



## Evaluation of Foreign Direct Investment Inflow in Sudan: An Empirical Investigation (1990-2013)

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### Abstract

*Foreign direct investment (FDI) is considered as the major source of external finance for many developing countries to achieve growth of private sector and sustainable development goals. This research evaluated from an empirical point of view some of the economic determinants of FDI in Sudan over the period (1990-2013). The importance of this research comes from the importance of FDI, which has become an important source of the private external finance for the developing countries, helps transferring production technology, skills and innovation capacity. The objective of this research is to investigate from an empirical point of view, some economic determinants of FDI in Sudan. For this purpose, ordinary least squared (OLS) method is applied to annual time series data to estimate along-linear relationship between FDI on the one hand and a set of explanatory variable on the other hand. Data were obtained from Bank of Sudan annual reports, Central Bureau of Statistics and Federal Ministry of Investment. The regression results suggest that exchange rate, transportation and communication, and oil exploration are the major determinants of FDI in Sudan through the period of research, while the growth rate of real gross domestic product and openness play insignificant role in effecting at FDI. These results may be attributed to the formula of FDI in Sudan, which adopted to encourage foreign investors to invest for re-exporting to market at home or in third countries. Research recommended, keeping the stability of the exchange rate, to make concentration of energy sector, improving the infrastructure, concentration of FDI in the productive sectors such as the agricultural and the industrial sectors, facilitating procedures for the foreign investor.*

*Key words: Evaluation Factors, FDI, Sudan.*

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## **1. Introduction**

There is no specific definition of Foreign Direct Investment (FDI) owing to the presence of many authorities like the OECD, IMF, IBRD and UNCTAD. All these bodies attempt to illustrate the nature of FDI with certain measuring methodologies. Generally speaking FDI refers to capital flows from abroad that invests in the production capacity of the economy and is usually preferred over other forms of external finance because they are non-debt creating, non-volatile and their returns depend on the performance of the projects financed by the investors. FDI also facilitates international trade and transfer of knowledge, skills and technology. It is also described as a source of economic development, modernization and employment generation, where by the overall benefits triggers technology spillovers, assists human capital formation, contributions to international trade integration and particularly exports, helps to create more competitive business environment, enhances enterprise development, increases total factor productivity and improve efficiency of resources use.

One of the economic problems of the developing countries is that they have not enough national savings to finance their investments. They are in constant need of foreign capital in both of direct and indirect investments. Initially, they take loans from the international commercial banks. But in 1980s the drying-up of commercial bank lending, because of debts crises, forced many countries to reform their investment policies so as to attract more stable forms of the foreign capital, and foreign direct investment (FDI) has been appeared to be one of the easiest way to get the foreign capital without undertaking any risks linked to the debt. Thus, it has become an attractive alternative to the bank loans as a source of capital inflow (Agiomirgianakis, 2003).

For many developing countries, FDI inflows is a major source of external financing thereby provides important means of implementation of growth of the private sector and sustainable development goals. Moreover, FDI is typically less volatile than the foreign portfolio investment. In many cases, FDI also contributes in technology transfer and improvement of labor and management skills. Sustained increases in FDI inflows often can be a sign of an improved investment climate. Although the largest share of FDI goes from the high-income economies to another high-income economy, flows to the developing countries are increasing and are very important to support the sustainable development. They now dwarf flows of official development assistance. In the recent years, FDI flows among developing countries have been also increasing. Like other developing countries, Sudan has faced the problem of capital deficiency emanating primarily from the inherent inability to save. However, the investment saving gap has been narrowed considerably since the early 1990s, because of the economic liberalization measures and the efforts made to improve the business environment with an attractive policy towards the inflow of FDI (Mohamed, 2007).

### **1.1 Research Problem**

Sudan owns huge untapped natural resources, such as oil. Nevertheless, Sudan is characterized by low per capita income and high dependency ratio. Therefore, savings are very low, in both public and private levels, thereby constraining capital formation and growth. Under such circumstances, the need for foreign saving is inevitable to bridge the wide domestic investment-saving gap.

This research tries to answer the following question: what are economic determinants of FDI inflows in Sudan? For this purpose, the research tries to examine the impact of many variables, represented the exchange rate, growth rate of real gross domestic product, transportation and communication, oil exploration and trade openness on the FDI in Sudan during the period (1990-2013)

## **1.2 The Importance of the Research**

The importance of this research comes from the importance of FDI, which has become an important source of the private external finance for the developing countries. It is different from other major types of external private capital flows in that motivated largely by the investor's long-term prospects for making profits in production activities those they directly control. In addition, FDI helps transferring production technology, skills and innovative capacity.

## **1.3 The Objective of the Research**

The purpose of this research as following: to show the evaluation of FDI in Sudan during the period (1990 – 2013) and estimate the relationship between FDI and the set of explanatory variables consisting of the exchange rate, growth rate of real gross domestic product, transportation and communication, oil exploration(as a dummy variable) and trade openness.

## **1.4 Research Methodology**

The Ordinary least squares (OLS) technique is applied to annual time series data covering the period (1990-2013). Which we obtained from the Central Bureau of Statistics, the Central Bank of Sudan annual reports, and Ministry of Investment, to estimate a long-linear relationship between FDI on the one hand, and the exchange rate, growth rate of real gross domestic product, transportation and communication, oil exploration, and trade openness on the other hand.

## **1.5 The Hypotheses of the Research**

The empirical model includes five explanatory variables namely the exchange rate, growth rate of real gross domestic product, transportation and communication, oil exploration(as a dummy variable), and trade openness, it is hypothesized that all of this explanatory variables incorporated have positive effect on FDI.

## **2. CONCEPT AND THEORIES OF FOREIGN DIRECT INVESTMENT**

The purpose of this section is to show the definition of FDI, explain historical stages of FDI, discusses some of theories of FDI, includes macroeconomic theories and microeconomic theories, in addition to show the main types of FDI based on the motive behind the investment from the perspective of the investing firm. Finally, this section contains a number of studies which have been too conducted identify the economic determinants of FDI.

### **2.1 Definition of Foreign Direct Investment**

The terms FDI, foreign direct investor and foreign capital have many definitions, some of which are quite widely used. According to harvy (1990), FDI means establishing a new company or a branch office, share office share acquisitions, out of stock exchange, participating into a company by owing 10 percent or more of the shares or voting power in stock exchange by means of, but not limited to the economic assets by the foreign investor.

According to the definition of International Monetary Fund (IMF,1993) and Organization for Economic Cooperation and Development( OECD,1996)definition, direct investment reflects the aim of obtaining a lasting interest by resident entity of one economy (direct investor) in an enterprise that is resident in another economy (the direct investment enterprise). The "lasting interest" implies the existence of a long-term relationship between the direct investor and direct investment enterprise and significant degree of influence on the management of the latter .Direct investment involves both the initial transaction establishing the relationship between the investor and the enterprise and all subsequent capital transaction between them and among affiliated enterprises, both incorporated and unincorporated . It should be noted that capital transaction which do not give rise to any settlement, e.g. an interchange of shares among affiliated

companies, must also be recorded in the Balance of Payment and in the International Investment Position (IIP).

## **2.2 Foreign Direct Investment Historical Background**

The actual prosperity of the FDI refers to the industrial revolution in the nineteenth century so the FDI passed through historical stages and these stages were different in political and economic conditions, and we can summarize in the following point:

### **2.2.1 The first stage (1800 - 1914)**

In This period, the FDI was booming and the economic and political condition is suitable, these reason encouraged the colonial powers to increase their investments.

### **2.2.2 The second stage (1914 - 1944)**

In this period, the FDI was retreating because of the circumstances of war and political instability, in this period the FDI was basing on oil investments, with the growing control of United States and the declining the control of United Kingdom (IBRD, 2005).

### **2.2.3 The third stage (1945 - 1989):**

In this period, the FDI was expanding and world trade was growing.

### **2.2.4 The fourth stage (1990 - 2007)**

There was a significant shift in funding sources in the developing countries in recent years, because of the restriction imposed by the World Bank (WB) and International Monetary Fund (IMF). According to international reports, the flow of FDI amounts of about 207, 1119 and 2002.7 billion dollars in 1997, 2000 and 2007 respectively. These figures indicate that FDI flow was increasing during this period, concentration of investment in the most advanced countries in the United States and Britain .as for developing countries were concentrated mainly in the Asian region, and as for Latin an American countries concentrated in the Brazil (UNCTADM, 2007).

### **2.2.5 The fifth Stage (2008 – 2013)**

In this period, the FDI had been retreating because of the international finance crisis in 2008. According to international reports, the FDI in 2008 amounted to about 1816.3 billion dollars in 2009 amounted to about 1216.5 billion dollars in 2010 amounted to about 1408.6 billion dollars, in 2011 amounted to about 1651 billion dollars, in 2012 amounted to about 1350.9 billion dollars. In 2013 expected to remain close to level in 2012 with the limits of maximum 1450 billion dollars (UNCTAD, 2009, 2013).

## **2.3 Theories of Foreign Direct Investment**

Numerous theories have been developed in FDI literature, these theories have been classified as microeconomic theories and macroeconomic theories of FDI, microeconomic theories focus on the characteristic of a firm that influence its decision making processes .These include market imperfection ,market power and investment location theories . Macroeconomic theories of FDI seek to investigate on a country's characteristics that explain FDI inflow within and across countries. Example includes internalization and product cycle theories .These theories can be classified as the following:

### **2.3.1 Production Cycle Theory of Vernon**

Production cycle theory is developed by Vernon in 1966 was used to explain certain types of FDI made by U.S. companies in Western Europe after the Second World War in the manufacturing industry.

Vernon believes that there are four stages of production cycle: innovation, growth, maturity and decline. According to Vernon, in the first stage the U.S. transnational companies create new innovative products for the local consumption and export the surplus in order to serve also the

foreign markets. According to the theory of the production cycle, after the Second World War in Europe has increased demand for manufactured products like those produced in USA. Thus, American firms began to export, having the advantage of technology on international competitors. If in the first stage of the production cycle, manufacturers will have an advantage by possessing new technologies, as the product develops also the technology is becomes known. Manufacturers will standardize the product, but there will be companies that you will copy it. Thereby, European firms have started imitating American products that U.S. firms were exporting to these countries. US companies were forced to perform production facilities on the local markets to maintain their market shares in those areas .This theory managed to explain certain types of investments in Europe Western made by U.S. companies between 1950-1970. Although there are areas, where Americans have not possessed the technological advantage and FDI were mad during that period.

### 2.3.2 The Theory of Exchange Rates on Imperfect Capital Markets

This is another theory, which tried to explain FDI. Initially the foreign exchange risk has been analyzing from the perspective of international trade. Itagaki(1981) and Cushman (1985) analyzed the influence of uncertainty as a factor of FDI. In the only empirical analysis made so far, Cushman shows that real exchange rate increase stimulated FDI made by USD, while a foreign currency appreciation has reduced American FDI. Cushman concludes that the dollar appreciation has led to a reduction in U.S. FDI by 25%. However, currency risks rate theory cannot explain simultaneous FDI between countries with different currencies. The sustainers argue that such investments were mad in different times, but there are enough cases that contradicting these claims.

### 2.3.3The Internalization Theory

This theory tries to explain the growth of transnational companies and their motivations for achieving the FDI. Buckley and Casson developed the theory. In 1976, Hennart, in 1982andCasson, in 1983, initially, the theory was launched by Coase in 1937 in a national context and Hymer in 1976 in an international context. In his Doctoral Dissertation, Hymer identified two major determinants of FDI. One was the removal of competition. The other was the advantages, which some firms possess in a particular activity (Hymer, 1976). Buckley and Casson, who founded the theory demonstrates that transnational companies are organizing their internal activities to develop specific advantages, then to be exploit. Internalization theory considered very important also by Dunning, who uses it in the eclectic theory, but also argues that this explains only part of FDI flows. Hennart (1982) develops the idea of internalization by developing models between the two types of integration: vertical and horizontal. Hymer is the author of the concept of firm-specific advantages and demonstrates that FDI takes place only if the benefits of exploiting firm-specific advantages outweigh the relative costs of the operations abroad. According to Hymer (1976), the Multinational Enterprise (MNE) appears due to the market imperfections that lead to a divergence from perfect competition in the final product market. Hymer has discussed the problem of information costs for foreign firms respected to local firms, different treatment of governments, currency risk . The result meant the same conclusion: transnational companies face some adjustment costs when the investments were mad abroad. Hymer recognized that FDI is a firm-level strategy decision rather than a capital-market financial decision.

### 2.3.4 The Eclectic Paradigm of Dunning

The eclectic theory developed by professor dunning is a mix of three different theories of FDI (O-L-I):

#### 2.3.4.1 “O” from Ownership advantages

This refers to intangible assets, which are, at least for a while exclusive possessions of the company and may be transferred within transnational companies at low costs, leading either to higher incomes or reduced costs. However, Transnational Corporation (TNCs) operations performed in different countries face some additional costs. Thereby to successfully enter a foreign market, a company must have certain characteristics that would triumph over operating costs on a foreign market. These advantages are the property competences or the specific benefits of the company. The firm has a monopoly over its own specific advantages and using them abroad leads to higher marginal profitability or lower marginal cost than other competitors. (Dunning, 1973, 1980, 1988), There are three types of specific advantages

- a) Monopoly advantages in the form of a privileged access to markets through ownership of natural limited resources, patents, trademarks
- b) Technology, knowledge broadly defined to contain all forms of innovation activities
- c) Economies of large size such as economies of learning, economies of scale and scope, greater access to financial capital;

#### 2.3.4.2 “L” from Location:

When the first condition had fulfilling, it must be more advantageous for the company that owns them to use them itself rather than sell them or rent them to another foreign firm. Location advantages of different countries are the key factors to determining who will become host countries for the activities of the transnational corporations. The specific advantages of each country can be dividing into three categories

- a) The economic benefits consist of quantitative and qualitative factors of production, costs of transport, telecommunications, market size etc.
- b) Political advantages: common and specific government policies that affect FDI flows
- c) Social advantages: includes distance between the home and host countries, cultural diversity, attitude towards strangers etc.

#### 2.3.4.3 “I” from Internalization:

Supposing the first two conditions met, it must be profitable for the company the use of these advantages, in collaboration with at least some factors outside the country of origin (Dunning, 1973, 1980, 1988). This third characteristic of the eclectic paradigm OLI offers a framework for assessing different ways in which the company will exploit its powers from the sale of goods and services to various agreements that might have been signed between the companies. As cross-border market Internalization benefits is higher the more the firm will want to engage in foreign production rather than offering this right under license, franchise Eclectic paradigm OLI shows that OLI parameters are different from company to company and depend on context and reflect the economic, political, social characteristics of the host country. Therefore, the objectives and strategies of the firms, the magnitude and pattern of production will depend on the challenges and opportunities offered by different types of countries. . (FDI theories quoted from Denisia, 2010).

## **2.4 Types of Foreign Direct Investment**

Dunning (1993) describes three main types of FDI based on the motive behind the investment from the perspective of the investing firm. The first type of FDI is Called market-seeking FDI, which aim is to serve local and regional markets. It also called horizontal FDI, as it involves replication of production facilities in the host country. Tariff-jumping or export-substituting FDI is a variant of this type of FDI. Because the reason for horizontal FDI is to better than serve a local market by local production, market size and market growth of the host economy play

important roles. Obstacles to accessing local markets, such as tariffs and transport costs, also encourage this type of FDI.

A second type of FDI is called resource seeking: when firms invest abroad to obtain resources not available in the home country, such as natural resources, raw materials, or low-cost labor. Particularly in the manufacturing sector, when multinationals directly invest in order to export, factor-cost considerations become important. In contrast to horizontal FDI, vertical or export-oriented FDI involves relocating parts of the production chain to the host country. Availability of low-cost labor is a prime driver for export-oriented FDI. Naturally, FDI in the resource sector, such as oil and natural gas, is attracted to countries with plentiful natural endowments.

The third type of FDI is called efficiency seeking; it takes place when the firm can gain from the common government of geographically dispersed activities in the presence of economies of scale and scope.

In 1998 the World Investment Report, UNCTAD (1998) has analyzed the determinants of FDI and host country determinants have classified into three groups. These are political factors, business facilitation and economic factors. The absence of the generally accepted theoretical framework has led researchers to rely on empirical evidence for explaining the emergence of FDI.

## **2.5 Empirical Determinants of FDI**

The literature examines a large number of variables that have been set forth to explain FDI. Some of these variables are included in formal hypotheses or theories of FDI, whereas others suggested because they make sense instinctively. Most of the variables used in empirical studies appear in the UNCTAD's (1998) classification of the determinants of inward FDI.

Froot and Stein (1991) claimed that the level of exchange rate might influence FDI because depreciation of the host country currency against the home country currency increases the relative wealth of foreigners thereby increasing the attractiveness of the host country for FDI, as firms are able to acquire assets in the host country relatively cheaply. Thus, a depreciation of the host country currency should increase FDI into the country and conversely an appreciation of the currency should decrease FDI inflow into the country. Against this argument, it is often claimed that the price of assets should not matter but only their rate of return when the host country currency depreciates relative to the home country currency. Since price of assets and returns on assets both go down exchange rate movements should not affect FDI.

Lucas (1993) in an econometric analysis of a single-equation model based on Cobb-Douglas technology using aggregate data on 7 South East Asian economies over the period (1961 - 1987) obtained mixed results on the importance of relative wage in determining FDI. He showed real net FDI to be less elastic with respect to the cost of capital than to real wages but found no systematic evidence to support the contention that higher real wage in rival host countries enhance inbound FDI. Schmitz and Bieri (1972) suggest that tariffs had no significant role in determining changes in the direction and magnitude of the FDI.

Singh and Jun (1995) empirically analyzed various factors including political risk, business conditions, and macroeconomic variables that have influenced FDI flows to the developing countries. Using a pooled model of the developing countries, they showed that political risk and business-operating conditions have been important determinants of FDI for the countries that have historically attracted substantial foreign capital flows. For the countries with relatively low FDI, a key determinant was the degree of sociopolitical instability, proxied by work hours lost in industrial disputes. They also observed that a country's orientation toward exports is the strongest variable for explaining why a country attracts FDI.

Stephen (1997) observed that the GDP, export, imports infrastructure and political risk have significant influences in the decisions of multinational corporations (MNCs) to invest abroad. Chakrabarti (2001) argued that the size of an economy is an important determinant of FDI inflow into developed and developing economies alike. The size of the market, however, might be less influential or even insignificant when FDI is invested to exploit the host country solely as a production base to reap profits from the cost advantage of the that economy by exporting more competitively to markets at home or abroad. A second potential determinant is the movement in the price level. A large and uncontrollable increase the price level or high inflation might reflect instability of the macroeconomic policy of the host country. This type of instability creates uncertainty in the investment environment. High inflation discourages FDI for re-exportation since the relative costs of production in the host country rise. In contrast, falling price level and the resulting contraction in economic activities might trigger a deflationary spiral and eventually bankrupt the host country's firms. This can induce local investor to sell off their interests in the host country's companies to foreign investors at low price thereby expanding the inflow of FDI. A third frequently noted factor is the strength of the host country's currency measured by the exchange rate. A depreciation of the host country's currency might attract FDI for two reasons. First, a depreciation of the host country's currency renders the shares of the host country relatively cheap. Second, in cases where the FDI is invested for re-exporting to markets at home or in third country, a depreciation of the host country's currency will enhance the competitiveness of producing in the host country, thereby raising the investor's wealth. In cases where FDI is invested for the sale in the host market, on the other hand, a depreciation of the currency might hinder FDI inflow. Again, there are two reasons for this. First, as FDI is projected over the long-run horizon, the stream of returns on investments might fall in terms of the home currency. Second, a depreciation of the currency lowers the relative purchasing power of consumers in the host country. All in all the effect of the exchange rate level on FDI inflows are rather ambiguous.

The volatility of the host country's exchange rate can also be a notable determinant of the extent of incoming FDI. Instability of a currency has often been identifying as a significant impediment for the inflow of FDI. Income stream from a highly volatile currency area is associated, in the long -run, with high exchange risk (Chakrabarti, 2001). FDI investors lack the security of portfolio investors as the latter can reduce the risk of exchange rate variability by hedging through the derivative market in the short run. As hedging is impossible in the long- run, FDI investor must pay much closer attention to exchange rate volatility. This factor is a particularly robust determinant for risk-averse investors.

On the other hand a policies of maintaining stable nominal exchange rates very often lead to a loss of price competitiveness, leading to another condition which discourages FDI inflow in the presence of comparatively high inflation as stable nominal currency hides accumulated appreciation of real currency and there for pushes up real prices. In contrast, a less restrictive policy towards volatility of nominal exchange rates makes it possible to eliminate trends in real exchange rates and maintain price competitiveness. Hence using the stability of exchange rates as an incentive to attract FDI involves a trade-off between volatility and price competitiveness.

Finally, the instability of the host country's currency tends to reduce FDI inflow by discouraging the repatriation of investment returns. On the contrary, a positive relationship between FDI inflows and exchange rate volatility might be found if investment in the local market is used as a substitute to exporting when variance is judged as too high. On way to escape

the vagaries of the currency market is to direct FDI into local market activities in the short-run larger volatility.

Jordaan (2004) claims that good quality and well-developed infrastructure increases the productivity potential of investments in a country and therefore stimulates FDI flows towards the country. According to Asiedu(2002) and Ancharaz (2003), the number of telephones per1,000 inhabitants is a standard measurement in the literature for infrastructure development. However, according to Asiedu (2002), this measure falls short, because it only captures the availability and not the reliability of the infrastructure. Furthermore, it only includes fixed-line infrastructure and not cellular (Mobile) telephones.

Applying Extreme Bound Analysis (EBA), Moosa(2005) examined the determinants of FDI inflows in a sample of 18 countries from the Middle East and North Africa (MENA) region. The empirical results suggest that FDI can be explained in terms of the GDP growth rate, enrolment in tertiary education, spending on research, development and domestic investment. In particular, the results indicate that countries that have more successful in attracting FDI are those with growing economies that pay attention to education and research, have low country risks and have high returns in capital, this seems to be a reasonable description of the countries that have successful in attracting FDI.

Khaliq and Noy (2007) investigate the impact of FDI on economic growth using detailed sartorial data for FDI inflows to Indonesia over the period 1997-2006. Using the methodology of the augmented production function specification and regression methodology with time fixed effects, they concluded that the aggregate level of FDI has a positive effect in the economic growth. However, when accounting for the different average growth performance across sectors, the beneficial impact of FDI considered no longer apparent. When examining different impacts across sectors, estimation results showed that the composition of FDI matters of its effect in the economic growth. Few sectors reflected a positive impact of FDI and one sector even showed a robust negative impact of FDI on economic growth.

Pradhan (2011) explored on the role of FDI in the trade- led growth hypothesis in three counties, namely Australia, Canada and Israel for the period 1965-2009. The study based on the panel integration and the causality tests. The results show long- run integration relationship of FDI and growth after allowing to heterogeneous country effect. The causality test confirms the presence of a long run and a short-run bi-directional causality between the openness and the economic growth. It is also confirms the presence of the unidirectional causality from economic growth to FDI, but not vice versa. At individual level, FDI will found to cause economic growth in the Australian economy only. The conclusion was that economic growth may harm the openness and foreign direct investment in the three countries investigated.

### **3. FOREIGN DIRECT INVESTMENT IN SUDAN**

This section aimed to explain the characterized of Sudan economic and show why Sudan needs the FDI, through this section; we discuss two empirical study of FDI in Sudan. Also, to view the laws of investment in Sudan, in addition to explain the size of FDI in Sudan through the period of the study and the sartorial contribution of FDI.

Sudan has a fertile agricultural land, large amount of fresh water, and a variety of its animal resources. This is besides the distinguished geographic location of Sudan, which makes it easily as a passage to other African countries and as one of the commercial and investment inlets of those countries. Nevertheless, Sudan is characterized by low per capita income and a high dependency ratio therefore; savings very low, in both public and private levels, thereby

constraining capital formation and growth. Under such circumstances, the need of foreign saving is inevitable to bridge the wide domestic investment-saving gap.

Using annual data covering the period (1990 – 2002) Abeker (2004) examined the role of FDI in the development of the industrial sector in Sudan. The results revealed that the cumulative effect of FDI includes increasing the number and types of industries, increasing the size formation of industrial network. In addition to raise up the contribution of the industrial sector in the GDP, by enhancing technology transfer, improving administrative techniques such as skills, and increasing access to international markets, these benefits contribute significantly as development and growth in the national economy. Abeker (2004) argued that the effects of FDI depend on the host country's policies; these benefits could be maximize when the government provides guidance and removes the difficulties and obstacles out of the flow of FDI.

Mohammed (2007) examined the economic determinants of FDI in Sudan was during over the period (1990 – 2007) .Her results suggested that inflation rate and real per capita GDP were the major determinants of FDI inflow in the Sudan; real GDP per capita has positive effect on FDI while the impact of inflation was negative. In addition, she observed that because of the strong correlation between the exchange rate and inflation rate, the former could affect FDI through the latter. These results lend support the contention that the growth and economic stability could have significant positive effects on the inflow of foreign direct investment.

In 1958 the first investment act was issued in Sudan, which aimed at encouraging both foreign and domestic investment. However, the outcome of the policy packages was in stagnation in exports, reduction in imports, deterioration in the trade (balance of payments), accumulation of foreign debt, high inflation rates, loss in the national currency in its purchasing power and increasing poverty (Ahmed, 2014).

In 1967 the government created the ministry of industry to promote the industrial activities. Thus, the industrial investment act was issued in 1973 the development and investment act was issued followed by the 1980 act with the objective of further encouraging investment in the economic services, especially infrastructure in transport, telecommunications, and road. However, many factors have hindered FDI inflows, particularly these related to nationalization and confiscation of the domestic and foreign –owned companies. Nonetheless, a few projects were financed through FDI notably Kennana sugar factory. The investment amounted to total of LS 590 million the Sudanese government contributed a share of 33.2% the Arab corporation for investment and Agricultural development contributed 92.43 million Kuwaiti Dinars corporation participated in five companies paid –up capital. Sudan-Emirates Company for investment has the share of about \$20 million in 1983 raised to \$50 million 1990 Daewoo the Korean company contributed in many projects such as international tyros company, Blue Nile bank Gezira tannery.

The 1980 act was revised in 1990 with a view to overcomes the obstacles facing foreign investor. These efforts culminated in the 1990 investment Encouragement Act, and the creation of the investment authority in 1996. The 1990 investment encouragement act assigned federal Ministries with the right to grant investment licenses for strategic projects, while states ministries were granted the right to issue investment licenses for projects within their own borders. The 1990 Investment Encouragement Act was amended in 1998, when the Ministry of Investment Corporation and investment was established to deal with FDI activities. Further amendments were introduced to the 1998 Investment Encouragement Act in 1999 and 2000 cover other sectors for investment, such as telecommunications, managerial, services and information technology(Mohammed, 2007).

Most of the controversy around the role of (FDI) in developing countries seems to be derived from ideological differences. However, it should be emphasized that if the host country can furnish itself with knowledge, vision, institutions, and determination, it will be able to attract the most suitable investments/investors that could assist in its development process as well as monitoring their contribution. In theory, the host country's development strategy, its nature and goals, should determine, to a larger degree, the policies to be adopted towards (FDI) and multinational enterprises. Accordingly, the host government should possess a detailed knowledge regarding the country's development needs both from local and foreign sources. For foreign resources, the different sources (aid, technical assistance, (FDI), portfolio investments, etc.) should be studied and their costs and benefits assessed in order to target the most suitable resources/sources. Thus, it may be more appropriate to adopt a selective policy for attracting the most suitable foreign resources (FDI included) rather than implementing a general open-door policy based on providing incentives and benefits for all foreign inflows. Such a general policy may attract inappropriate foreign investors. That been said, (FDI) should also be envisaged and planned not only as flows of foreign resources but also as an instrument for developing the country's resource base and contributing to its structural transformation. In that context, the dynamic link between (FDI) and the Sudanese private sector is critical, so that (FDI) could contribute to developing/strengthening the envisaged leader of development (the local private sector) and not to crippling it further. For example, FDI as a provider of technology may serve as a step towards adapting technology by local firms, which should be followed by innovating and producing technology locally.

In general the national policy framework toward FDI includes among another elements, core policy measures such as the rules and the regulations regarding entry, the supplement policies and the government's stance on privatization in 2003 they changed the investment regulations by the ministry of investment. The 2003 investment encouragement act was amended in 2007 and 2013 and this amendment laws encouragement investment in the agricultural sector, in addition 2013 act targets the encouragement of investment in projects achieving objectives of the national strategy and development plans, investment initiations of Sudanese private sector, non-Sudanese cooperative sector, mixed, public, rehabilitation and extension of investment projects.

As result of these efforts, Sudan has witnessed the inflow of substantial amount of FDI since the early 1990 increasing from US\$12.3Million in 1990 to US\$2179 Million in 2013 with cumulative total of US\$ 32493.9 Million over the period (1990-2013).

According to the table (1) which cleared oil sector as the leading recipient sector of FDI, with share 52.07 percent of total inflow, during the period (1990-2013).FDI followed by industrial sector with share 23.38 percent. FDI followed by services sector with share 18.81percent.while the agriculture received only 5.74 percent of total inflows. We also observe that in the second half in 1990s witnessed substantial investment inflows, due to the primarily discovery of oil and the improvement in the business environment. After the comprehensive peace agreement, which was signed in 2005 to achieve great political stability, the FDI increased marked much more increasing. While in 2008, the size of FDI decreased due to international finance crisis. Also in 2011 and after that, the size of FDI has been decreasing due to secession of the south and the transformation of the companies working the field of oil in the South of Sudan.

(Table 1): Foreign direct investment in the Sudan contribution by economic sector (percentage),  
(1990-2013)

<b>Years/Sectors</b>	<b>Agricultural%</b>	<b>Industrial%</b>	<b>Services%</b>	<b>Oil%</b>
1990	-	100.00	-	-
1991	-	0.24	99.76	-
1992	-	7.64	92.36	-
1993	11.36	25.00	63.64	-
1994	48.39	12.10	35.89	3.63
1995	84.59	8.22	1.37	5.82
1996	9.32	12.29	51.69	26.69
1997	8.34	49.13	2.29	40.24
1998	3.93	5.61	2.41	88.05
1999	1.53	31.98	17.10	49.38
2000	0.05	3.83	11.99	84.13
2001	0.35	2.44	2.09	95.12
2002	0.14	9.12	5.19	85.55
2003	6.52	45.41	27.11	20.96
2004	0.26	25.43	8.34	65.96
2005	0.74	24.30	5.52	69.43
2006	0.76	6.02	0.54	92.68
2007	0.41	3.03	54.43	42.13
2008	9.77	6.85	0.46	82.92
2009	0.03	3.34	12.79	83.83
2010	0.03	43.71	17.15	39.11
2011	2.07	58.65	31.12	8.16
2012	11.14	44.75	41.20	2.91
2013	16.89	39.65	39.01	4.45
<b>TOTAL</b>	<b>5.74</b>	<b>23.38</b>	<b>18.81</b>	<b>52.07</b>

Source: Authors' calculations based on table (A-3)

Sudan suffered greatly of the problems and obstacles. That restricts the entry of FDI, such as deterioration of infrastructure and the lack of information, and instability of the security situations in many of states of the Sudan, so that the FDI is under the required level. Nevertheless, Sudan could be an attracting many FDI, these investments help in transferring technology and localization, developing Sudanese labor skills, opening new channels for marketing and exporting .Also help to achieve sufficiency of some commodities such as cement, iron and other.

It is clear that the FDI is under the required level, but it contributes to achieve the economic development in Sudan (Osman, 2013).

Most of the controversy around the role of (FDI) in developing countries seems to be derived from ideological differences. However, it should be emphasized that if the host country can furnish itself with knowledge, vision, institutions, and determination, it will be able to attract the most suitable investments/investors that could assist in its development process as well as monitoring their contribution. In theory, the host country's development strategy, its nature and goals, should determine, to a larger degree, the policies to be adopted towards (FDI) and multinational enterprises. Accordingly, the host government should possess a detailed knowledge regarding the country's development needs both from local and foreign sources. For foreign resources, the different sources (aid, technical assistance, (FDI), portfolio investments, etc.) should be studied and their costs and benefits assessed in order to target the most suitable resources/sources. Thus, it may be more appropriate to adopt a selective policy for attracting the most suitable foreign resources (FDI included) rather than implementing a general open-door policy based on providing incentives and benefits for all foreign inflows. Such a general policy may attract inappropriate foreign investors. That been said, (FDI) should also be envisaged and planned not only as flows of foreign resources but also as an instrument for developing the country's resource base and contributing to its structural transformation. In that context, the dynamic link between (FDI) and the Sudanese private sector is critical, so that (FDI) could contribute to developing/strengthening the envisaged leader of development (the local private sector) and not to crippling it further. For example, FDI as a provider of technology may serve as a step towards adapting technology by local firms, which should be followed by innovating and producing technology locally.

#### **4. THE RESEARCH METHODOLOGY AND EMPIRICAL RESULTS**

##### **4.1 Methodology**

In this section we specify the empirical model, outline the research methodology that will be adopted in the analysis , and report the empirical results .Our purpose is to investigate the important variables that affect the inflow of FDI in Sudan .The empirical model that will be used in the present paper takes the following general functional form.

$$FDI = F(\text{GRGDP}, \text{EX}, \text{TR}, \text{OP}, \text{OE}) \quad F_1, F_2, F_3, F_4, F_5 > 0(1)$$

Where:

FDI : Foreign direct investment

EX : Exchange rate (Sudanese pounds per US\$)

OP : Trade openness

GRGDP : Growth rate of real gross domestic product

OE : Oil exploration (dummy variable representing the beginning of oil production in 1999)

TR : Transportation and communication /RGDP

It is hypothesized that FDI is influenced by the exchange rate (EX), growth rate of real gross domestic product (GRGDP), transportation and communication (TR), oil exploration (as a dummy variable)(OE), and trade openness (OP). The effect of exchange rate on FDI is expected to be positive, since the depreciation of the host country's currency against the home country's currency is expected to increase the relative wealth of foreigner. This in turn, makes firms more able to acquire assets in the host country relatively cheaply, thereby increasing the attractiveness of the host country for FDI. Thus in summary, a depreciation of the host country's currency should increase the flow of FDI into the country.

Investment decision depend on a large extent , on provision of an adequate and reliable infrastructure services such as transportation and communication .The transportation and



The above results refer to, the relative stability in exchange rate, political stability, improves the business environment , economic liberalization through the period of the study and oil exploration all of this variables were played positive role to attractive of FDI in Sudan. Geographic location of Sudan, which makes it easily as a passage to other African countries and as one of the commercial and investment inlets of those countries, Availability of skilled and unskilled labor, encouragement foreign investors, is invested for re-exporting to markets at home or in third countries that mean a depreciation of the host country's currency might attract FDI. According to Chakrabarti (2001), a depreciation of the host country's currency might attract FDI for two reasons. First, a depreciation of the host country's currency renders the shares of the host country relatively cheap. Second, in cases where the FDI is invested for re-exporting to markets at home or in third country, a depreciation of the host country's currency will enhance the competitiveness of producing in the host country, thereby raising the investor's wealth. While the size of the market might be less influential or even insignificant when FDI is invested to exploit the host country solely as a production base to reap profits from the cost advantage of the that economy by exporting more competitively to markets at home or abroad.

The above results reveal that the estimated transportation and communication (TR ),exchange rate( EX), and oil exploration( OE), are the major determinants of FDI in the Sudan through the period (1990 –2013)while the growth rate of real gross domestic product(RGDP), and openness (OP),play insignificant role in effecting at FDI in Sudan through the period of study . This result supports the contention that improves the work environment and economic stability could have made significant positive effect in the inflow of FDI.

## **5. CONCLUSIONS AND RECOMMENDATIONS**

### **5.1 Conclusions**

The study aimed at examining the main factors that may have influenced FDI in Sudan. For this purpose, the Ordinary Least Squares (OLS) method is applied to annual time series data covering the period (1990-2013). The data were obtained from the Bank of Sudan, the Central Bureau of Statistic (CBC), and the Federal Ministry of Investment.

The regression results suggest that the transportation and communication (TR), exchange rate (EX), and oil exploration (OE), are the major determinants of FDI in Sudan. Also we observed that the growth rate of real gross domestic product (RGDP), and openness (OP),play insignificant role in effecting at FDI. This result supports the contention that improves the work environment and economic stability could have made significant positive effect in the inflow of FDI.

### **5.2 Recommendation**

The research recommends, keeping the stability of the exchange rate, to make concentration of energy sector, institutional reform and improving the infrastructure. Trade and financial openness should be also attractive for the FDI, concentration of FDI in the productive sectors such as the agricultural and the industrial sectors, facilitating procedures for the foreign investor and detrainning the FDI towards establishing of non-traditional project, which have not adversely effect in the existing projects in the host country

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## APPENDICES

**Table (A-1)**

Foreign direct investment (FDI), Real gross domestic product (RGDP), Transportation and communication (TR), Exchange rate (EX) .FDI "Millions of US\$" RGDP & TR" Millions of SDG"

Years	RGDP(1)	TR(2)	EX(3)	FDI(4)
1990	7.9	0.8	0.045	12.3
1991	8.5	1.1	0.045	82.5
1992	9.1	1.1	0.1	41.9
1993	9.5	1.2	0.1328	88
1994	9.6	1.2	0.218	248
1995	10.1	1.3	0.4	584
1996	11.3	1.2	1.2464	236
1997	11.9	1.2	1.5755	743
1998	12.9	1.2	1.9945	1247
1999	13.5	1.2	2.516	2023
2000	14.7	1.2	2.5714	392
2001	16.3	1.3	2.587	574
2002	17.1	1.3	2.6334	713
2003	18	1.7	2.6082	1350
2004	18.9	1.8	2.5826	1510
2005	20.1	2	2.4358	2300
2006	21.9	2.1	2.1715	3540
2007	22.9	2.3	2.0159	2440
2008	23.4	2.5	2.0913	2600
2009	24.9	2.7	2.3259	2900
2010	27.1	2.9	2.3051	2063.622
2011	27	2.8	2.7	2313.7
2012	27.3	3	4.409	2312.9
2013	28.1	3	5.695	2179

Sources:

Columns (1), (2): Central Bureau of Statistic

Column (3): Statistic Department, Bank of Sudan

Column (4): Ministry of Investment, Khartoum and Central Bank of Sudan

**Table (A-2)**

Foreign direct investment (FDI), Growth rate real gross domestic product (GRGDP), Transportation and communication Percentage real gross domestic product (TR), Trade openness (OP), Oil exploration (OE), FDI "million SDG"

Years	FDI(1)	GRGDP(2)	TR(3)	OP(4)	OE(5)
1990	0.5535	-5.5	10.13	8.43	0
1991	3.7125	7.5	12.94	4.78	0
1992	4.19	6.6	12.09	21.11	0
1993	11.6864	4.6	12.63	21.68	0
1994	54.064	1	12.50	25.67	0
1995	233.6	6	12.87	34.43	0
1996	294.1504	11.6	10.62	52.63	0
1997	1170.597	6.1	10.08	34.20	0
1998	2487.142	8.2	9.30	52.14	1
1999	5089.868	4.2	8.89	66.87	1
2000	1007.989	8.4	8.16	92.47	1
2001	1484.938	6.4	7.98	95.17	1
2002	1877.614	6.7	7.60	73.70	1
2003	3521.07	6.1	9.44	69.51	1
2004	3899.726	7.4	9.52	70.49	1
2005	5602.34	8.7	9.95	77.04	1
2006	7687.11	9.4	9.59	71.86	1
2007	4918.796	10.2	10.04	63.59	1
2008	5437.38	7.8	10.68	95.80	1
2009	6745.11	5.9	10.84	64.17	1
2010	4756.855	5.2	10.70	15.47	1
2011	6246.99	1.9	10.37	33.30	1
2012	10197.58	1.1	10.99	17.80	1
2013	12409.41	3.6	10.68	30.30	1

Sources: Column (1): own calculation based on column (3), (4) in table A-1

Column (2): Central Bureau of Statistic

Column (3): own calculation based on column (1), (2) in table A-1

Column (4): central Bank of Sudan

**Table (A-3)**

Foreign direct investment (millions of US\$) in Sudan by economic sector (1990-2013)

Years/Sector	Oil	Services	Industrial	Agricultural	Total
1990	0	0	12.3	0	12.3
1991	0	82.3	0.2	0	82.5
1992	0	38.7	3.2	0	41.9
1993	0	56	22	10	88
1994	9	89	30	120	248
1995	34	8	48	494	584
1996	63	122	29	22	236
1997	299	17	365	62	743
1998	1098	30	70	49	1247
1999	999	346	647	31	2023
2000	329.8	47	15	0.2	392
2001	546	12	14	2	574
2002	610	37	65	1	713
2003	283	366	613	88	1350
2004	996	126	384	4	1510
2005	1597	127	559	17	2300
2006	3281	19	213	27	3540
2007	1028	1328	74	10	2440
2008	2156	12	178	254	2600
2009	2431	371	97	1	2900
2010	807	354	902	0.622	2063.62
2011	188.7	720	1357	48	2313.7
2012	67.2	953	1035	257.7	2312.9
2013	97	850	864	368	2179
Total	16919.7	6111	7596.7	1866.52	32493.9

Source: Ministry of investment, Khartoum