abroad decrease and the balance of payments is restored (Afifi, op. cit.)

Orbiting installation system: (Bretton Woods system):

In 1944, the Bretton Woods Conference was convened to agree on a new monetary system for regulating monetary transactions for the post-Second World War, whereby the IMF Agreement was established in addition to a series of arrangements, including promoting international monetary cooperation and balanced growth of foreign trade through stable exchange rates and avoiding restrictions on foreign payments. The theory stipulated each country's obligation to set a fixed value for its currency or a price equivalent to a specific weight of gold or units of the dollar In this system, if States face a temporary imbalance in their balance of payments, they intervene



in the exchange market to correct the imbalance and maintain the parity price. If the imbalance is chronic, the State will make a 10% reduction in its currencies (Abed, 1999).

Orbiting flotation system:

This system appeared in the wake of the collapse of the Bretton Woods system, which was based on managed stabilization. The method followed by countries differed, as the method of pegging to a basket of currencies and the method of pegging to a basket of special drawing rights emerged.

Exchange Control System:

States with persistent deficits in their external balance of payments resort to direct foreign exchange controls. The exchange control system is a regulated government supervision of the foreign exchange market, i.e. the presentation and demand of foreign exchange in order to achieve balance in the trade balance by imposing a set of laws to tighten control over foreign exchange resources and uses (Known, 2006)

2-2 theoretical foundations of the Balance of Trade:

The balance of trade shows the value of evolving exports and imports during a year where merchandise export earnings are recorded on the creditor side of the balance of trade while import payments are recorded on the debtor side of the balance if payments abroad to finance imports are greater than those from abroad (Exports) In this case, the balance of trade shows a deficit and vice versa, if earnings from commodity exports exceed import payments, the balance shows a surplus. If the proceeds from commodity exports are equal to the payments of commodity imports, the balance is in Equilibrium.Foreseeable trade transactions covered by the balance of trade represent only one element of the State's transactions with the outside world, so the importance of the balance of trade varies depending on its role in the balance of payments. In some countries, particularly lagging countries that rely on agricultural hearing, mineral raw materials and petroleum for their



exports, the balance of trade is a major part of the balance of payments such as tourism services, transport, insurance, banks and others.

2-3 Theoretical basis for the relationship between the Exchange Rate and the trade balance:

If the exchange rate (currency depreciation) rises, the value of exports will rise as a result of increased global demand, imports will fall due to lower demand, and vice versa in the case of depreciation, exports will fall and imports will increase because national products become expensive from the point of view of the foreign consumer and foreign products will become cheap from the point of view of the national consumer. If the monetary authorities undervalue their currency, this stimulates the external demand for national products, i.e. an increase in exports, as does a contraction in the national demand for foreign products (decrease in imports). On the contrary, where monetary authorities do their currency above its value, they limit exports and encourage imports.

The flexibility approach illustrates the role of exchange rate policy to remedy the trade deficit and is linked to the classic vision of foreign trade and is based on spending transfer policies that seek to remedy balance-of-payments imbalances by shifting expenditure between foreign and national commodities in a way that increases exports, reduces imports in deficits and sometimes decreases exports and increases imports in surpluses. Under these assumptions, the trade balance deficit is an increase in import payments on export earnings and the currency devaluation is intended to change the relative prices of both exports and imports so as to stimulate an increase in export earnings and reduce import payments sufficiently to restore balance between them and balance the trade balance.

The devaluation of the national currency by a certain percentage reduces export prices denominated in foreign currency by the same proportion. This depends on export flexibility.



Export earnings are expected to increase if demand is flexible or if demand is equally flexible or decreases if demand is inflexible. Currency devaluation also leads to higher import prices in national currency, resulting in reduced imports. This depends on import flexibility. If demand is flexible, this increases import payments or remains the same if demand is equally flexible or increases if demand is inflexible. Improvement in the balance of trade requires that global export demand flexibility 1 and global import demand flexibility 2 is greater than one true (G1 + G2 > 1) This requirement is called Marshall Lerner Marshal- Lerner Condition) "The impact of devaluation on the balance of trade under the Marshall Lerner Clause depends on the value of the resilience of global export demand and national import demand, If total flexibilities are greater than one right, devaluation will remedy the trade balance deficit. "The devaluation of the currency leads to corresponding changes in the prices of both exports and imports. Export prices become low. Foreign consumer demand increases. Imports become relatively high and national consumer demand decreases. Hence, devaluation increases exports and declines in imports until the trade balance deficit is eliminated. (Afifi, previous reference).

The effective impact of the exchange rate change is linked to the non-intervention of monetary authorities by satisfying surplus domestic monetary demand and creating surplus supply left to determine the balance of the free conduct of the economy's units

Chapter III: Analysis of the Impact of Exchange Rate changes on Sudan's

Trade Balance

Research 1: A measurable study of the impact of exchange rate change on the balance of trade.

3-1 Analytical study of the Evolution of the Exchange Policy in Sudan during the period from 1995-2020

Exchange Rate policies for the period 1995-1996 :



In 1995, the Bank of Sudan moved to activate the policy of liberalizing the exchange rate and allowed the Bank of Sudan to buy 20% of the export proceeds and 80% of the sales rate announced by the Bank.

In 1996, the Bank of the Sudan developed a new exchange rate liberalization mechanism, which consists of the following actions:

- The exchange rate at which commercial banks and exchange companies deal on a daily basis is determined by the Bank of Sudan's index of the weighted average of the previous day's rates.

- Each accredited bank or exchange company is obliged to determine the purchase price and determine the sale price by adding a margin not exceeding 2% of the purchase price.

Speculation in the foreign exchange market widened the gap between the free market price and the parallel market price, reaching about 23%. The free market price was about 1467 pounds per dollar, while the parallel market price was about 1805 pounds per dollar.

Crawling linkage (1997 - 1999)

Since 1997, the State has pursued deflationary fiscal policies that coincided with full control over monetary expansion by the Central Bank to absorb sources of monetary expansion through deflationary monetary policy. foreign investment from China, Malaysia and other countries that invested in the Sudanese petroleum project The Sudan went east, leading to the availability of foreign exchange resources. The difference between the official and parallel exchange rates was reduced and removed by the end of 1999. The foreign exchange market was consolidated and the creeping exchange rate was followed, whereby the exchange rate was determined by a committee composed of the Bank of Sudan. The Commission announces the minimum and highest purchase price to the banks and the banks. The Commission selects either limit to represent the purchase price for the banks and then adds 2% of the selected rate to



determine the sale price for them. The reserving rate for exporters has been increased and means the central bank's waiver of foreign exchange from the export process in favor of the exporter

This narrowed the gap between free and parallel prices from 23% in December 1996 to 6.9% in December 1997. This system continued until August 1998 and followed a number of procedures such as avoidance of certain goods such as cotton and Arabic gum. The Exchange Rate Determination Committee was abolished. The Bank of Sudan calculates a 14-day moving weighted average based on bank transactions and foreign exchange exchanges. This method has succeeded in reducing the gap between the free exchange rate and the parallel market rate to about 1%. In March 1999, in order to stabilize the exchange rate, the Central Bank issued a publication explaining the mechanism by which it could intervene in the cash market through auctions. Foreign exchange tenders for banks and money exchanges were cancelled and replaced by the foreign exchange chambers system for commercial banks. Thus, they became the option in the case of cash scarcity. Leverages from other banks or recourse to Bank of Sudan chambers.

Orbital flotation (1999-2008)

This period saw an unprecedented exchange rate stabilization as a result of increased oil revenue flows that contributed to the provision of valuable resources to the foreign exchange market. In this period, monetary authorities applied a flexible managed exchange rate system where supply and demand forces became the primary determinant of the exchange rate and intervention in the foreign exchange market was to correct course and manage liquidity in the economy. In 2000, the exchange rate stabilized considerably as a result of the extraction and export of petroleum and one real exchange rate stabilized in the range of SD 147.6 to the dollar. In 2001, the Bank of Sudan announced a new exchange rate determination mechanism, the visa rate mechanism, and the auction system was abolished for the Bank of Sudan to cover the use of chambers of commercial banks .In 2002, policies aimed at maintaining the stability of the



exchange rate of the Sudanese dinar in addition to adjusting the margin in which the visa rate moves from 1% to 1.5% to 2% according to the requirements of the market movement In 2003, foreign exchange policies aimed at maintaining the stability of the exchange rate and continuing to liberalize foreign exchange transactions; Measures have also been put in place to manage the State's foreign exchange reserves Since 2004, the Sudanese pound rate has been raised for the first time. The authorities considered that the exchange rate of the Sudanese dinar against free currencies was undervalued. Therefore, after a study prepared by the Central Bank of the Sudan in cooperation with the international monetary authorities, the need to raise the exchange rate of the Sudanese dinar was reached.

At the end of December 2005, the exchange rate of the Sudanese dinar reached 246.26 Sudanese dinars to the United States dollar. The Central Bank has ceded many resources in favour of commercial banks and exchange exchanges in order to stabilize the exchange rate In December 2007, the decision to move from the United States dollar to free currencies came with a range of considerations, including the US economic embargo based on the Sudan since 1997, adding to the trend of many countries to disengage their currencies from the United States dollar, such as China and Malaysia, in order to avoid exchange rate fluctuations, In January 2008, the Bank of Sudan began effectively implementing the process of conversion to other currencies. The public sector's response was greater than that of the private sector in order to control the dollar currency in the public's mind in dealing (Abdullah, June 2016).

Float Orbit and Foreign Exchange Resource Scarcity Period(2009-2018):

In 2009 there was a shortage of foreign exchange as a result of the global financial crisis. Oil revenues shrank sharply and non-petroleum export revenues fell. And so, some pressures are beginning to emerge in the foreign exchange market. One of the most important indicators to measure this is the re-emergence of the parallel market. Since early 2009, exchange rates have



multiplied in and with subsequent cuts in the official exchange rate also decreased in the parallel market. In 2010, the Central Bank directed banks and ATMs to grant an incentive of 16.29% to anyone who sells foreign cash to banks and banks by adding the same ratio to the sale price, and allowed the opening of free accounts at least 5,000 euros with proof of the existence of continuous open account flows

After 1997, the foreign exchange market stabilized and continued until the end of 2005, after which the exchange rate was affected by the global financial crisis that began to emerge from 2007, but the actual impact on the Sudan began since 2008, when exchange rate pressures began as a result of the decline in foreign exchange reserves, after which the gap between the official and parallel rates emerged and this gap rose, reaching 4% in 2009. The difference between the official and parallel exchange rates has increased as a result of the consequences of the global financial crisis as well as the loss of petroleum due to South Sudan's secession. The effects of the secession of South Sudan are the most important reasons that have deepened the problem of the scarcity of foreign exchange resources, with the country losing 76% of foreign exchange resources and about 56% of the state's general revenue.

The shock quickly shifted to the various economic sectors and the country experienced high inflationary pressures since July 2011, real production in the productive sectors declined and the public budget deficit rose, with the result that the cash bloc grew and the cost of living. (Bank of Sudan, 2011), so the Central Bank has taken many measures to rationalize foreign exchange demand, including:

- Apply 0.04% margin between the purchase and sale price of all convertible foreign currencies.

- Prohibiting money exchanges from making transfers for the purpose of feeding their accounts with correspondents abroad.

- Regulate the use of foreign exchange for the purpose of invisible payments to banks and money exchanges, including travel and transfers for various purposes.



The Central Bank's petroleum import credits should be opened instead of commercial banks.Raise the ratio of paid import profit margin to 100%.

In 2012, the Central Bank of Sudan reduced the exchange rate from Pound2.76 to Pound4.398 to the dollar by 65%, which contributed to bringing the gap between exchange rates in the regulated market and exchange rates in the parallel market (Bank of Sudan, 2012). The Central Bank of Sudan corrected the exchange rate of the Sudanese pound in the regulated market to reflect its real value, as its value was reduced from 4.4 pounds per dollar to 5.7 pounds per dollar in September 2013. The total gap between the official rate (6.2 pounds per dollar) Al-Mawazi (8.8 pounds per dollar) reached 42% by the end of 2014, and jumped to 85% at the end of 2015, in 2016 the Bank of Sudan took many policies and actions that resulted in relative stability in the exchange rate as the gap between the official and parallel rate narrowed to only 5% in December 2016 (Bank of Sudan, 2016). The exchange rate was adjusted by including the incentive to encourage exports and remittances of Sudanese working abroad within the visa rate. The exchange rate of the Central Bank of the Sudan was adjusted, and the exchange rate for the regulated market was adjusted several times during 2018; In order to reduce the gap between the regulated market exchange rate and the parallel market price. As a continuation of the Central Bank's efforts to maintain exchange rate stability, the Market Makers Mechanism was established as an independent entity to declare the exchange rate from market information, thereby applying the declared rate to all foreign exchange transactions. As a result of these measures, the gap between the official and parallel rates decreased from 202% in December 2017 to 71% in December 2018 (Bank of Sudan, 2018).

3-2 Analytical Study of the Development of the Sudanese Trade Balance Analysis of the development of the balance of trade during the period 1995-2010:



During this period, the managed flotation system was adopted to reduce persistent fluctuations in the exchange rate. The central bank intervenes in the foreign exchange market through direct intervention, which leads to a change in the situation of reserves and indirect intervention through exchange rates, liquidity and other financial instruments.

Table No. (1)

Balance of trade for the period 1995-2010 in millions of dollars

Year	exports	Imports	trade
			balance
1995	555.7	1184.4	-828.8
1996	620.2	1504.4	884.2
1997	594.2	1579.7	-985.5
1998	595.7	1925.6	-1329.4
1999	780.1	1414.9	-634.8
2000	1806.7	1552.7	254
2001	1698.7	1585.5	113.2
2002	1949.1	2446.4	-497.3
2003	2542.2	2881.9	-339.7
2004	3777.8	4075.2	-297.4
2005	4824.3	6756.8	-1932.5
2006	5656.6	8073.5	-2416.9
2007	8879.2	8775.4	103.8



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2008	11670.5	9351.5	2319
2009	7833.7	9690.9	-1857.2
2010	11404.3	10044.8	1359.5

Source: Bank of Sudan Reports

From table1, we note that exports started on an upward trend and reached the highest value of 620.2 in 1996, while the lowest value was 319.3 in 1992. Imports are also on an upward trend and reached the highest value of 1504.4 in 1996. The trade balance deficit is escalating with some years of declining volatility and the highest trade balance deficit 884.2 was at the end of the period in 1996 because imports were worth 1,504.4 and exports were worth 620.2 We note that accelerated exchange rate reductions have led to an increase in exports, although they cover less than 50% of imports, thereby increasing the trade balance deficit.

The Sudan has become an oil exporter since 1999, with the highest value at 11.670.5 in 2008, and the lowest value at 594.2 in 1997, with the highest increase in exports at 19.8% in 1999, which decreased in 2001 and 2009 by 5% and 32.9%, respectively. Exports to petroleum and non-petroleum exports were classified after the entry of petroleum. Petroleum contributed to a substantial increase in exports by 95% in some years, while the value of non-petroleum RAT declined by 5%. This means the low competitiveness of Sudanese exports and the non-employment of oil revenues in the agricultural and industrial sector.

From table 1, we note that imports are on an upward trend to import most of the equipment associated with petroleum extraction during this period. The Government's imports also declined after the oil bill came out and private sector imports increased. Imports reached the highest value of 10,044.8 in 2010 and the lowest value was 1414.9 in 1999. The highest rate of increase was 65.8% in 2005. Imports decreased by 26.5% in 1999 and were almost constant from 3.7% respectively. 3.6%, 6.6%, 2007-2010, with an increase of about 8.7%.Petroleum extraction and



export contributed to an estimated surplus as the deficit decreased in some years, with the trade balance falling in 2004 from 985.5 to 297.4 in 2004. The highest value of the trade balance surplus was 2,319 in 2008 overall.

We note that the extraction and export of petroleum resulted in relative stability in the exchange rate and contributed to an increase in exports by 95%. The proportion of petroleum imports fell to the lowest 2.9% rate in 2007. This resulted in an improvement in the trade balance, as it achieved a marked surplus in this period after a frequent deficit since the mid-1970s.

Trade Balance Development Analysis (2011-2020):

	I					
Year	Exports	Imports	trade balance			
2011	9655.7	8127.7	1528.1			
2012	3367.7	8338.0	4970.4-			
2013	4789.7	9918.1	-5128.3			
2014	4454.0	9211.3	-4757.3			
2015	3160.0	9509.1	-6340.1			
2016	3093.6	8323.4	-5229.8			
2017	4100.4	9133.7	5033.3-			
2018	3484.7	7850.1	4365.4-			
2019	3734.7	9290.5	5555.9-			
2020	3802.4	9837.7	6035.3-			

Table No. (2)

Balance of trade for the period 2011-2020 in millions of dollars

Source: Bank of Sudan Reports



From table 2, we note that this period was characterized by the loss of exports of oil as a major resource and the detection of the weakness of the production system, especially the industrial sector and the neglect of agriculture during the oil period. The balance of payments also recorded a persistent deficit throughout the period except for 2014 and 2015. The deficit was caused by the deterioration of exports due to the separation of southern Sudan and the exit of oil from the Sudanese export structure, with imports not falling at the same rate but increasing, which showed a persistent trade balance deficit, the impact of which was reflected in the macro balance. Exports in 2012 fell to \$3367.71, adding to the trade balance deficit of \$4970.4 million. In terms of foreign exchange policies, the export of key agricultural goods such as sesame, Arabian gum, cotton, corn, hibiscus, livestock, cows and lamb was banned. In 2016, it was decided to sell export earnings to commercial banks at a purchase price plus an incentive ratio. The deficit continued until 2020m (6035.3) US \$1 million. During this period, several exchange rate cuts were made starting from June 2012 with a 91% reduction and then in September 2013 with a 30% ratio until the incentive policy was implemented again on November 1st, 2016. In order to narrow the gap between the official and parallel rates, which amounted to about 131% of the official price. One of the features of this period is the expansion of the Government in the issuance of securities from 2012 to 2018 to fill the general budget deficit, which has led to the displacement of direct investment, which has deepened the country's weak production structure for the industry and agriculture sectors, thus weakening exports and increasing imports that have exacerbated the balance-of-payments deficit s economic blockade and the decline in foreign direct investment for oil-investing companies in favour of the separate southern part, reflecting weak foreign direct investment in other non-oil sectors. In addition, there is a lack of interest in moving and diversifying other productive sectors, especially when oil is lost by South Sudan's secession. The contribution of the gold, livestock and agricultural commodities sectors to exports began to improve after the loss of oil as the local



currency devalued, stimulating exports and beginning to scale imports. As a result, the overall trend of the trade balance position in the Sudan was the deficit (-6035.3 million dollars) in 2020.

Chapter IV: Methodology and Applied Evidence

Preface:

Objective of the research to measure the impact of the exchange rate on the Sudan's balance of trade during the period 1995-2020 In order to reach this goal, the standard quantitative curriculum was based on the objective of estimating the parameters of a simple decline between the balance of trade as a subordinate variable and the exchange rate as a separate variable, This is done by testing the dormancy and joint integration of the time series of the variables being studied using ARDL's self-degradation methodology.

Analysis Methodology:

The task of standard economics is to test hypotheses for validity, i.e. to confront theory with reality and give theory practical and applied content by measuring and testing economic relationships. Overall, the methodology for research into economics is defined in the following steps:

Standard Model Characterization Phase, Standard Model Assessment Phase, Estimated Model Assessment Phase, Application Phase and Forecasting

Stillbirth Tests: All applied studies using time chain data assume that the chain is stable or static, and in the absence of stability, the decline we get from time chain variables is often false (Abdul Qader, 2009, p. 643).

At the applied level, there are several tests that can be used to test the quality of stillness in the time series, the most important of which are: the historical drawing of the time series, the consecutive box drawing and the tests of the Isles of Unity. The Isles of Unity test is one of the most used in practical applications and is used in most ready-made programs. The most important



tests of the Isles of Unity are: Dickie Fuller's Expanded Test (ADF) and Flips-Perone Test (PP) (Al-Rasheed, 2005, p. 31). The PP test differs from the previous test that it does not contain slowing values for differences that take into account the correlation in the first differences in the time series using non-teacher correction, but it is based on the same extended Dickie Fuller test formats, and the same critical values are used (MD, 2012, p.212).

Joint Integration:

One of the problems facing standard economic analysis is the inactivity of time chains of variables and so the estimated decline between them is false and so the relationship between them may be a relationship of pairing or association rather than a causal relationship, but of course not all cases where time chain data is not static, the estimated regression is false. and found that the time-series data of variables if they are integrated from a single grade are said to be of equal complementarity and therefore the estimated regression relationship between them is not false even though the chain is not static (Al-Rashid, previous reference, p. 274). There are many methods of joint integration such as Engel Granger's two-step method, Johansson and the Boundary Test for Joint Integration. This study uses the self-regression limit test model for slowing distributed time gaps developed by Pesaran 2001 and why this model is preferred to other known joint integration models, The problem of uncertainty that usually arises about the characteristics and stability of time chains Which makes using the Pesaran method of border testing the best option, Pesaran argues that the ARDL test can be applied regardless of the characteristics of time chains if they are stable at their levels (0) 1 or integrated Grade I (1) 1 or mixture between the two, in addition, the Pesaran method has better features in the case of short time chains compared to other usual methods (Al-Jarrah, 2011).

In order to apply the ARDL-distributed self-degradation methodology, the stability and complementarity of time series must be ascertained with a view to improving estimates of model



transactions whose accuracy depends mainly on the nature and magnitude of random errors resulting from template variable time series data errors through preliminary analysis of the study data.

There are a number of steps to follow when applying ARDL methodology that can be summarized as follows:

Step 1: Choose the optimal delay period for the first variable variables in the unrestricted error correction model (VECM) by OLS method by using an unrestricted self-regression vector model and the appropriate time periods are determined by using both: Final Prediction Error Standard (FPE), Akiaki Information Standard (AIC), Schwartz Information Standard (SC) and Q. The appropriate period of minimum value is selected from the above estimated statistical standards.

Step 2: Test for a common integration (long-term balance relationship) using the UECM model derived from the generic version of the ARDL model .A common integration of the variables is verified using the boundary test Bound Test according to the Pesaran procedure, which is based on the (F) test to test the following assumptions:

$\alpha_1 \neq \alpha_2$ H₀ =Null Hypothesis : no common integration

$\alpha_2 = \alpha_1 H_1$ = Alternative imposition: joint integration

Since the F test has a non-standard distribution, there are two critical values for the measurement of this test: the minimum value and assumes that all variables are static at their level, i.e. integrated from rank 0 (0) 1, the upper value and assume that the variables are static in their first differences, meaning integrated from rank 1 (1) 1. The estimated F statistic is compared with the critical (tabular) values of Pesaran (2001). If the calculated F statistical value is greater than the value of the upper limit, the nowhere hypothesis that there is no long-term common integration between variables will be rejected, and if the calculated F statistical value is lower than the minimum value, the nowhere hypothesis that there is no long-term common integration between



variables and finally if the value is (F-statistic) Between the higher and lower levels of tabular values the result is inconclusive (Naseer, 2016, p. 107).

Step 3 : If there is cointegration between the variables, the long-term equation is estimated using the general formula equation of the ARDL model.

Step 4: To capture the short-term dynamic (short-term relationship) between the interpretative variables and the affiliate variable, the error correction model (ECM) will be built.

Step 5: Perform diagnostic tests where diagnostic procedures are performed to ascertain the quality of the model used in the analysis and free of standard problems by testing the following:

The serial correlation test between random errors, the natural distribution test for regression equation protectors and the error threshold non-stabilization test using the self-regression conditional contrast stabilization test.

Step 6: Structural Stabilization Test of Estimated Short-Term and Long-term ARDL Transactions to ensure that the data used are free of any structural changes over time by using two tests: CUSUM and ARDL model cumulative aggregate test (CUSUM SQ), structural stabilization of estimated UECM model transactions is achieved if the CUSUM and CUSUMSQ statistical graph falls within the 5% cumulative boundary level.

Applied Evidence:

Model Characterization:

The phenomenon is expressed in mathematical formulation to reverse different relationships, including the following steps: identifying model variables, determining the mathematical shape of the model, determining values and preconceived signals.

First: Study model variables:

1. Dependent variable: (TB): is the difference between exports and imports of goods and services during a given period of time and is expressed in the form of the following formula:



Balance of trade = country's total exports (X) - country's total imports (Y).

- Exchange rate: the number of units of local currency that pay a price for one unit of foreign currency, or the number of foreign currency units that pay a price for one unit of local currency Second: Determining the mathematical shape of the model:

The mathematical form of the study model was formulated as follows:

 $TB = f(EXR) \quad \dots \quad (1)$

 $TB \equiv trade balance.$

 $EXR \equiv$ Sudanese pound to dollar exchange rate

Through experimentation using economic standard, statistical and metric. The best function for representing the trade balance model in the Sudan has been found to be the log function, where the logarithmic formula is considered to be of high importance in estimating standard models, because it gives long-term flexibility to independent economic variables and their impact on the dependent variable, in addition to reducing dispersion of data. The final version of the model to be assessed would thus be as follows.

According to the autoregressive distributed lag (ARDL) methodology presented by Pesaran, the function becomes as follows:

 $\Delta LTB = \alpha_0 + \alpha_1 LTB_{t-1} + \alpha_2 LEXR + \dots$ Trade balance as a proportion of agricultural output $\beta_1 \Delta LTB_{t-1} + \beta_2 \Delta LEXR \ e_t (3)$

where:

p,q = Periods of time delay.

 Δ = The first differences of variables

 β_i = Short-term relationship transactions

 α_i = Long-term relationship transactions

e_t = Random Error Limit



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Error Correction Form:

 $\Delta LTB_{t} = \beta_{0} + \beta_{1} \Delta LTB_{t-i} + \beta_{2} \Delta LEXR + \lambda ECM_{t-1} + \zeta_{t} \dots (4)$

 $ECM_{t-1} = Represents the error correction limit$

 λ = Error correction coefficient measuring adjustment speed at which short-term imbalance is adjusted towards long-term balance

Third: Expected signs of the model's milestones:

Based on economic theory and previous studies, the model parameters are expected to be as follows:

 α_0 : The fixed limit signal is expected to be positive and represents the balance of trade

 α_1 , β_1 : Exchange rate flexibility, expected to be negative in the short and long term

 λ : Error correction parameter expected to be negative and moral according to economic theory. Collect and process study data:

The study relies mainly on time-series data for the study's variables of trade balance as a subordinate variable and exchange rate, collected from the Bank of Sudan, the Ministry of Finance, the Ministry of Commerce and the World Bank, and to avoid the negative values of trade balance in the analysis. The Logarithm subtraction law was used and then the exports were divided into Logarithm imports.

Time Chain Data Stabilization Tests for Study Variables:

1 - Unit root test results

The study data was subjected to preliminary examination by conducting time chain data stabilization tests for study variables. Although the unit's root tests are multiple, we will use Phillip Perron as a more general assumption and have a better and more accurate test capability than the Dickie Fuller test, especially when the sample size is small.



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	first differ	ence (Ist Di	fference) –				
degree of	P. Value			Level - P.	Value		Variable
integrati		By			By		e e e e e e e e e e e e e e e e e e e
on		constant	By		constant	By	5
	without	and time	constant	without	and time	constant	
(1)	0.0000	0.0000	0.0005	0.6728	0.7171	0.2846	LTB _t
(1)	0.0023	0.0037	0.0050	0.9997	0.9907	0.9969	LEXR _t

Table 3: Data Stability Test Results Using Phelps-Perone (PP) Test

Source: Eviews.10 Program Outputs

In light of the results of the Philp-Perone test through the above table, we note that the statistic of estimated parameters at the level is immoral, which indicates that the variables are not static at the level (0 (1) By applying the tests to the first difference to the variables, the results of the test revealed the refusal to impose nowhere with a unit root at a moral level of 1%, which means that these variables are integrated from the first class i.e. (1 (1), therefore, it can be concluded that time chains are non-static but static in the first difference, indicating that these results are consistent with standard theory.

2 - Joint Integration Test for Study Variables

There are many tests that are used to verify the co-integration of the variables, but in this study, we will use the Bound Test in accordance with the self-regression methodology with slowing distributed time gaps. According to Pesaran, the first step is to test the boundary (Bounds Test), which includes estimating the unrestricted error correction model (UECM) to test the extent to which there is a stable long-term balance between the balance of trade and the exchange rate and then comparing the estimated F statistic with the critical values (tabular) provided by Pesaran.



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Function Relationship)	F-statiatic	K
F _{LTB} (LEXR)		11.9	1
Critical value (tabular)	for statistical $F : K = 1$		
Level of morale	Maximum Limit (1) 1	Minimum (0) 1	
1%	5.58	4.94	
5%	4.16	3.62	
10%	3.51	3.02	

Table N	Jo 4.	Joint	Integration	Test	Results	Using	Border	Test	Metho	dology
I abit r	10. 4.	JUIIII	micgianon	1 631	resuits	Using	DUIUCI	1 621	MECHIO	uulugy

Source: E-views10 Program Outputs

The test results in the above table indicate that the calculated F-statistic is equal to 11.9 and compares it to the critical values of the upper and lower boundaries at a 5% morale level with a constant segment and without a time direction that we find greater than the upper limit of all critical values levels. and supports the decision-making rule that rejects the imposition of nowhere in the absence of common integration and acceptance of the alternative hypothesis of common integration, and that there is a long-term balance between the balance of trade and the exchange rate.

Model Estimation:

After conducting the tests of dormancy and co-integration, the model assessment phase came true. The ARDL methodology was used. Following the experimental method, the study found the optimal dual formula in terms of ARDL gaps (2.4) as in the table below:



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Affiliate Variable: Changing Logarithm Commercial Balance (LTB)				
long-term				
Possibilities	standard error	transactions	variables	
0.0000	0.010468	1.011076	Constant	
0.0060	0.008781	-0.028430	LEXR _t	
$R^2 = 0.79$, Ajd $R^2 = 0.6$	69, S.E = 0.0269, SSR	= 0.0101 , F = 7.83 P(0.0	0005)	
short term				
0.0142	0.144889	0.405736	ΔLTB_{t-1}	
0.0288	0.047837	-0.116530	$\Delta LEXR_{t-3}$	
0.0000	0.183419	-1.172143	ECM _{t-1}	
$R^2 = 0.74$, Ajd $R^2 = 0.67$, S.E = 0.0252, SSR = 0.0101, F = 7.83 P(0.0005)				

Table No. (5): ARDL (2,4) Model Estimation Results for Study Variables

Source: E-views10 Program Outputs

From the results of the above table we note that the estimated exchange rate parameter is statistically significant at a morale level of 1%. The flexibility of the exchange rate is -0.028, i.e. an exchange rate increase (currency devaluation) of 1% results in a decline in the balance of trade of approximately 3% in the long term. In the light of the short-term results of the ARDL model through the above table, the ECMt-1 error correction transaction limit is moral at the level of 1% with the projected negative signal. This result is considered supportive of a long-term balance between the variables under consideration. and reflects the rapid adaptation of the model to move from short-term imbalances to long-term equilibrium, where the error correction coefficient's value and exaggeration indicate (-1.172143) to the extent that the balance of trade is adjusted towards its balance value in each period of time by a proportion of the balance imbalance of trade deviates



from its long-term balance value, the equivalent of 1.17% of this deviation or imbalance is corrected in the present period, On the other hand, this correction ratio reflects rapid adjustment speed towards balance, In other words, the balance of trade takes about eight months. $(1 \div 1.172143)$ in the direction of its balance value after the effect of any shock to the system or model

Model Evaluation:

After assessing the digital values of the model's parameters through the data of the study, the results of the assessment must be assessed and analyzed to ensure that there is economic, statistical and statistical meaning and meaning to the information. As is known in the standard models where the assessment begins with the economic, statistical and then standard, ARDL methodology begins with the standard.

First: Standard Assessment of Estimated Model ARDL (2,4)

The estimated form underwent several standard tests as follows:

1 - Diagnostic tests for the rests: Diagnostic Residual:

To ensure the quality of the model used in the analysis and free of standard problems, diagnostic tests were performed according to the tests shown in the table below:

Null hypothesis (H0)	Test	F-ststistic	Value - P
Natural distribution between random errors	Bera -Jurque	B = 1.892 . J	0.388
No self-correlation problem between errors	LM Test	1.5700	0.247
Consistencyofdiscrepancybetween	Heterosedasticity Test	1.9485	0.178

Table No. (6): Results of the examination of the rests of the form



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errors (homogeneity of			
contrast)			
Inadequate DAL form	Ramsey Test	0 3088	0 538
(model characterization)	Kanisey rest	0.5788	0.556

Source: E-views10 Program Outputs

The results of the previous table show that all P - Value values are greater than 0.05 in all tests, which proves that the estimated standard model is free from the problem of serial interconnection between the remains using a test (LM) as well as the problem of Heterosedasticity Test (Heterosedasticity Test), the remains are naturally distributed (Jarque - Bera), and the Ramsey Reset test statistic for identifying the appropriateness of identifying or designing the estimated form type model indicates the validity of the model's dual form.

2 - Structural Stability Test for Model Transactions:

The structural stability of the estimated ARDL transactions is achieved if the CUSUM and CUSUMSQ statistical chart falls within critical boundaries at a 5% moral level. While the chart of the test count goes beyond the limits at a 5% moral level, the transactions are unstable (Shawkar, 2019, p. 83). The following chart shows the test result:





Source: E-views10 Program Outputs



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Figure No. (2): Results of the Cumulative Residual Sum of Squares (CUSMSQ) test

Source: E-views10 Program Outputs

In both formats, the estimated transactions of the ARDL model used are structurally stable over the period in question, confirming stability among the study bypass, and harmonization of the model between short- and long-term error correction results, where the graph for the counting of the said tests within the limits of the critical area fell at a morale level of 5%.

The model's short-term and long-term economic assessment

Using the results of the model estimate in Table 5, we get short and long term trade balance flexibilities as follows:

Table 7:	Short-term	and l	ong-term	trade	balance	resilience
			0			

Variables	short-term	long-term
Exchange rate (EXR)	-0.116	-0.028

Source: E-views10 Program Outputs

Note from the table above that the trade balance showed no flexibility for the exchange rate. All flexibilities were consistent in terms of reference. exchange rate flexibility of -0.12 and -0.03 respectively in the short and long term means that an exchange rate increase of 1% in the short term with the stability of other factors will lead to a 12% decline in the balance of trade and then continue at a decreasing rate in the long term until it reaches 3%. Higher exchange rates mean



that domestic prices are more attractive than foreign prices, as domestic commodities become more competitive than foreign commodities, encouraging domestic production, increasing export capacity and raising domestic income.

Statistical assessment of the model

1 - Test the morale of the estimated parameters: by reference to the long-term results in Table 5, we find that the fixed limit coefficient and exchange rate parameter came in morale at a 1% morale level, which means statistically proven. 2 - Test the morale of the model: Table 5 results indicate that the statistical probability value (F) is (P.value 0.0000) below the moral indication level of 0.05%, meaning that the model as a whole is moral at a moral indication level of 5%.

3 - Test the quality of the model reconciliation: by reference to Table 5, the determination factor (R2 = 0.79) and this value indicates that the long-term exchange rate variable explains 79% of the change in the balance of trade, while the remaining 21% is due to other factors not included in the model.

Discussion of hypotheses

There is a statistically significant inverse relationship between the trade balance and the exchange rate in the short and long term: Through the results of the benchmark analysis, the flexibility of the exchange rate has reached (EX) in the short and long term -0.12 and -0.03 respectively This means that an exchange rate increase of 1% will lead to a 17% decline in the balance of trade, 3% If other independent variables are stable, this is because higher exchange rates mean that domestic prices are more attractive than relatively higher foreign prices, as domestic goods become more competitive than foreign goods High exchange rate has a positive impact on GDP through the production and export channel. The decline in the local currency's exchange rate could be accompanied by a deflationary effect on GDP through lower export price purchases, higher import prices and any improvement in the exchange rate leading to an increase in GDP. But



if the exchange rate rise causes a further depreciation of the local currency in this case, society may retain few amounts of local currency compared with foreign currency, and here the estimated exchange rate benchmark signal will be negative, which is known as the swap effect.

Results and recommendations

The study examined the impact of the exchange rate on the trade balance in Sudan during the period (1995 - 2020). The study relied on the standard quantitative approach to examine the data based on the test of stillness of time chains and joint integration provided by Pesaran for time chains and estimate the parameters of the decline of the trade balance using the ARDL self-regression methodology. After drafting and testing the hypotheses, the study reached the following findings:

1 - After conducting the unit root tests to stabilize the data, the results showed that all the study variables are static at the first difference (1) 1, so it can be concluded that the time chains are non-static but static at the first difference indicating that these results are consistent with the standard theory.

2. The result of the boundary test for joint integration indicated a long-term integrative balance between the balance of trade and the price of disbursement.

3. The results indicate an inverse relationship between the trade balance and the short and long-term exchange rate.

4. The error correction limit (ECMt-1) parameter showed morale at the 1% indicator level with projected negative signal, confirming a long-term balance relationship. The value of the error correction factor indicates that the balance of trade is adjusted towards its balance value in each period of time by a proportion of the imbalance remaining from the period (t-1) which equates to 1.17% towards the balance after the impact of any shock to the model as a result of the change in the trade balance in the Sudan.



5 - The model showed free of standard problems through tests of the normal distribution requirement statistics of the protectors, serial self-association, variation of variability, multiple linear association, and also showed no problem of error in identification and structural stability.

Recommendations

- 1. Encourage exports through tax exemptions, export financing and customs facilitation.
- 2. Increase the value of exports by increasing their quality and improving their competitiveness in foreign markets by reducing production costs and using modern technology.
- 3. Pursue import substitution policy by establishing domestic industries to produce goods imported from abroad.
- 4. Employ economic policies to protect and support emerging national industries.
- 5. Interest in increasing GDP rates through reforms aimed at increasing production and encouraging producers to achieve economic stability.
- 6. Maintaining economic stability by maintaining the stability of the exchange rate and supporting monetary arrangements to fight speculation in foreign currencies.
- 7. Work to reduce the exchange rate fluctuations that lead to the flight of foreign investors, and adopt a policy of constant and unified exchange rate

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