



Some Economics Determinants of Non-Oil Exports in Sudan: An Empirical Investigation (1990-2012)

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Abstract

Exports represent the backbone of the economy in developing countries. The purpose of this study is to the examined from an empirical point of view the some economics determinants of non-oil exports (Real gross domestic product, exchange rate and trade openness) in Sudan. The importance of this study stems from the effective role that can play by these determinants on non-oil exports. The analysis covered period (1990-2012), where the data included in this research are obtained from official sources namely, the Central Bank of Sudan and the Central Bureau of Statistics. Applying, Ordinary Least Square (OLS) technique, the results indicate that Real Gross Domestic product (RGDP), Exchange rate (EX) and Trade Openness (OP) were found to have a positive effectiveness on non-oil exports in Sudan, Among these determinants, Real Gross Domestic product was found to be the most important determinants of non-oil exports, these suggest that all variables are more potency on non-oil export performance in Sudan during the period study. Also based on findings of the study can be concluded that exchange rate regime is one of major factors that impede non-oil export growth. The study recommends that the decision- makers should encourage diversification of production to increase real growth domestic product and foreign trade through the adoption of import substitution and export promotion strategies in agriculture and industrial sectors, which require diversification of markets as well as improving economic infrastructure. In the since that promotion of non-oil export is one of the urgent issues as economic strategy in Sudan. Thus; findings of this study may be useful for the economics policy makers.

Key words: Exports, Non Oil, Sudan.

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1- Introduction:

Exports are the mainstay of perhaps a fifth or more of the world's population. Also they may be a major source of economic growth. Both directly because exports are part of production and indirectly, as exports facilitate imports of goods and services, new ideas, knowledge, and technology. By encouraging specialization according to comparative advantage theory, high and rising exports enhance static and dynamic efficiency of resources allocation and hence economic growth. The rapid expansion of exports relative to output in the fast-growing East Asian economies over the years is hardly an accident, for instance (Gylfason, 1997).

Export earnings play vital importance not only for developing, but also for developed countries. Developed countries mainly export capital and final goods, while the main part of export of developing countries consists of mining-industry goods especially natural resources. According to export-led growth hypothesis increased export can perform the role of “engine of economic growth” because it can increase employment, create profit, trigger greater productivity and lead to rise in accumulation of reserves allowing a country to balance their finances (Emilio 2001; Goldstein and Pevehouse, 2008; Gibson and Michael, 1992; McCombie and Thirlwall 1994). In this context there are some challenges for countries with natural resource abundance such as oil in comparison with other countries. The main point is that in parallel with windfall of oil revenues these countries have to pay more attention to the development of the non-oil sector as well as its export performance, because in the most of the cases oil driven economic development leads to some undesirable consequences such as Dutch Disease in the oil rich countries (Sorsa 1999).

In the early 1960s, Sudan’s non-oil exports were roughly one-sixth of Gross Domestic Product (GDP) after four decades this ratio has come down to one-fiftieth. Sudan historically enjoyed success in exporting a wide range of products, including cotton, various oilseeds, gum Arabic, livestock and other products whose exports were significant from time to time, such as sorghum and sugar. Many had earned a global reputation for high quality. But over time traditional exports became stagnant, and Sudan lost market share in several key commodities for which it had been a global leader, such as gum Arabic and sesame. In addition, exports remain concentrated in a handful of countries: for example, sheep are shipped almost exclusively to

Saudi Arabia, cotton to Egypt, and sesame oil to Saudi Arabia and the United Arab Emirates (Sudanese Ministry of Trade, 2008).

The structure of the Sudanese economy has clearly changed from being dominated by the agricultural sector to an economy with a greater share of services, petroleum and manufacturing, besides agriculture. However, it was also obvious that, the oil sector has not contributed largely to the development of other sectors, especially agriculture. Instead, it has facilitated the continuing neglect of the productive sectors, namely, agriculture and manufacturing (Gadkarim, 2010).

The backbone of the Sudanese economy since the seventies is the agricultural sector, which represents nearly 40 percent of GDP, until the mid-eighties, traditional irrigated cotton was the Sudan's main exported product, which represented almost half of the total exports in the 1970s. Oilseeds, Gum Arabic, livestock, and sorghum (Dura) make up most of the balance. The industrial sector in Sudan was lagging behind, contributing only 12-15 percent of GDP (Almosharaf and Tain, 2014).

1.1 Research Problem:

Sudan considers as one of countries that its economic depend on a single source of income which is almost the revenues of the country's natural resources, especially oil, gas and gold this is what characterized Sudan's economy in recent years despite of available great natural resources wealth. On the other hand, the structures of Sudan's economy have been characterized by small share of industry, notably manufacturing, and a high share of agriculture and service sectors in GDP. So, non-oil exports in Sudan had taken small attention in two decades ago as a result of concentrate most the policies to the oil exports, this reflects in decreasing the share of non-oil exports.

1.2 The Importance of the Research: The importance of this study comes from the fact that the economic determinants of non-oil exports sector are the most important variables for realizing sustainable revenue and support economic growth.

1.4 The objective of the research: The purpose of this study tried to examine from an empirical point of view some economic determinants of non-oil exports in Sudan during the period (1990-2012). The empirical model incorporated three variables namely, Real Gross Domestic Product (RGDP), Exchange Rate (EX) and Trade Openness (OP).

1.5 Research Methodology: The methodology that will be used in this research is analytical framework by using Ordinary Least Squares method (OLS) techniques on annual time series data covering the period (1990-2012), which we obtained from the Central Bureau of Statistics and Central Bank of Sudan. The empirical model employed in this study is a linear regression model, to estimate a linear relationship between non-oil exports on the one hand and the real gross domestic product, exchange rate and trade openness on the other hand.

1.6 The Hypotheses of the Research: This research hypothesized that the Real Gross Domestic Product, Exchange Rate and Trade Openness have a positive effective on non-oil exports in Sudan.

2- Literature Review

Exports are the source of most financial resources in the economy. But the non-oil exports represent the initial source of economy particularly in developing countries. This effect appear in viability of foreign resources which is positively related to economic growth and stability of exchange rate, in addition to that trade openness will improve.

The theory of development which suggest that export expansion accelerate economic growth through efficient allocation of resources, efficient management and production techniques, specialization, and improved scale. This strategy is known as Exports-Led Growth (ELG) hypothesis (Feder, 1963; Balassa, 1978). Endogenous growth models use a similar opinion to explain the effect of export on economy. However, they also consider the role of imports. In fact, we can say that according to the theory of endogenous growth, the main factors of economic growth are physical and human capital, and expansion of import and export of capital and intermediate goods.

In this regard Dutch Disease concept provides certain link between the real exchange rate and non-oil export. According to this concept the appreciation of a country's real exchange rate caused by the sharp rise in export of a booming resource sector draws capital and labour away from a country's manufacturing and agricultural sectors, which can lead to a decline in exports of agricultural and manufactured goods and inflate the price of non-tradable goods Corden (1982), Corden and Nearly (1984). If we divided overall export of rich countries into oil and non-oil exports appreciation of real exchange rate which is specific for these countries negatively affects on non-oil exports while export revenues of oil sector mainly depends on oil price in the world

markets.

The impact of the real exchange rate on non-oil exports of Azerbaijan is investigated by using Threshold Autoregressive (TAR) and Momentum Threshold Autoregressive (MTAR) methods, in the framework of co-integration and asymmetric adjustment. Regarding with the co-integration methods Engle-Granger (1987) approach is employed which is a widely used method in the case of anal-asymmetric adjustment towards a long-run level. By following Enders and Siklos (2001), TAR and MTAR models are applied in both versions: when the threshold level was (a) zero or (b) unknown. Estimation results indicate that the real exchange rate has a statistically significant negative impact on the non-oil exports in the long-run. However the adjustment process towards the long-run is not found to be asymmetric.

Using Ordinary Least Squares technique and annual time series data covering the period (1960-1990), Ros (1993) analyzed Mexico's non-oil trade and industrialization experience and concluded that appreciation of real exchange rate due to oil revenues is harmful for non-oil export performance.

The influences of trade and exchange rate policies on agricultural export which is the main part of non-oil export in Cameroon is studied by Amin (1996) over the period (1971-1992), the study concludes that current exchange rate policy especially appreciation of national currency impedes agricultural export.

In economic theory, trade openness causes growth, through different channels. The relationships between trade openness and growth, however, remain debated, and the positive impacts of trade openness are limited when the export structure of a country consists of primary products, which are much less sensitive to a country's domestic trade policy than an export structure based on industrialized products. As shown by Teal (2002) in the example of Ghana, trade policy did not succeed in increasing export volumes, in moving towards sustainable growth.

Liberalization policies have ignored Sub Saharan African (SSA) market failures, e.g., skill shortages affecting SSA industry. Tariff reductions led to the collapse of uncompetitive industrial sectors. SSA specific conditions, its poor infrastructure, its dependence on a limited number of primary products do not make it a special case in which exports are not responsive to trade policy, but the latter's influence on growth is weaker. Trade openness cannot substitute for a development strategy (Rodrik, 1997).

Anwer and Sampath (1997) utilized unit root and co-integration techniques and Granger causality, for the period of (1960-1992), have found that out of 96 countries only 8 show unidirectional or bidirectional causality from exports to GDP with positive relationship between the two variables. According to the evidence of the study, causality from GDP to exports with positive relationship between the two variables has been found for only 9 countries.

Ekanayake (1999) used co-integration and error-correction models to analyze the causal relationship between export growth and economic growth in eight Asian developing countries using annual data from (1960-1997). This study has provided strong evidence supporting the export-led growth hypothesis. The empirical results in Ekanayake's research showed that bi-directional causality exists between export growth and economic growth in India, Indonesia, Korea, Pakistan, Philippines, Sri Lanka and Thailand. According to this study, there is also evidence for export-led growth in Malaysia. Furthermore, there is evidence for short-run Granger causality running from economic growth to export growth in all cases except Sri Lanka. However, there is no strong evidence for short-run causality running from export growth to economic growth.

Bernardina (2004) investigated the impacts of the real exchange rate, real non-oil GDP, and the world income on Russian non-oil export by using an Error Correction Model over the period (1994-2001). He found that there is a robust and negative long run co-integration relationship between the real exchange rate and Russian non-oil exports. Furthermore, the world income has positive effect on Russian non-oil export while real non-oil GDP causes a decline in non-oil export.

Balazs and Amalia (2005) estimated export functions both in nominal and real terms in the case of transition countries of Central and Eastern Europe including Russia over the period (1990-2005) by employing panel regression and Autoregressive Distributed Lag (ARDL) modeling. They use domestic and foreign income, foreign direct investment, relative prices, the nominal exchange rate for nominal exports, the real exchange rate for real exports, and a volatility measure of the nominal and the real exchange rates respectively as explanatory variables and conclude that in general appreciation of exchange rate (nominal or real terms) and also its volatility are harmful for export earnings.

Pandhi (2007) analyzed the theories behind the role that exports play in growth, and has used regression analysis for four African nations namely the Democratic Republic of the Congo,

Guinea Bissau, Malawi, and Nigeria during the period (1981-2003). By following Foster's model and using the first-difference form of the variables, the regression results have shown a mostly positive relationship between exports and growth and mixed results for the other independent variables, investment and population.

Jun (2007) investigated the relationship between international trade and economic growth using cutting-edge panel co-integration testing and estimation techniques, annual panel data on 81 countries' macroeconomic variables over the period (1960-2003), the results implied that there is a positive two-way causal relationship between exports and output, not one-way and that the positive impact of output on exports is a little stronger than the reverse. That is, exports induce output growth and in turn output growth enhances exports and the latter relationship is somewhat stronger than the former. Also suggests that increases in the investment share promote exports.

In some cases, trade openness has hurt industrial sectors, which are particularly vulnerable when they are exposed to the imports of more competitive products from emerging countries (e.g., Sub-Saharan Africa, SSA, countries' textile sectors). Kaplinsky and Morris (2008) confirmed that, though the export of manufactures is the crucial way for SSA to develop, a global exporter of manufactures such as China threatens export-oriented growth in SSA – in particular in the clothing and textile sectors, both in their exports and in the domestic markets, though these sectors were considered to be the first step in export-oriented manufacturing growth.

By using Static OLS and Fix Effect based on 2SLS Masoud and Rastegari (2008) estimated the effects of certain factors as well as real exchange rate on non-oil export over the period (1995-2005). Study concluded that Iran's non-oil exports positively related to increase in population, per capita income and consumer price index while negatively depends on appreciation of real exchange rate.

Another study related to Iranian non-oil export conducted by Sabuhi and Piri (2008). They explored the effects of exchange rate, export volume, domestic saffron production on price of saffron, Iran's major non-oil export good in the short- and long-run. Employing Autoregressive Distributed Lag (ARDL) model showed that appreciating exchange rate has statistically significant negative impact on export price of saffron while there is no significant relationship between export price and domestic production of Saffron in the long-run.

The study, conducted by Duasa (2009), investigated the impact of the real effective exchange rate on the trade variables in Malaysia over the period (1999-2006). By following Ender and Siklos (2001), he also concluded that there is an asymmetric adjustment in the relationship between the real effective exchange rate and the trade balance in the case of Momentum Threshold Autoregressive (M-TAR) model. The main shortcoming of this study is that equations in the empirical analysis are miss-specified due to omitted variable problem. Precisely saying, the author in his analyses does not include (foreign) income variable as one of the determinants of (export) import predicted by international trade theory.

Safdari, et al. (2011) investigated the causality relationship between export and economic growth in thirteen Asian developing countries over the (1988-2008) years, by employing Panel-VECM causality based on Wald's test. Empirical analyzes have presented a unidirectional causality from economic growth to export. They studied the causality between the two variables by using a bi-variate vector autoregressive (VAR) model and employing Wald test.

Olurankinse and Fatukasi (2012) examined the impact of non-oil export on economic growth in Nigerian. The study employed an Ordinary Least Square (OLS) technique and observed that non-oil export has positive impact on the economic growth. The study recommended the need to increase production in both agricultural and manufacturing sectors to ensure product availability for both local and export purposes. The study also recommended an urgent completion of the export processing zones to promote the establishment of export oriented firms that will produce solely for export market.

Ningi (2013) examined the effect of banks financing on non-oil exports in Nigeria. The study employed questionnaires which were distributed to 120 non-oil exporting firms. Tools used for data analysis and hypotheses testing included: mean and standard deviation, and multiple regression. The multiple regression estimate indicated that non-oil exports financing by banks significantly accounts for slightly 16 percent of variance in non-oil exports performance, similarly the beta coefficient revealed that firm' perception of banks attitude to risk of financing non-oil exports had the highest beta value followed by cost of bank finance. Also the study observed that exchange rate fluctuation and access to credit facility had insignificant relationships with non-oil exports performance in Nigeria.

Raheem and Busari (2013) examined the impact of non-oil export on economic growth in Nigeria for the period (1970-2010). The study employed Simultaneous Equation Model (SEM) and a single equation model. The growth equation in the SEM showed that non-oil export and

agricultural performance negatively impacted on economic growth, while the single equation model showed that the industrial sector performance and population growth are good determinant of economic growth. The study recommended the need for increase in government participation and patronage as well as creating investment friendly environment for investors in the sector.

There is many studies exist on non-oil export separately and also on oil revenue separately. Ozurumba and Chigbu (2013) examined the effect of non-oil export credits on economic growth in Nigeria for the period (1984-2009). The study utilized a multiple linear regression technique to examine the effect of non-oil export credits on economic growth and Granger causality tests to determine the direction of causation between the variables. The study observed that banks credits for agriculture and forestry, mining and construction, and nominal effective exchange rates have negative impact on non-oil gross domestic product in Nigeria while banks credits for merchandise export, import and domestic trade, public utilities and services impacted positively on non-oil gross domestic product. The causality estimate revealed unidirectional causality from GDP to public utilities and services, and agriculture and forestry. The study recommended the need for a sustainable programme towards the diversification of the economy by developing the non-oil sector, which will in turn enhance the revenue accruing to the country.

3- Non- Oil Exports In Sudan

Sudan was the largest country in Africa and the Arab world until 2011, when South Sudan separated into an independent country, following an independence referendum. Sudan is now the third largest country in Africa (after Algeria and the Democratic Republic of the Congo) and also the third largest country in the Arab world (after Algeria and Saudi Arabia) (CBoS, 2013).

Exports represent the backbone of the economy in developing countries, particularly the non-oil exports in Sudan. Thus, revitalizing non-oil exports can play an important role in achieving Sudan's economy tremendous potential for international integration, sustaining and broad-based economic development and promoting widely-shared improvements in living standards.

In the early 1960s, Sudan's non-oil exports were roughly one-sixth of gross domestic product; after four decades this ratio has come down to one-fiftieth. Sudan historically enjoyed success in exporting a wide range of products, including cotton, various oilseeds, gum Arabic, livestock, and other products whose exports were significant from time to time, such as sorghum and sugar. Many had earned a global reputation for high quality. But over time traditional

exports became stagnant, and Sudan lost market share in several key commodities for which it had been a global leader, such as gum Arabic and sesame. In addition, exports remain concentrated in a handful of countries: for example, sheep are shipped almost exclusively to Saudi Arabia, cotton to Egypt, and sesame oil to Saudi Arabia and the United Arab Emirates (Sudanese Ministry of Trade, 2008).

The economy and the external sector in Sudan faced problems since the mid-1970s, many strategies and reforms are undertaken. Trade policies during the period (1960-1977) aimed at diversifying the economy by developing new lines of production in industry and introducing new cash crops (e.g. oil seeds like groundnuts and sesame) other than cotton, which was the major source of foreign export earnings. The foreign sector became the central policy target over the period (1978-1985) when the government launched a stabilization program with financial assistance from the IMF. In 1987 the government launched a four-year Salvation, Recovery and Development Programme (1988/89-1991/92) to address the major inherited economic problems.

In their assessment of the Economic Recovery Programme (ECRP), Hussein and Thirlwall (1984) have argued that devaluation, the main policy adopted to promote exports, would lead to a negative effect on export profitability. Using a three-goods macro-model, Haj Diab (1985) shows that because of the institutional and structural rigidities of the Sudanese economy, devaluation of the exchange rate may not succeed in promoting exports and reducing imports. These arguments are analysed at length in (Ali, 1985).

Mahran (2005) argued that the Sudan economy has witnessed major transformations during the last three decades. Full government control over economic activities characterized the period of the 1960s, while an inward-looking strategy dominated development policy during the early 1970s and mid-1980s. Economic difficulties assumed crisis proportions during the second half of the 1970s, following the ambitious development program launched at early 1970s. The failure of the investment boom to increase the economy's productive capacity has accelerated the crisis. By the late 1970s, the government was confronted by falling export earnings, increasing import bill, accelerating budget deficit, and mounting foreign debts (Ali, 1985).

Hussain and Thirlwall (1984) examined the profitability of long and medium staple cotton, groundnuts, sesame and gum Arabic. Their results reveal that the elasticity of export supply may be very low because of structural rigidities and factor immobility, while the elasticity of import prices and domestic prices may be very high, so that profitability of exporting remains largely unchanged. Thirlwall (1992) added that, when the price elasticity of demand for exports is large

but not infinite and real wages are sticky downwards, devaluation might be a second-best policy compared to structural intervention to raise foreign exchange earnings per unit of domestic inputs.

Zaid (1989) examined export promotion as a viable trade strategy for the acceleration of development and the improvement of the debt situation over the period (1956-1980). He tested the possibility of two way causation between exports and output using three-stage least squares (3SLS) method. The results suggest a positive and significant relationship between GDP and exports growth.

The national salvation revolutionary government adopted a self-imposed structural adjustment programme called the three-year National Economic Salvation Programme (NESP) (1990-1993). The major policies included reduction of export taxes and devaluation of the exchange rate where the Sudanese pound was devalued initially by a factor of 500 percent against the US dollar. A new agricultural credit system was established by all commercial banks working as a “consortium” to finance agricultural production. Price controls at production, factory and wholesale levels were lifted. To achieve food security, the government reduced areas for cotton production and increased area for wheat. A temporary ban on sorghum export was declared.

Hag Elamin and Osman, (1995) tended to suggest that for the period (1975-1978), commodity composition and a weak competitiveness of Sudan’s exports seem to have been the primary forces retarding the growth of exports. Similar analysis for the years (1985-1993) indicates that, as in the case of (1975-1978), commodity composition and poor competitiveness appear to have been the major factors suppressing the growth of exports. The negative impact of commodity composition, however, appears to have been greater in 1987 than in 1985 and 1993. It seems reasonable, therefore, to infer that the structural adjustment programme implemented over the periods (1978-1985) and (1990-1993) failed to improve the commodity mix and that Sudan still remains greatly handicapped by the range of goods it has been offering on the world market.

Sudan is predominantly an agricultural country with over 90 percent of its exports supplied by the agricultural sector. Agriculture is the basic economic activity accounting for more than 35 percent of gross domestic product (GDP). The average share of total exports in GDP for the period (1970-1993) was 7.0 percent. Imports on the other hand, accounted for about 14 percent of the GDP (average for 1970-93). Therefore, dependency of the Sudanese economy on foreign

trade is not as great as might be expected. However, the foreign trade sector remains crucial. Taxes on foreign trade constitute more than 40 percent of the central government revenue. The exports of Sudan are dominated by agricultural products. A small but growing export trade in mineral extractive products (chrome and gold) offers promise of expanded opportunities for foreign exchange earnings. Exports of primary products as a percentage of total merchandise exports were 93%, 94%, and 90% for the years 1970, 1980, and 1990 respectively. Sudan's exports are destined to only a few countries. The destination of Sudan's exports may be ranked in a decreasing order of importance as follows: the European Union (EU); the Arab countries; and other developing countries. Historically, the European Union is the main customer. The directional pattern of Sudan's merchandise trade has been subject to significant changes in the last two decades. The share going to the EU increased between 1970s and 1980s, but has been declining since then. The share going to the Arab countries and Japan, through fluctuating, has taken an upward trend. The largest single recipient was Saudi Arabia which accounted for about 15 percent (average for 1980-93) of Sudan's total exports. The Union of Soviet Socialist Republics (USSR), which was among the largest customers of Sudan in the period until the early 1970s purchasing about 16% of its exports, became an inconsiderable buyer in the late 1970s and the 1980s. Sudan accounts for nearly 75 percent of the world exports of gum Arabic, 25-30 percent of long-staple cotton, and more than 30 percent of sesame seeds (averages for 1970-93) (Hag Elamin, 1997).

Despite these positive developments, the share of exports in GDP continued its downward trend, though the real value of exports did not show a clear decline. Sudan's shares in total world exports fell from 0.016% in 1990 to 0.01% in 1993. Any attempt to evaluate the economic policies undertaken in the economic recovery programme (ECRP) and economic salvation programme (NESP) runs into major difficulty.

During the period (1979-1993) the Sudanese economy witnessed unprecedented developments in different spheres. This period is marked by adverse weather conditions, war and civil strife. The droughts of (1980-1984) and 1990 in the western and central Sudan led to severe damage in crop production. This, in turn, led to a huge reduction in export supply and exposed the precarious state of the country's food security. The consequences were localized famines, a substantial rise in the real price of food and the increased necessity for food imports. Several factors could explain this stagnation in Sudan's exports in (1970-1993), including different rates of increase in the level of prices, mainly resulting from increasing domestic supply rigidities;

institutional obstacles and tariff- related bias against exports. While price distortions appear to be crucial in explaining the deterioration in export performance, technological and structural backwardness is also at the root of the problem. The continuous deterioration of the rural infrastructure-transport, power, water, credit and banking institutions, marketing facilities, etc. – and the increasing shortage of consumer goods and imported inputs are among the major constrains to which Sudanese agriculture has been particularly prone, this points to the slow growth in domestic production as a major factor contributing to the fall in export volume. Comparing the growth rates in production and export volumes of the major export commodities, however, it appears that export volumes deteriorated at a faster rate than the volume of total output, this indicates that the fall in domestic productivity does not explain the whole story” (Hag Elamin, 1997).

Using ordinary least squares technique and annual time series data covering the period (1970-1998), Meezan (2000) examined the impact of fiscal and monetary policies on economic activities in Sudan. He tested the hypothesis that the money supply, government expenditure, and total exports have a positive impact on economic activity. The results revealed that the most important single variable which has a significant positive effect on economic activity is exports. This suggests that export promotion have played a significant role in economic growth over the study period. On the other hand, neither monetary policy nor fiscal policy has had any significant impact on growth. This might provide an evidence of the failure of such policies and their ad hoc nature in inducing growth.

Hussein (2003) examined the impact of export promotion and import substitution strategies on the growth of real GDP in Sudan for the period (1960-2001), which is divided into three sub-periods, namely (1960-1978), (1979-1989) and (1990-2001). The results reveal that export promotion strategy has played an important role in the development process during the period (1979-1989), while import substitution strategy has not played a significant role in the development process over the period under study.

In February 1992 the state launched a reform and free market policy, as laid out in the National Economic Programs for (1990-1993) and (1992-2002). The programs aimed at encouraging economic and commercial activities by freeing prices and removing administrative restrictions on import and export. The main objective of Sudan (2001-2010) program is to improve export performance by increasing oil production and exports and exploration of other mineral resources, increasing exports of animal resources, agriculture and wildlife products,

increasing meat and fisheries export. In spite of all these reforms the non-petroleum export showed a systematic decrease in its share of export and this due to the high production costs and deterioration in productivity and quality, which reduces competitiveness of these goods, in addition to the fact that most of Sudanese export goods are primary products and raw materials and then their international prices are generally low (Saber, 2009).

Export volumes grew in line with overall GDP during 1990's. Non-oil export volume grew at an average rate of about 11% during (1990-2000), though not for all commodities. Cotton and Gum Arabic, for example, declined. Over the years, there has been a change in the composition of Non-oil exports. Traditionally, cotton was most important, but in 1996 it was overtaken by sesame, which remains the leading non-oil export. Sudanese export competitiveness has been suffering from other non-economic policy weaknesses, such as supply bottlenecks due to the old and rundown transport network. The civil conflicts that hit mainly areas, where most agrarian production takes place, also damaged major cash crops (Saber, 2009).

Oil has taken a corner stone position within the united Sudanese economy since its exploitation started in 1999. This could be demonstrated by its weight in, at least, three major economic variables, namely: the GDP, the foreign trade sector, and the government revenue as depicted in Central Bank of Sudan (CBoS) Reports. Before 1999 and even in 1999, the year which witnessed the beginning of Sudanese exports of oil, the Petroleum sector contribution to the GDP was negligible. Prior to that date, the shortage of Petroleum products was a permanent handicap impeding the economy's development with all its negative implications especially on production and growth? The structure of the economy has been changing from dominance of the agricultural sector towards that of the petroleum Sector. However, the petroleum sector has not contributed largely to the development of the other sectors. In the contrary, it facilitated the continuation of neglecting the productive sectors agriculture-and manufacturing. The contribution of the petroleum sector was more than 90% of exports during the last five years implying that the economy is becoming highly dependent on the exports of one product. Moreover, this, as well, indicates that oil has not played appositve role in the development of non-oil exports and particularly agricultural products exports (Gadkarim, 2010).

Exports proceeds from non-oil exports, (agricultural, livestock, manufactured goods and others) increased from US\$ 322.1 million in 2001 to US\$ 438.2 million in 2002, by 36 percent. The following are details of the major exports. Earnings from livestock exports were leading among the non-oil exports increasing from US\$ 1.7 million in 2001 to US\$ 117.2 million in 2002

due to a resumption of export flow into Saudi Arabia. For the same reason, earnings from meat exports increased from US\$ 13.7 million in 2001 to US\$ 17.3 million in 2002. Sesame exports earnings decreased from US\$ 104.5 million in 2001 to US\$ 74.6 million in 2002 by 28.6% due to a fall in exports from 183.1 thousand metric tons to 155.4 thousand metric tons, as well as a drop in its international price. Cotton exports earnings increased from US\$ 44.4 million in 2001 to US\$ 62.2 million in 2002 by 40.1% due to an increase in exports by 69.9%, as well as an increase in its international price. Gum Arabic exports earnings increased from US\$ 24.3 million in 2001 to US\$ 31.9 million in 2002 by 31%, due to an increase in exports by 57.5% in spite of the drop in its international prices by 18.2%. Sugar exports earnings dropped from US\$ 12.1 million in 2001 to US\$ 10.5 million in 2002 by 13.2% due to a fall in exports on the one hand, and a drop in its international prices on the other. Molasses exports proceeds remained stable during 2001 and 2002 amounting to US\$ 7.9 million in spite of the increase in the amount exported of 96,641 thousand metric tons in 2001 to 154,600 thousand metric tons in 2002 by 60%. This condition was due to an increase in the volume of supply in the international markets especially from India and Pakistan. Sorghum “Dura” exports proceeds increased from US\$ 0.4 million in 2001 to US\$ 4.8 million in 2002 due to an increase in exported quantities in spite of the decline in the price of exports per metric ton from US\$ 186 to US\$ 132.9 by 28.5%. Gold exports proceeds increased from US\$ 43.7 million in 2001 to US\$ 52.2 million in 2002 by 20%, due to an increase in the exported amount by 26.7% (CBoS, 2001).

Non-oil exports proceeds (agricultural, animal, industrial and others) increased from US\$ 438.2 million in 2002 to US\$ 494.5 million in 2003 by 13%. Cotton occupied the first place in non-oil exports, rising from US\$ 62.2 million in 2002 to US\$ 107.8 million in 2003 by 73% due to an increase in exported quantities from 397 thousand bales to 507 thousand bales, in addition to an increase in average of its international prices. Sesame exports earnings stabilized in two years, 2002 and 2003 amounting to US\$ 74.6 million and US\$ 74.4 million respectively in spite of the decrease in exported quantities from 155.4 thousand tons in 2002 to 108.7 thousand tons in 2003, and that was due to an increase in average of its international prices. Gum Arabic exports earnings rose from US\$ 31.9 million in 2002 to US\$ 35.4 million in 2003 by 11% in spite of the decrease in the exported quantities by .08%. This increase in proceeds was due to an increase in its average international prices (CBoS, 2002).

The proceeds of non-petroleum exports increased from US\$ 1020.2 million in 2009 to US\$ 1709.2 million in 2010, by 67.5%. That was attributed to the noticeable increase in gold and

meat exports. The following are details of major non-petroleum exports: Gold ranked first in non-petroleum exports as proceeds from its exports increased from US\$ 403.4 million in 2009 to US\$ 1018.0 million in 2010, by 152% due to the increase in exported quantities from 14913843 grams in 2009 to 26316777 grams in 2010 and the rise of international prices. Similarly, the proceeds of meat exports went up sharply from US\$ 9.3 million in 2009 to US\$ 43.5 million in 2010, by 368% due to increase of the quantities from 570 metric tons in 2009 to 5290 metric tons in 2010. In addition to this sesame export proceeds rose from US\$ 143.3 million in 2009 to US\$ 167.3 million in 2010, by 16.7%. This attributed to the increase in the exported quantities from 137659 metric tons in 2009 to 224137 metric tons in 2010, in spite of the decrease in average world prices. Cotton export proceeds declined from US\$ 42.1 million in 2009 to US\$ 40.4 million in 2010, by 4.0% as a result of the decrease in exported quantities from 35062 bales in 2009 to 34095 bales in 2010. Exports of gum Arabic decreased from US\$ 33.1 million in 2009 to US\$ 23.8 million in 2010, by 28.1% owing to the considerable decline in the export quantities from 237009 metric tons in 2009 to 18202 metric tons in 2010 (CBoS, 2010).

Gold export represent the first ranked in non-petroleum exports as proceeds from its exports increased from US\$ 1455.0 million in 2011 to US\$ 2158.0 million in 2012, by 48.3% due to the increase in exported quantities from 23.7 tons in 2011 to 46.1 tons in 2012 and the rise of international price. Similarly, the proceeds of meat exports went up sharply from US\$ 17.9 million in 2011 to US\$ 38.1 million in 2012, by 112.6%. In addition to this sesame export value decrease from US\$ 231.0 million in 2011 to US\$ 223.5 million in 2012, by 3.2%. Similarly, cotton export proceeds declined from US\$ 27.0 million in 2011 to US\$ 11.8 million in 2012, by 56.5% as a result of the decrease in exported quantities from 37640 bales in 2011 to 13383 bales in 2012 (CBoS, 2012).

Table (1)
The Main Non-Oil Exports in Sudan from (2001-2012), (in Million US\$)

	Gold	Cotton	Sesame	Gum Arabic	livestock	Others	Total	Change %
2001	43.7	44.4	104.5	24.3	1.7	103.5	322.1	-
2002	52.2	62.2	74.6	31.9	117.2	100.1	438.2	36
2003	58.6	107.8	74.4	35.4	97.7	120.5	494.4	13
2004	50.4	93.7	178.6	60.6	137.9	156.0	677.2	36
2005	63.6	107.2	118.5	107.5	114.9	125.2	636.9	6
2006	64.3	82.3	167.0	50.2	121.7	83.8	569.3	10
2007	63.2	68.5	92.8	51.9	80.6	103.7	460.7	19.1

2008	112.1	61.8	141.8	60.9	46.4	153.4	576.4	25
2009	403.4	42.1	143.3	33.1	179.5	219.0	1020.4	21.9
2010	1018.0	40.4	167.3	23.8	136.0	323.7	1709.2	67.5
2011	1455.0	27.0	231.0	82.0	305.3	249.4	2652.2	35
2012	2158.0	11.8	223.5	67.1	371.5	214.1	3111.1	65

Source: Central Bank of Sudan Annual Reports (various issues).

From table (1) it's clear that the performance of non-oil exports wasn't stable due to fluctuation in performance of main sectors particularly, agriculture sector which represent the main components of main non-oil exports and deterioration of agriculture product prices in the international market because it's often raw material exports and less compete. It's worth to mention that, gold export increasing in 2009, 2010, 2011, which represents the second important ranked exports after the petroleum exports. After south Sudan separation in 2011, the Sudanese economy depends on gold exports as the main important non-petroleum exports.

Siddig (2012) investigated the implications the separation of Sudan and the establishment of the Republic of South Sudan (RSS) may have on the Sudanese economy. The paper is motivated by the fact that Sudan (North) will lose a significant part of its revenue from oil. Oil has been contributing considerably to the economy as represented in its GDP, exports, and government income during the last decade.

Using ordinary least squares technique and annual time series data covering the period (1990-2010), Alfaki (2013) examined the impact of fiscal, monetary, foreign trade policies on economic activities in Sudan. He tested the hypothesis that the real growth rates in money supply, real growth rate in government expenditure, and openness have a positive impact on economic activity. The empirical result revealed that, trade openness variable is more potent than fiscal and monetary variables. Trade openness and fiscal policy influences were significant in determining the growth rate in real GDP. Based on the findings of the study, more encouragement for foreign trade is needed by facilitating procedures and eliminating all barriers in order to achieve higher rates of economic growth. Import substitution and export promotion strategies should be adopted with diversification of production and markets as well as improving economic infrastructure, particularly roads and bridges. Furthermore, a rational fiscal policy that raises the rate of economic growth and reforms development projects should adopted.

4- Research Methodology And Empirical Results

4.1 Research Methodology

This chapter outlines the research methodology that will be used in the analysis of the findings and the empirical results. Firstly provide the model employed in this study is a linear regression model with taken logarithm as given by the following equation, where exchange rate defined as unit of foreign currency against units of domestic currency.

$$\text{Log NOX} = \beta_1 \text{Log RGDP} + \beta_2 \text{Log EX} + \beta_3 \text{log OP} + \mu t \quad (1)$$

β_1, β_2 and $\beta_3 > 0$

Where:

NOE: Non Oil Exports.

RGDP: Real Gross Domestic Product, (with constant prices).

EX: Exchange Rate.

OP: Trade Openness.

μt : The error term which is assumed to be serially uncorrelated, with zero mean and constant variance?

Theoretically, it is expected that credit to trade openness (OP) and real growth domestic product (RGDP) would have a positive effect on non-oil export. This is because increase in credit to trade openness is expected to enhance investment in the economy; accordingly, trade openness has a positive relationship with non-oil exports. Increase in real growth domestic product is also expected to boost the investment capability of the government in providing investment-enhancing facilities necessary to promote the performance of the non-oil sector.

Exchange rate is expected to have negative or positive effect on non-oil export. This is because an appreciation of the exchange rate would results in increase in the cost of imported raw material/inputs, which discourage export potential of the non-oil sector.

The exchange rate policy that adopted in Sudan is depreciation policy and the sign according to the policy adopted in Sudan is positive.

According to economic theory depreciation in domestic currency encourages export by lowering the foreign price of exports and also encourages the flow of foreign direct investment which in turn increases the demand for imported inputs, accordingly trade openness will increase, and this will lead to increase non-oil exports. Then, exchange rate positively related to non-oil exports.

The data are collected from official sources namely; Central Bank of Sudan and the Central Bureau of Statistics annual reports (various issues). Ordinary Least Squares (OLS) method is adopted to analyze data covering period (1990-2012).

4.2 Empirical Results

To accomplish the objective of the study, Ordinary Least Squares (OLS) method is applied to the linear regression model specified in equation (1), using data covering period (1990-2012) in table (1) of the appendices. The results are given in equation (2), where the figures inside the brackets are t-ratios of the estimated coefficients.

$$\text{Log NOX} = 1.76 \text{ Log RGDP} + 0.94 \text{ Log EX} + 0.51 \text{ Log OP} + 0.83 \text{ AR} \quad (2)$$

(4.28) (2.53) (2.01) (4.06)

$$R^2 = 0.97, F = 240$$

$$R^2 = 0.96, DW = 1.41$$

According to the above results, equation (2) is statistically significant at the 1% level as indicated by the (F) ratio. The values of R^2 and Adjusted R^2 suggest that 97%, 96% respectively of the variation in Non-Oil Exports (NOX) is explained by the variations in the Real Gross Domestic Product (RGDP), Exchange Rate (EX) and Trade Openness (Op), While about 3%, 4% respectively of the variation in Non-Oil Exports (NOX) is explained by the variations in the explanatory variables which are not included in the model and represent by the random error. According to values of t-ratios, real gross domestic product is significant at 1%, while exchange rate and trade openness are significant at 5% level. Also Durbin-Watson statistic indicates the absence of serial correlation problem in the model at the 1% level. All expected signs of the determinant variables are confirmed by the empirical results; thus real gross domestic product, exchange rate and trade openness are found to have significant positive effect on non-oil exports. This suggests that, the three variables are becoming most important mix policy to achieve growth in non-oil sector.

Based on this results, the attention should concentrate on strategies lead to increase in production of non-oil sectors (Agriculture, industry, and services) for the all purposes either investment, or exports, which needs diversification of production and improving infrastructure .

5- Conclusion And Recommendations

5.1 Conclusion

This study tried to assessment the effect of real gross domestic product (RGDP), exchange rate (EX) and trade openness (OP) on non-oil exports in Sudan. According to this aim, a linear regression model is specified with taking logarithm and estimated employing data covering the period (1990-2012), which were obtained from the Central Bank of Sudan and Central Bureau of Statistic. Real Gross domestic product, exchange rate and Trade Openness are selected as determinants of non-oil exports. Ordinary Least Squires (OLS) method is applied to the linear regression model the empirical results reveal that, real gross domestic product, exchange rate and trade openness are potent and their influences were significant in determining non-oil exports.

5.2 Recommendations

Through what mentioned in this research, we note that the historical path of Sudan's economy fluctuated between the cases of stability and instability this is mainly due to the disruption of economic policies and developmental programs. In spite of the reform and development efforts those have been made for improve the situation of the Sudan's economy, but it still suffers from substantial distortions related to its structure. Sudan's economy had significant economic opportunities if it handled properly and exploited efficiently it would put the economy on the right track and made it able to absorb any sudden shocks, based on the findings of the study there are a number of recommendations which need to undertake:

- Adopts strategies and development programs and real work to strength the economy structure in order to diversify productive base.
- Reform of the agricultural sector through facilitating procedures and eliminated all barriers. Also fertilizers and seeds should be available.
- Raw material should be available to support the industrial sector.
- Improving infrastructures in order to support key sectors (agriculture, industry, and services).
- Adopt policies that will lead to stability in exchange rate.
- The decision- makers should encourage diversification of production to increase real growth domestic product and foreign trade.

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APPENDICES

Table (1)

**Non-Oil Exports (NOX), Real Gross Domestic Product (RGDP), Exchange Rate (EX), (in Million Sudanese Pounds), Trade Openness (OP) as Percentage with current prices).
Consumer Price Index (CPI), (2007=100) (1990-2012).**

Year	NOX	RGDP	EX	OP	CPI
1990	3.53	7.90	.05	7.80	.24
1991	5.08	8.50	.05	9.71	.52
1992	25.14	9.06	.10	29.69	1.32
1993	49.66	9.47	.13	25.56	3.73
1994	111.46	9.57	.22	25.61	7.99
1995	350.08	10.14	.40	23.33	13.15
1996	539.07	11.31	1.25	17.81	27.59
1997	769.53	12.00	1.58	20.71	40.95
1998	1006.93	12.99	1.99	23.43	48.62
1999	1164.42	13.54	2.52	21.42	57.80
2000	1225.79	14.67	2.57	27.02	62.28
2001	858.87	16.26	2.59	23.98	65.03
2002	1213.79	17.23	2.63	24.27	69.51
2003	1311.32	18.32	2.61	25.51	73.85
2004	1535.07	19.25	2.58	28.05	80.89
2005	1484.25	20.43	2.44	32.77	87.84
2006	1179.70	22.35	2.17	31.66	94.16
2007	974.78	22.90	2.02	32.15	100.00
2008	1365.94	23.40	2.09	38.20	114.30
2009	1507.50	24.90	2.00	26.68	127.15
2010	4110.61	27.10	2.09	33.99	143.65
2011	4215.31	27.00	2.23	26.62	169.62
2012	9933.94	27.30	4.41	14.81	230.00

Sources: Central Bank of Sudan and Central Bureau of Statistics.