Determinants of Foreign Direct Investment in Sudan during 2000-2006

A Dissertation Submitted in Partial Fulfilment of the Requirements of M.Sc. in Economics

By:

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مستخلص البحث

لا يوجد نص يمكن قراءته بشكل طبيعي من الصورة المقدمة.
التغيرات الأخرى المقصورة على النموذج وإجراء ثلاث مصادر وسعر الاقتصادي الإنتاج (معنويات، كانت جميع التغيرات فإن).

والسياسية الأمنية الجانب مثل الأخرى العوامل تأثير كان وقانونية وتشريعية وناء الإدارة وهو الثابتة المعزولة خلال ذلك وكبير إجابة والبى،

2006-2000 له.

أثبت وقد دراسة توصلت إلى الإنتاجي والأنماط هي السودان في الشارع الأجنبي الاستثمار الصفر وسعار الخارجية التجارة على الإنتاجي.

والسياسات التدابير اتخذت بضرورة وأوصت المنسرين منزيد الجذب على الإنتاجي التغييرات في ذلك أدوات الإنتاجية المستمرة والسودان الأوروبي.
ABSTRACT

Foreign Direct Investment is the acquisition of a lasting interest in enterprises operating outside of the economy of the country of the investor where an effective voice is held in the management of the enterprise. That is, a single foreign investor either owns 10 per cent or more of the ordinary shares or voting power of an enterprise. That only implies that direct investors are able to influence the management but they do not have absolute control over an enterprise. The FDI forms are equity capital, the reinvestment of earnings and the provision of long-term and short-term intra-company loans.

FDI differs from foreign portfolio investment as it is undertaken with the intention of exercising control over an enterprise.

The determinants of FDI include pull and push factors. Pull factors, on which our study focuses; include domestic market size, openness of the economy to foreign trade, infrastructure, exchange rate and economic stability as well as investment climate.

**The investment climate** is the set of location-specific factors shaping the opportunities and incentives for firms to productively invest, create jobs and to expand. It is a combination of surrounding circumstances under which investment process takes place such as political, economic, social, security, legal and administrative situations.

Average annual rate of FDI inflow to Sudan is 961 million Sudanese pounds (SDG) during 1992-2006. The maximum amount of FDI, SDG 5033 million, was in 2006. But the FDI minimum size was in 1991 and is 47.9 million pounds only.

FDI inflow to Sudan during the period 2000-2006 started to increase from year to the other. The FDI size increased from SDG 392 million in 2000 to

To test the main determinants of FDI inflow to Sudan, a regression model was formulated and the regression was run. The empirical results proved that the overall model is significant. However, the three variables domestic market size, infrastructure and economic stability are not significant for the existence of multi-collinearity problem. By excluding the three variables the model became significant.

The influence of the other factors such as security and political instability, legal and legislative conditions and administrative environment and procedural aspects is verified to be positive and very high. This was due to the policy measures taken by the concerned institutions during the 2000s.

The study concludes that the FDI determinants in Sudan are the Openness of the Economy to the Foreign Trade and the Exchange Rate. The economic policy measures should be taken to make these two economic variables work for attracting more foreign direct investors to boost the country growth and development.
CHAPTER ONE
INTRODUCTION

1.1. Preface:

In spite of the fact that Sudan owns great deal of natural resources, it is considered as poor country with low per capita income because its real GDP growth was low and negative in the previous years. The low economic growth rate greatly affects standards of living; since growth can provide the opportunity to use resources well. However, Sudan economy achieved a real GDP growth of about 6.0 percent in 2003, 7.3 percent in 2004, and 8 percent in 2005. That is because the economic policy has been directed to achieve sustainable economic growth and development.

But since early 1990s Sudan has made a turning-point decision in the country’s development strategy to build a market-oriented economy. The Government of Sudan, while attempting to mobilize all domestic resources, pursues the policy of deepening international economic relations to seek new opportunities for the country’s development.

Important efforts were exerted to attract foreign direct investors to contribute to the development of the country. Hence, several policies were set in economic, political, legal and administrative fields to attract inflow of foreign direct investment (FDI). FDI inflow offers the potential for the country to gain benefits such as new capital formation, technology transfer, employment creation, market access, and skill & management techniques.

As a result, the inflow of Foreign Direct Investment to Sudan, which was of negligible size in 1970s and 1980s, became increasingly sizable in 2000s. Its volume increased from 59.93, 47.87 and 309.16 million Sudanese pounds (SDG) in 1990, 1991 and 1992 to 1773.91, 3204.86 and SDG 5033.10 million in 2004, 2005 and 2006, consecutively.
"The United Nations Conference on Trade and Development (UNCTAD), FDI Report for 2006 about the investment in the world; classified Sudan as one of the countries having high investment potentials in the world although its performance is low as Nigeria, Jamaica and Zambia.

The report also rated Sudan among the best five African countries receiving FDI in the continent. Those countries are South Africa, Egypt, Nigeria, Morocco and Sudan.

The UNCTAD report put Sudan and Morocco in the second group (FDI size of 2 to 2.9 billion US$) and Egypt, South Africa and Nigeria in the first group (3 billion US$ and more).

The size of foreign direct investment inflow to Sudan increased from US$ 1349 million in 2003 to US$ 1511 million in 2004 and leaped to US$ 3532 million in 2006. This increase in FDI inflow improved Sudan international classification of the FDI receiving countries. Sudan position moved from the rank 114 and 112 in 1990 and 1995 at the world level to 63 and 44 in 2000 and 2002, respectively” (A. Rahim, B. Ibrahim 2007).

The study aims to investigate the factors and determinants behind this increase in FDI inflow to Sudan.

1. 2. Research Plan:

The study plan covers six sub- titles: the research problem, research hypotheses, importance of the study, objective of the study, research methodology and the organization of the study.

1. 2. 1 Research Problem:

In early 1990s, Sudan had drastically changed its economic and development policies. A market- oriented economic system has been adopted in order to mobilize the domestic resources and to attract foreign capitals. Pulling Foreign Direct Investment to Sudan was considered one of the policy
makers' priorities for development in the country.

These policies succeeded in attracting foreign investors from different places in the world to invest in Sudan in various economic fields, particularly in the oil sector. The study attempts to trace the impacts of these policies on the investment climate and FDI attraction to Sudan. At the same time it aims to verify which important determinants of FDI inflow to Sudan during 1990-2006 are?

1.2.2 Research Hypotheses:

According to data from Sudan’s official publications during the period 1990-2006, FDI inflow to Sudan almost tended to increase over years. Its size increased from 12, 35, 334 and 186 US million dollars in the years 1990, 1991, 1992 and 1993 respectively to 1349, 1511, 2304 and 3532 million US dollars during the period through 2003 to 2006. The study hypothesizes typical FDI determinants as follows:

- Market size, openness of the economy to the foreign trade and infrastructure play an important and positive role in FDI attraction.
- Exchange rate of domestic currency and overall stability in Sudan economy measured by inflation rate are both negatively related to FDI inflow to Sudan.

1.2.3 Importance of the Research:

The importance of the study is that: It attempts to verify the applicability of those hypothesized FDI determinants to Sudan economy. Hence, it helps to indicate the best policy measures for attracting and maintaining inflow of FDI to Sudan.
1. 2.4 Objective of the Research:

Foreign Direct Investment became very important for the development of less developed countries during the recent years. It provides the necessary funds for establishment of vital economic projects. FDI inflow to a given country depends on many factors. These factors are almost similar to each other in all developing countries and Sudan is not an exception. Therefore the study aims:

- To examine the direction of the relation between the FDI and the market size and the magnitude of this relation.
- To examine direction of the relation between FDI and the openness of the economy and the magnitude of this relation.
- To examine the direction of the relation between the FDI and the infrastructure (degree of development) and the magnitude of this relation.
- To examine the direction of the relation between the FDI and the exchange rate of domestic currency and the magnitude of this relation.
- To examine the direction of the relation between the FDI and the overall stability in Sudan economy measured by inflation rate and the magnitude of this relation.

1. 2.5 Research Methodology:

The study used qualitative and quantitative methods. While the qualitative method was used for the analysis of the investment climate in Sudan (Chapter Three), the quantitative method was applied for the estimation and testing of the FDI determinants.

Based on annual data of the Sudanese economy for the period 1990-2006, a linear relationship between the variables has been assumed using a time-series regression equation.

The signs of the coefficients indicate the directions of the relations, the t
& f – values show the magnitude of the direction of the relation, the parameter size reflects the relative importance of the economic variable, R- squared and R- adjusted reflect the explanatory power of the independent variables. Durbin - Watson (DW) indicates the existence and magnitude of auto-correlation.

The study employed a secondary data from Sudan’s official publications, journals, working papers, books, and other sources of secondary data such as the International Monetary Fund (IMF) and the World Bank (WB) publications.

For the test of the relation between the FDI inflow to Sudan and FDI determinants during (1990-2006), the model is formulated as follows:

\[
\text{FDI} = f(Y, \text{OP}(X+M/Y), I, EX, R) \quad (1)
\]
\[
\text{FDI} = a + b_1Y + b_2\text{OP} + b_3I + b_4EX + b_5R + U_i \quad (2)
\]

The equation includes the FDI as a dependent variable on the left-hand side and the other variables as explanatory (independent) on the right-hand side.

**Where:**
- \(Y\) ≡ Market size
- \(\text{OP} (X+ M/Y)\text{(Nachega, Thomson 2006)}\) ≡ Openness of the economy to the foreign trade
- \(I\) ≡ Infrastructure
- \(EX\) ≡ Exchange rate
- \(R\) ≡ Economic stability

**1. 2. 6 Organization of the Research:**

The study consists of five chapters. Chapter one is an introduction. Chapter two deals with the theoretical framework while chapter three reviews the investment climate in Sudan. The methodology, data analysis and empirical results will be discussed in chapter four. Chapter five concludes with the Summary of Study.
1.3 Limitations of the Research:

As with all empirical research in developing countries there are some limitations to this study mainly from unavailability of statistics on the basic variables. Due to relatively small sample size, a caution has to be exercised when interpreting the results.

Data published in official statistical reports show a lot of discrepancies raise the doubtful about its reliability. So that the results reached at might not be completely correct. This fact must be taken into consideration.

As much of the discussion on FDI in Sudan is, to the extent I checked, largely in the nature of reasoned speculation rather than conclusions based on an examination of facts and relevant data, it is expected that the findings of this study will provide a basis for future studies.
CHAPTER TWO
THEORETICAL FRAMEWORK

2.1 Preface:
This chapter tackles the FDI definitions and concepts as well as the previous studies. It also covers the theories on FDI. These theories range from the mainstream economic theories, internalization models to Dunning’s Eclectic Paradigm. Determinants of FDI are also discussed in this chapter.

2.2.1 Definitions and Concepts
International Monetary Fund (IMF) Balance of Payments Manual, Fifth Edition (BPM5) defines FDI as an investment made to acquire lasting interest in enterprises operating outside of the economy of the country of the investor. Further, in cases of FDI, the investor’s purpose is to gain an effective voice in the management of the enterprise. The foreign entity or group of associated entities that make the investment is termed the "direct investor". The unincorporated or incorporated enterprise- a branch or subsidiary, respectively, in which direct investment is made- is referred to as a "direct investment enterprise". Some degree of equity ownership is always considered to be associated with an effective voice in the management of an enterprise; the BPM5 suggests a threshold of 10 per cent of equity ownership to qualify an investor as a foreign direct investor.

Once a direct investment enterprise has been identified, it is necessary to define which capital flows between the enterprise and entities in other economies should be classified as FDI. Since the main feature of FDI is taken to be the lasting interest of a direct investor in an enterprise, only capital that is provided by the direct investor either directly or through other enterprises related to the investor should be classified as FDI. The forms of investment by the direct investor, which are classified as FDI, are equity capital, the
reinvestment of earnings and the provision of long-term and short-term intra-
company loans (between parent and affiliated enterprises).

The Organization for Economic Co-operation and Development (OECD) considered a direct investment enterprise as an incorporated or unincorporated enterprise in which a single foreign investor either owns 10 per cent or more of the ordinary shares or voting power. Or owns less than 10 per cent of the ordinary shares or voting power of an enterprise, yet still maintains an effective voice in management. An effective voice in management only implies that direct investors are able to influence the management of an enterprise and does not imply that they have absolute control (UNCTAD Report 2006).

The most important characteristic of FDI, which distinguishes it from foreign portfolio investment, is that it is undertaken with the intention of exercising control over an enterprise.

2.2 Differences between FDI and Foreign Portfolio Investment

Generally, there are four major different points between FDI and foreign portfolio investment.

1. FDI involves the transfer of non-financial assets, notably technology and intellectual capital, in addition to financial assets.
2. In the case of foreign portfolio investment, there is a change in ownership of the assets transferred; this is not so in the case of FDI.
3. FDI is more indivisible and less exchangeable than foreign portfolio investment, and is undertaken mainly by corporation, which control the use of the assets transferred, rather than by individuals and institutions, which exercise little control or influence over those assets.
4. Unlike foreign portfolio investment, which is primarily prompted by
higher foreign interest rates, FDI is motivated by opportunity of achieving a better economic performance than that currently earned by competitors. For this to be achieved, the investing firms need to have some comparative advantage, either prior to, or in consequence of, their foreign activities, over and above that possessed by their foreign rivals, and for this advantage to be transferable across national boundaries (Manh 2002).

2. 2. 3 Types of Foreign Direct Investment

FDI inflows into developing countries are divided into subgroups according to their characteristics. According to Manh, FDI could be divided into 4 groups as shown in table 1, hereunder:

Table (1): The main types of foreign direct investment

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<th>Natural resources seeking FDI</th>
<th>Market seeking FDI</th>
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<td>- Physical resources</td>
<td>- Domestic markets</td>
</tr>
<tr>
<td>- Human resources</td>
<td>- Adjacent (e.g. regional )markets</td>
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<table>
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<th>Efficiency –seeking FDI</th>
<th>Strategic (created) asset-seeking FDI</th>
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<tbody>
<tr>
<td>Rationalization of production to exploit economies of specialization and scope</td>
<td>To advance regional or global strategy</td>
</tr>
<tr>
<td>- Across value chains (i.e. product specialization)</td>
<td>To link into foreign networks of created assets</td>
</tr>
<tr>
<td>- Along value chains (i.e. process specialization)</td>
<td>- Technology</td>
</tr>
<tr>
<td>4. Strategic (created) asset-seeking FDI</td>
<td>- Organizational capabilities</td>
</tr>
<tr>
<td>To advance regional or global strategy</td>
<td>- Markets</td>
</tr>
</tbody>
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Mainly motives for initial foreign direct investment |
Mainly motives for sequential foreign direct investment.

In the first kind of FDI, foreign investors have the main motives to exploit the physical and human resources of the countries. In the second one, investors focus on seeking markets for their outputs, those may be domestic market or regional market. Market-seeking FDI aims to set up enterprises in a particular country to supply goods and services to the local market. This kind of FDI may be undertaken to sustain or protect existing markets or to exploit or promote new markets. The most frequently cited reason for market-seeking FDI is tariff barriers imposed by host country's government.

While the first two reasons represent the main motives for initial foreign direct investment, the latter two include the main modes of expansion by established foreign investors.

The efficiency-seeking foreign direct investments frequently target increasing the efficiency of regional or global corporation activities by integrating assets, production and market. The last type of FDI is called strategic asset-seeking investment whose main purpose is to acquire resources and capabilities that an investing firm believes will sustain or advance its core competence in regional or global markets.

In the 1960s and 1970s, most FDI was of the first or second type. There were only some efficiency seeking in Europe and Latin America, and a very small amount of strategic asset-seeking investment had been done by United States firms that invested in Europe. From 1980s onwards, FDI has been increasingly of the third and fourth type not only in developed countries but also in developing countries.

2. 2. 4 FDI Patterns

Vertical and horizontal FDI are the two opposite patterns that foreign investors use to expand their production activities. A vertical pattern arises when the multinational firm fragments the production process internationally,
locating each stage of production in the country where it can be done at the least cost. In contrast, a horizontal pattern occurs when the multinational enterprise produces the same product or service in multiple countries.

It is important to understand the difference between vertical and horizontal FDI because these two production strategies may have very different implications for the distribution of income both within and across countries. Vertical FDI may compress the skilled-nonskilled wage differential across countries as well as change the income distribution within countries. Horizontal FDI may increase incomes in each country with minor distributive impact (Manh 2002).

Vertical FDI involves sharing the vertical chain of production and repositioning part of the chain in a low cost location. Vertical FDI may encompass efficiency-seeking and raw material-seeking FDI. Different sophisticated component parts are produced in different countries in order to minimize cost of the production chain. In many other cases, vertical FDI also encompasses raw material seeking FDI since in a specific site, the cheap inputs could be primary commodities or raw materials. But other cheap inputs that may be sought (required) by vertical FDI include labour, intermediate goods in other specific places.

Vertical FDI is normally export-oriented. By and large, vertical FDI will be stimulated when different parts of the production process have different input requirements and input prices vary across countries.

Horizontal FDI is usually market seeking because it normally involves building duplicate plants in foreign locations to supply the market there. The motive is to reduce the cost involved in supplying the market such as tariffs or transportation costs or to become more competitive in other ways such as through closeness to the market and thus being able to respond to changing
local circumstances and preferences. Consequently horizontal FDI will tend to replace exports if the costs of market access through export are higher than the net costs of setting up a local plant and doing business in foreign market.

Foreign investors choose between vertical and horizontal production structures depending on country characteristics, such as relative size and relative endowment differences, as well as trade investment costs.

2.3 Theories on FDI:

To analyze and understand foreign direct investment, a theoretical framework is necessary. A number of theories have been developed to explain the level and pattern of FDI activity since the late 1950s, when the topic started to receive scholarly attention.

These theoretical frameworks range from the mainstream economic theories, internalization models to Dunning's eclectic paradigm. Therefore, in this section some of the leading theories used in explaining FDI will be briefly reviewed.

2.3.1. Product Cycle Theory:

It is a combination of Hymer’s theory of firm-specific advantage and neoclassical trade theory. The product cycle hypothesis focuses on the changes in the comparative advantages according to the stage of development of each economy.

The product cycle hypothesis states that each product undergoes three phases; innovation, maturity, and standardization. The duration of each phase varies very much from a product to another. Based on the comparative advantage arising from the pattern of factor endowments, initially a product was invented in the home country with comparative advantage in technology and innovatory capabilities, and produced for the home market in the home country near to both its innovatory activities and market. Consequently, the
product is entirely sold in the domestic market. In this phase, FDI does not appear. In the second stage of the product cycle, because of a favorable combination of innovation and production advantages offered by the home country, the product is exported to other countries. Gradually, the product becomes standardized or mature and labor becomes more important ingredient of production cost. Also in this phase, the need for feedback from market to the producer becomes less frequent, which allows increasing the distance between the market and plants. The attraction of placing value-adding activities in a foreign, rather than in a domestic, location increases. In this phase, FDI will flow from advanced to less advanced nations to seek for cheap labour cost, and thereby, for higher profit. Eventually, if conditions in the host country are suitable, the subsidiary could replace exports from the parent company or even export back to the home country.

The product cycle theory, however, did not explain why firms choose FDI rather than export or license their technology abroad. In other words, why such a case FDI is more profitable than other alternatives? The theory based on implicit assumption that the firms those developed their product on the home market would acquire plants in other countries with abundant unskilled labour rather than export or license their technology. However, FDI does not only take place between advanced countries and less developed ones but also between rich nations and somewhat similar market characteristics, with negligible technology gap, such as the U.S investing in European countries and vice versa.

Actually, the Product cycle theory is a story of location in the sense that it ignored the ownership matter of FDI activities. Notwithstanding, the theory still has profound implication in explaining FDI between the developed and less developed countries to a certain extent, and in explaining of the growth of
manufacturing exports to a large extent.

In spite of these shortages, the product cycle hypothesis was the first dynamic interpretation of the determinants of, and relationship between, international trade and foreign production. In 1992, Dickens (1992) has developed the Product cycle theory and divided the product life cycle into five phases. They are initial development, growth, maturity, decline and obsolescence, which seem to be in light of natural laws.

In the first period of product life cycle, the product is introduced with high research and development expense and other costs relating to the distribution network. The product in this phase is domestically consumed and foreign demand is met by export from time to time. In this phase, FDI is rarely seen, if not at zero level. In the second phase, the product becomes standardized and sales increase. Competitors in other developed countries are likely to emerge since they can sell the product at a lower price stemming from lower costs of distribution and/or production. Firms will react by opening subsidiaries in other developed countries to eliminate local competitors and to look for lower cost of production. Thus, FDI flow in this phase may be seen in other developed countries having their great demand for such products.

Economies of scale enable firms to reduce their cost of production, allowing exports to developing countries. In the third phase, the product fully acquires mass acceptance and the technology is fully standardized. Great utilization of skilled labour in this phase is no longer required, but instead, demand for semi-shifted from the advanced country to developing countries to reduce the production cost and thereby to seek for higher profit. In the two other phases, FDI might still occur in developing countries since firms wish to cover the cost of existing technology and to reap the remaining rents.
2.3.2 Theories of Market Imperfection and Industrial Organization

2.3.2-I Internalization Theory

The theory of internationalization was first expounded by Peter Buckley and Mark Casson (1976) and was elaborated on by Casson (1979). The theory is built on three basic propositions: 1. Firms maximize profit in a world of imperfect markets; 2. when markets in intermediate products are imperfect, there is an incentive to bypass them by creating internal market. This involves bringing under common ownership and control the activities that are linked by the market; 3. Internalization of market national boundaries generates Multinational Enterprises (MNEs). Buckley and Casson envisaged the firm as an internalized bundle of resources that can be allocated between product groups, and between national markets. Their theory states that firms will internalize transaction and some other kinds of costs rather than rely on external markets or in other words to avoid the costs of using market because of the existence of market imperfection. Thus, the reasons for FDI taking place were market imperfection and existing specific advantages of firms.

Claim of Peter Buckley and Mark Casson that MNEs are typically both vertically and horizontally integrated led them to formulate a model centred on the relationship between knowledge, market imperfection and the internalization of markets for intermediate goods. The scholars state that their theory provided a much more accurate and precise account of the origin of the attribute, or set of attributes, that give the MNE its advantages. They regard such advantages as the rewards for past investment in (i) research and development facilities which create an advantage in technological fields. (ii) the creation of an integrated team of skills, the rent from which is greater than the sum of the rewards to individuals, as such, are dispensable, (iii) the
creation of an information transmission network which allows the benefits of (i) and (ii) to be transmitted at low cost within the organization, but also protects such information, including knowledge of market conditions, from outsiders (Manh 2002).

One important achievement of the Internalization theory is its explanation why firms undertake FDI rather than export or license their technology.

2.3.2-II The Eclectic Theory or OLI Paradigm

The theory was built by J. Dunning and resulted from his dissatisfaction with existing theories of international production: the Hymer-Kindleberger approach, the product-cycle theory, and the internalization theory. Dunning synthesized the main elements of various explanations of FDI, and suggested three conditions all need to be present for a firm to have a strong motive to undertake direct investment abroad. These conditions have become known as the OLI framework: Ownership advantages (O), Location advantages (L), and Internalization advantages (I).

Firstly, a firm’s ownership advantage could be a product or a production process to which other firms do not have access, such as a patent or blueprint. This advantage could also be some specific intangible assets or capabilities such as technology, know-how, marketing and managerial skills, organization systems and access to intermediate or final goods markets, resources or other forms of income-generating assets which host country’s indigenous competitors do not hold. Basically, the ownership advantage presents some valuable market power or cost advantage on the firm sufficient to outweigh the disadvantages of doing business abroad.

Secondly, foreign market must offer a location advantage that makes it profitable to produce the product in the foreign country rather than simply produce it home and export it to the foreign market.
Location advantages consist of both resources endowments and economic-social factors, such as market size and structure, prospects for market growth and the degree of development, the legal, political and institutional environment, and government regulation and policies.

The location advantages certainly belong to the host country and significantly differ from country to country.

Finally, a trans-national company (TNC) must have an internalization advantage so that it will benefit from using internal markets instead of relying on external markets. In case the firm does not have I-advantages, it will license its technology to host country’s indigenous firm rather than investing abroad.

From Hymer’s seminal work to Dunning’s OLI paradigm, scholars have made great contributions to the theory of foreign direct investment. Among them, Dunning’s OLI framework has been the most ambitious and comprehensive explanation of FDI. It is very useful theoretical framework for the present study.

2.4 Previous Studies

In their study entitled "Locational Determinants of Foreign Direct Investment in an Emerging Market economy: Evidence from Turkey", Erdal and Tatoglu (2002) concluded that host country market size, openness of the economy to foreign trade, physical infrastructure of the host country, attractiveness of the host country market had positive effect, while exchange rate stability of domestic currency had negative effect on FDI in Turkey.

A paper on "Determinants of Foreign Direct Investment in India: An Empirical Analysis of Source Countries and Target Industries" by Venkataramany, University of Ashland, USA (2002). The study came up with a conclusion that change in GDP with a positive sign was an encouraging
factor for both the host and the source economies. Similarly, the change in inflation showed high significance on the inflow of direct investment. Other variables such as deposit and commercial interest rates terms of trade, change in exports and change in imports proved to be highly significant with exception of change in exports.

In his study "Foreign Direct Investment: Determinants, Trends, Inflow and Promotion Policies", Joong- Wan Cho (2004) outlined FDI determinants in economic conditions (Markets, Resources and Competitiveness), host country policies (Macro policies, Private sector, Trade & Industry and FDI policies) and Multi- national Enterprises -MNEs- (Risk perception, Location, sourcing, integration transfer).

Prof. Ali, A. Ali’s Paper on "Determinants of Foreign Direct Investment (2004)" confined FDI determinants in the host country market size, economic growth and per-capita income.

2. 5 FDI Determinants

The following table summarizes determinants of foreign direct investment in the developing countries and transitional economies.
Table (2): FDI Determinants

<table>
<thead>
<tr>
<th>economic conditions</th>
<th>• markets</th>
<th>Size; income levels; urbanization; stability and growth prospects; access to regional markets.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Resources</td>
<td>Natural resources; location.</td>
</tr>
<tr>
<td></td>
<td>• Competitiveness</td>
<td>Labour availability, cost, skills, trainability; managerial technical skills; access to inputs; physical infrastructure; supplier base; technology support.</td>
</tr>
<tr>
<td>Host country policies</td>
<td>• Macro policies</td>
<td>Management of crucial macro variables; ease of remittance; access to foreign exchange.</td>
</tr>
<tr>
<td></td>
<td>• Private sector</td>
<td>Promotion of private ownership; clear and stable policies; easy entry/exit policies; efficient financial markets; other support.</td>
</tr>
<tr>
<td></td>
<td>• Trade and industry</td>
<td>Trade strategy; regional integration and access to markets; ownership controls; competition policies; support for SMEs.</td>
</tr>
<tr>
<td></td>
<td>• FDI policies</td>
<td>Ease of entry; ownership, incentives; access to inputs; transparent and stable policies.</td>
</tr>
<tr>
<td>MNEs strategies</td>
<td>• Risk perception</td>
<td>Perceptions of country risk, based on political factors, macro management, labour markets, policy stability.</td>
</tr>
<tr>
<td></td>
<td>• Location, sourcing, Integration transfer,</td>
<td>Company strategies on location, sourcing of products/inputs, integration of affiliates, strategic alliances, training, technology</td>
</tr>
</tbody>
</table>

The Eclectic Theory of Dunning can be used satisfactory as a theoretical framework to assess the determinants of FDI. According to the Eclectic Theory, firms will undertake FDI not only because of home country's factors but also because of host country's factors. The determinants of FDI in a given country can be grouped in two categories: demand-side factors or "pull" factors and supply-side factors or "push" factors. The former belongs to the host country, which as a matter of fact is intimately related to L advantages, while the latter belong to the home country. In other words, "push" factors originate from Internalization and Ownership advantages. As far as the context of developing world is concerned, FDI policy should be more focused on "pull" factors rather than "push" factors.

2. 5.1 Push Factors

"Push" factors concern with the supply side of FDI and are usually determined by the nature and extent of enterprises' possession advantages and the incentive to internalize the use of their ownership. Advantages of enterprises are closely related to home countries' technological & innovative capabilities and the overall economic development levels.

Enterprises from developed countries with high technological & innovative capabilities and high overall economic development level possess not only more ownership advantages in general but also more ownership advantages in the forms of hi-technology, product differentiation, managerial skills and knowledge-based intangible assets in particular.

On the other hand, enterprises those come from developing countries have relatively lower technological and innovative capabilities and are at the mid-level of economic development, so their ownership advantages are relatively less and so concentrated in the forms of labor-intensive production technology. For enterprises to internalize the use of their ownership
advantages through FDI, due to incentives, depend on the nature of the ownership advantages and the degree of imperfections of the markets. In particular, the more technology intensive and the higher the imperfections of the markets, the stronger the incentive for enterprises to internalize the use of their ownership advantages through FDI and control operations.

In brief, enterprises from developed countries have greater incentives to internalize the use of their ownership advantages and a stronger tendency to secure control over the business than enterprises from developing countries.

2. 5. 2 Pull Factors

In terms of demand-side, "pull" factors are specific factors that the host country can provide to foreign investors so that in exploiting Internalization and Ownership advantages, the firms will find it more profitable than producing at home, export, or license their technology.

Because resources endowments are not evenly distributed among countries and social-economic factors as well as government policies are also different among countries, the attractiveness of host countries to FDI is different. In the sense of creating favourable conditions to attract FDI, "pull" factors can be seen as factors that determine FDI inflows and are likely to be the same factors that make countries more or less credit-worthy in international market. The 'pull' factors include following aspects:

2.5.2-I Size of the Host Market

The importance of market size as a location in the determination of the inflows of FDI is primary based on the theory of economies of scale. It argues that larger Economies can provide more opportunities to realize and explore economies of scale, to realize the specialization of productive factors and to absorb more efficiently the technology that the foreign investors desire to introduce.
There are three basic arguments for the importance of the market size as a location factor in attracting FDI inflows even within open economies. First, for domestic market-oriented FDI and FDI in non-tradable sectors, especially FDI in the service sector, domestic markets size is a very important determinant affecting the investment location decision. This kind of FDI in the world total FDI inflows and in the FDI inflows into developing countries has increased rapidly in recent years. Second, for export-oriented FDI in developing countries, domestic market size can still be important because larger economies can provide more opportunities for industries and enterprises to benefit from external economies of scale and spillover effects. This is especially important for high technology industries and those industries that have a relatively high requirement for well-trained skilled and semi-skilled labourers. Third, large economies not only can sustain more economic activities but also can provide more opportunities for economic diversification. This is very important for strategic-seeking conglomerates and diversification FDI.

2.5.2-II Development and Infrastructures of the Host Country

The degree of development of host countries is expected to be another important location determinant affecting FDI inflows. The state of the host country's infrastructures is proxy for the relative availability of specialized support services. The impacts of these factors on both horizontal and vertical FDI are positive. First, the supply of domestic entrepreneurship is generally assumed positively related to the degree of development of the country. This is important for attracting FDI inflows, particularly for FDI taking the form of joint ventures with local partners and for FDI with high technology and high requirements for skilled labourers. Second, a higher degree of development
also implies better conditions in local infrastructure, which is fundamental for attracting FDI inflows.

2. 5.2.III Factors Costs

Production cost-minimizing vertical FDI will be stimulated directly by lower factor cost FDI. The most important factor cost in determination of FDI flows is the wage rate, especially when FDI is export-oriented. It is necessary to note that a lower wage rate may also be accompanied by lower productivity, and therefore the "efficiency of wage" may not be low in a number of developing countries where wage rate is near to the ground. Factor costs also include numerous others such as electricity charge, water charge, telecommunication fee, transportation fee, and so on. If these factors are supplied with high cost and poor quality, the ambition of the host country to attract FDI may be very difficult.

2. 5.2.IV Openness to Foreign Trade

Openness as a location factor may have a different effect on the inflows of different kinds of FDI. On the one hand, horizontal FDI undertaken to get behind trade barriers (tariff-hoping) may decrease with an increase in openness, say, a decrease in tariffs.

On the other hand, a higher degree of openness of an economy not only indicates more economic linkages and activities with the rest of the world, but also indicates a more open and liberalized economic and trade regime. Consequently, it is expected to attract more FDI inflows, particularly vertical FDI, which requires substantial flows of intermediate input and goods in- and- out of the host country. Benefits from a liberal and predictable trade environment will increase with greater openness.

For foreign investors, the host country policies on the repatriation of profits and capital and access to foreign exchange for the import of
intermediaries, raw materials and technology are particularly important. The pattern of recent FDI flows supports the conclusion that liberal policies on technology, which tend to go hand in hand with policies that are more liberal, in general, serve to attract more and better foreign investments.

Ali A. Ali (2004) confined FDI determinants in:

1. Host country market size.
2. Host country economic growth
3. Per-capita income

2.6 Conclusion:

From the IMF and OECD definitions, FDI is an investment made to acquire lasting interest in enterprises operating outside of the economy of the country of the investor where he has an effective voice in the management of the enterprise. That is, when he either owns 10 per cent or more of the ordinary shares.

An effective voice only implies that direct investors are able to influence the management of an enterprise and does not imply their absolute control. The only capital that is provided by the direct investor should be classified as FDI. These forms are equity capital, the reinvestment of earnings and the provision of long-term and short-term intra-company loans.

FDI is undertaken with the intention of exercising control over an enterprise. It is the combination of both capital and management. FDI main types are natural resources seeking, market seeking, efficiency –seeking and strategic asset -seeking.

The main theories on Foreign Direct Investment are Product Cycle Theory and the theories of Market Imperfection and Industrial Organization.

The determinants of FDI can be grouped into two categories: demand-side factors and supply-side factors. The former usually prevails in the host
country while the latter are often found in the home country. In other words, push factors originate from Internalization and ownership advantages. Pull factors, on which our study focuses, include market size, openness of the economy, infrastructure, economic stability, investment climate, etc.

There are many previous studies on FDI determinants. Studies by Erdal and Tatoglu (2002), Venkataramany, Joong- Wan Cho and Ali, A. Ali, have taken in this study as an example. They are almost in consensus over the determinants of foreign direct investment.
CHAPTER THREE
INVESTMENT CLIMATE IN SUDAN

3.1 Preface:

The investment climate, in general, is the set of location-specific factors shaping the opportunities and incentives for firms to invest productively, create jobs and expand. Government policies and behaviours exert a strong influence through their impact on costs, risks and barriers to competition.

A good investment climate fosters productive private investment - the engine for growth and poverty reduction. It creates opportunities and jobs for people. It expands the variety of goods and services available and reduces their cost, to the benefit of consumers. It supports a sustainable source of tax revenues to fund other important social goals.

According to Arab Investment Guarantee Corporation (AIGC) investment climate "is a combination of surrounding circumstances under which investment process takes place. These circumstances can have positive or negative impacts on investment opportunities, mechanism and trends. These situations include political, economic, social, security, legal and administrative situations. These elements are usually treated by AIGC as overlapped and correlated. Some are permanent or almost permanent, but most of them have a changing nature, so they affect and be affected by each other; creating new situations- interactively or in falling a part- with different implications which will eventually be attracting or un-attracting to capitals" (Ali, A. Ali 2004).

3.2 Components of Investment Climate in Sudan

This part reviews factors of investment climate in Sudan. It consists of
political & security situations, economic & financial aspects, legal & legislative affairs, the infrastructure & administrative environment and procedural conditions.

According to the Ministry of Investment in Sudan, the following factors represent investment climate's components in Sudan

3.2.1 Political and security factors

Political and security stability considered as one of the prerequisites of FDI attraction.

Relations of a country with the international community and its role in the international order affect, to a great extent, capital inflows to that country. Since the country, from which the capital is transferred, will influence the directions of the investors to certain countries.

In Sudan, However, the situation is different. In spite of security and political instability and the sanctions the United States imposed on the country since early 1990, FDI remains inflow to Sudan.

Sudan adopted a number of reforms including signing of the Comprehensive Peace Agreement (CPA) in January 2005, Darfur Peace Agreement in May 2006 and the Eastern Sudan Peace Accord in October, 2006. Sudan also cooperated with the international community in terrorism combating. However, existence of Darfur problem hampered restoration of security and stability a matter that still renders investors hesitant to invest in Sudan.

Yet the relative political stability that Sudan witnessed during the elapsed years greatly contributed to the attraction of investments from Arab and foreign countries in the fields of oil, mines and services such as banks and transportation.

By adoption of Sudan to the interim constitution which guarantees
number of rights and establishes the political system, security and stability are expected to be restored. Hence, investors will be certain about the safety of their properties and investments.

3.2.2 Economic and Financial Situations

According to the generally accepted economic principles, Sudan economy witnessed during 1990s and the early 21st century crucial and comprehensive developments resulted in big changes in its structure and performance.

The basic features of these developments represented in the philosophy adopted by the Sudanese authorities since early 1990s for restructuring the economy to be market-oriented, encouraging personal initiatives, reducing government role in the economy and creating conducive atmosphere for the private sector to play its role in resources’ exploitation and mobilization of economic stagnation.

Accordingly, the government of Sudan adopted in 1992 economic liberalization policy which resulted in privatization of number of public institutions including the General Communications Corporation and many of industrial, agricultural and service enterprises and removal of monopoly by some public sector foundations over some economic activities e.g. trading in oil seeds, livestock marketing and others. These policies coincided with economic reform programmes in the fields of taxes, exchange rate and banking services. All these changes led to improvement in the economic performance.

The economic growth rates therefore increased from an average of 1% during 1980s to 6%, 8.3 % and 7.2 % in 1999, 2000 and 2004 respectively. The inflation rates dropped from about 120% to less than 9% during the
The improvement of economic performance also extended to cover a number of economic sectors especially productive sectors. The construction, buildings and roads, industrial and mining, agricultural and services sectors witnessed big growth and expansion. The government spending over the roads, electricity, water and transport sector altogether increased from 79,000, 110,000, and 120,000 Sudanese pounds in 1990, 1991 and 1992 to 190,000, 210,000 and 220,000 pounds in 2004, 2005 and 2006 respectively.

Financial and fiscal performance, which is reflected by the government budget, has achieved big positive development resulted in the increase of revenues from average of less than one billion dollars to 5 billion dollars in 2005. At the same time public budget deficit reduced to unprecedented level (1%).

Regarding the foreign sector, balance of payments registered remarkable improvement due to enhancement of trade balance. Sudan exports increased from about 500 million dollars during 1980s and early 1990s to 2.5 billion dollars in 2004. Synchronization of this increase with the inflows of foreign capitals contributed to the capital account improvement.

Data in the following table reflect some macroeconomic indicators explaining the economic conditions during the period covered by the study:
Table (3): Major Macroeconomic Indicators in Sudan (1990-2004)

<table>
<thead>
<tr>
<th>Indicator/ Year</th>
<th>Average 90-1999</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic growth rate</td>
<td>6%</td>
<td>8.3%</td>
<td>6.4%</td>
<td>6.5%</td>
<td>6.1%</td>
<td>7.2%</td>
</tr>
<tr>
<td>Inflation rate</td>
<td>80.5%</td>
<td>8.2%</td>
<td>4.9%</td>
<td>8.3%</td>
<td>7.4%</td>
<td>8.7%</td>
</tr>
<tr>
<td>Government balance</td>
<td>-2.1</td>
<td>-0.01</td>
<td>-0.02</td>
<td>-0.01</td>
<td>-0.01</td>
<td>-0.01</td>
</tr>
<tr>
<td>Balance of payments</td>
<td>-0.08</td>
<td>-0.01</td>
<td>-0.01</td>
<td>-0.01</td>
<td>-0.01</td>
<td>+ 0.01</td>
</tr>
<tr>
<td>Exchange rate ($/pound)</td>
<td>0.79</td>
<td>2.57</td>
<td>2.61</td>
<td>2.62</td>
<td>2.60</td>
<td>2.51</td>
</tr>
</tbody>
</table>


3.2.3 Legal and legislative guarantees:

The government of Sudan has adopted a number of legal and legislative reforms which greatly contributed to improvement of the legal environment. These reforms could be outlined in:

- Investment Encouragement Act (1995), replaced by another one in 1996, guarantees extra exemptions and concessions to investors. The act was also replaced by the 1999 act which in turn amended in 2000 and 2003.

These changes are not always preferable unless they are in the interests of the investors as continuous changes in investment legislations might send negative message to the investors that the investment environment is not healthy.

The act contains many advantages that protect assets of investors from confiscation and nationalization and ensure transference of their profits abroad at any time. The act also gives the right to investors to own projects’ assets including a piece of land on which an investment project is established.

Moreover, it grants investors exemptions from profit tax as well as custom duties for about 10 years.
Many reforms were also introduced to judicial and justice system ensuring fair filing of suits for the two parties in case of dispute.

The Investment Act guarantees the following basic advantages:

1. The strategic project (infrastructures’ projects) enjoys advantage of exemptions from corporate profit tax for a period not exceeding 10 years from commencement of commercial production or activities.
2. The non-strategic project enjoys advantage of exemptions from corporate profit tax for a period not exceeding 5 years from commencement of commercial production or activities.
3. Amendment of Taxation Act by reducing corporate profit tax and rebuilding of industrial sector from 30% to 10%.
4. Full exemption from custom duties for projects imports
5. A project is granted preferential advantages if it is characterized by any of the coming features:
   - I. less developed areas- oriented investment
   - II. helps in exports capacity development of the country
   - III. helps in realization of integrated rural development
   - IV. creates great labour opportunities
   - V. helps in promotion of scientific and technological research
   - VI. reinvests its profits
6. guarantees and facilities for movement of capital and remittance of profits
7. projects shall not be subjected to partially or wholly nationalization or confiscation
8. permission to open foreign currency account
9. permission to transfer savings of alien workers
3.2.4 The Infrastructures:

Lack of infrastructures is considered one of the most important negative features of investment climate in Sudan. There exist no effective network of roads, bridges and modern airports facilitating transportation of goods and people between different cites. Sudan also lacks energy necessary for production operations.

However, efforts are being exerted to improve situations of infrastructures such as the means of telecommunications and transport. The government of Sudan is trying to establish modern utilities providing the required services to cope with the prospective development at the wake of oil exploration and peace realization in Sudan.

These efforts include projects of roads, railways, sea and air ports, telecommunications, electricity stations, water purification, drainage network, etc.

Also there is a new orientation to enhance conditions of the exiting industrial cities besides establishment of new others equipped with all essential services and facilities to the investors. Efforts are also being exerted to create advanced banking and insurance sector, educational and health utilities to provide excellent services to the nationals and foreigners. Besides establishment of building and construction sector to help in providing commercial and residing estates satisfying requirements of foreign investors.

With the efforts being exerted for encouraging FDI inflows to Sudan, the government of Sudan established free trade zones in each of Sawakin and Al-Gaily areas. Act/law of these areas comprises the following concessions and advantages:

1. Full right of ownership
2. Full freedom for transference of capitals and profits
3. Removal of restrictions on foreign currency exchange
4. Full exemption from income tax for foreigners
5. Full tax exemption for the working companies for renewable 15 years
6. Full freedom for employing local and foreign labour.
7. Facilitating procedures of granting entry visa and residence.
8. The right to benefiting from the comparative advantages guaranteeing by the international agreements which government of Sudan signs with the remaining world countries.

Efforts of the government of Sudan to create conducive investment climate in the country encompass signing of a number of regional and international agreements include:

I. signing of a number of agreements with the neighbourliness in the fields of inter-trade and commercial protocols
II. joining of Sudan to the Organization of Common Market for East and South Africa (COMESA)
III. Sudan is endeavouring to join the World Trade Organization
IV. Sudan is seeking to join Arab Organization for Free Trade in 2007
V. Sudan consolidated cooperation relations with the regional and international institutions on the investment affairs.

3.2.5 Administrative environment and procedural aspects:

The administrative environment is considered as an important factor for investment attraction and development. It refers to the government organs responsible for investment affairs representing in determination of the required procedures for licensing establishment of an investment project, setting up investment maps and specification of projects and priorities of implementing them.

The bureaucratic procedures are deemed as one of the major impediments to the FDI flows to the Arab states. The first Conference on
Finance and Investment, which was held in Egypt in 2004, recommended development of Arab administration in order to attract foreign direct investment.

During the past few years, the government of Sudan was concerned over the administrative fields and the required measures for establishment of investment projects.

In affirmation to the state's concern on investment, the investment authority was upgraded to a ministry by issuance of the Republican Decree No. 24 for 2002.

The Ministry of Investment is responsible for formulating strategies, policies, goals and programmes aiming at development of local and foreign investments in Sudan.

The tasks of the ministry as determined by the said decree can be outlined in:

I. Setting up of strategies, policies and priorities of investment
II. Implementation of Investment Encouragement Act
III. Preparation of federal and state investment maps
IV. Enhancement of investment climate and facilitation of the related procedures
V. Development of investment promotion systems
VI. Monitoring and evaluation of implementation of investment policies
VII. Working for attraction of national and foreign investments
VIII. directing of investments to the projects of infrastructures
IX. any other tasks to be assigned to the ministry by the Council of Ministers to enhance the investment climate

The Ministry of Investment provides different services to investors among which the following are the most important:
I. Issuance of investment licenses through the One-Shop-Stop system in a very short period of time
II. Provision of necessary information to investors on investment prospects in Sudan
III. Providing the targeted parties with promotion materials
IV. Promoting investment in Sudan and strengthening economic relations with other nations through exchange of visits, delegations and participation in conferences, workshops and economic forums
V. Development of relations with international organizations, corporations and governments of other nations with the purpose to develop investment and to exchange information.
VI. Organization of symposiums and forums for investors to acquaint them with the advantages of investing in Sudan.

3.3 The Unified Outlet System (One-Stop-Shop):

The ministry implemented the unified outlet system by bringing together, in one place, all concerned government circles such as the Land Authority, Customs Authority, Tax Chambers, Commercial Registrar, and others to perform the following (Ministry of Investment Brochures):

1. Receiving license applications and project technical and economic feasibility studies
2. Issuance of initial approval following obtaining the agreement of the concerned technical committees
3. Issuance of a final license within 72 hours of receiving complete documents including concessions, exemptions, and facilities granted to the investors
4. Handing over the land required for the project establishment
5. Issuance of import licenses concerning the project's requirements in
accordance with a specified list of needs.

The establishment of Investment Ministry and introduction of the Unified Outlet System helped a lot in procedures' simplification comparing to the practices in the previous era.

This system saves many efforts and time that are to be taken to receive a license for a new investment project. But some hindrances are not yet removed due to lack of qualified and well-trained staff to implement the investment policies.

3.4 Conclusion:

The investment climate is the set of location-specific factors shaping the opportunities and incentives for firms to productively invest, create jobs and expand. It is a combination of surrounding circumstances under which investment process takes place such as political, economic, social, security, legal and administrative situations.

Since the Political and security stability constitutes one of the prerequisites of FDI influx, Sudan introduced political reforms include signing of peace agreements. It adopted many political measures to ensure respect of basic human rights. Furthermore, it boosted cooperation with the international community.

Sudan economy also witnessed, during 1990s and the early 21st century, crucial and comprehensive changes in its structure and performance such as adoption of economic liberalization policy. Thereby growth rates, inflation rates and exchange rate reflected positive trends and revenues increased. At the same time public budget deficit reduced to unprecedented level and foreign sector, balance of payments registered remarkable improvement due to enhancement of trade balance.

Regarding the legal and legislative reforms Sudan enacted Investment Encouragement Act. The act grants investors many advantages that enable
them to do their business activities and investments in a fear-free atmosphere. Many reforms were also introduced to judicial and justice system ensuring fair filing of suits for the two parties in case of dispute.

Efforts are being exerted to improve situations of infrastructures. These efforts include projects of roads, railways, sea and airports, telecommunications, electricity stations, water purification, drainage network, creation of advanced banking and insurance sector and establishment of free trade zones areas, etc.

Efforts of the government of Sudan to create conducive investment climate in the country encompass signing of a number of regional and international agreements. Sudan also joined many regional and international institutions. It is now endeavoring to join the World Trade Organization and at the same time seeking to be a member of Arab Free Trade Organization.

As administrative environment is an important factor for investment attraction and development, during the past few years, the government of Sudan was concerned over the administrative fields and the required measures for establishment of investment projects. Hence, the investment authority was upgraded to a ministry by issuance of the Republican Decree No. 24 for 2002.

The Ministry of Investment provides different services to investors such as issuance of investment licenses and provision of necessary information to investors about investment prospects in Sudan. It shoulders a responsibility for strengthening of economic relations with other nations.
CHAPTER FOUR
EMPIRICAL EVIDENCE ON DETERMINANTS OF FDI INFLOW TO SUDAN

4.1 Preface:

To test the determinants of foreign direct investment inflows to Sudan during (1990-2006), a multiple regression model has been formulated. The equation includes the FDI as a dependent variable and the size of domestic market (Y), openness of the economy to the foreign trade (OP), infrastructure of the country (I), exchange rate (EX) and economic stability (R) as explanatory variables.

The study in this empirical part adopted the model used by Erdal and Tatoglu in 2002. In their study entitled Locational Determinants of Foreign Direct Investment in an Emerging Market economy: Evidence from Turkey, Erdal and Tatoglu stated that "various market characteristics had been found to influence the inflow of FDI including market size and growth in market size. The Market size in conjunction with the growth prospects of the host country market are important 'pull' factors and theoretically positively related to the level of FDI flows. A large market size is conducive to increase the demand for the products and services provided by foreign investors. Moreover, a huge market size allows the attainment of economies of scale, and transaction costs are thought to be lower in countries with higher levels of economic development".

Trade and investment regime, the 'openness' of the host country, and the adequacy of the basic infrastructure in the host countries are some of the most important determinants of FDI. Host countries pursue FDI and external economic ties are expected to integrate more easily into global production and
trade patterns, and thus would be more attractive to foreign investors.

In an open economy, it is easier to import raw materials or some capital goods, which are necessary for the investment and also to export the finished goods. Thus the openness of the host country economy is expected to influence the FDI levels positively. Similarly, a foreign investor would prefer a host country with a good infrastructure, which will facilitate communication, transportation and distribution. Instable inflation rate is used as an ancillary variable to measure overall economic instability, which is expected to decrease the user return of capital in the host country economy and to affect the profitability of FDI negatively, so acting as a FDI deterrent.

In a similar manner exchange rate is expected to affect FDI inflows in so far as they affect a firm's cash flow, expected profitability and the attractiveness of domestic assets to foreign investors.

While previous literature on the subject has suggested several possible explanatory variables, the used model selected the most expected important factors in the case of Sudan. The regression has been run with data for the period 1990-2006. This chapter contains statistical analysis of the FDI and the main variables considered to be the basic factors affecting FDI in Sudan.

The first section of this chapter reviews the general trend of the main variables for the period covered by the study (1990-2006). In the second section a regression equation is suggested to express the relationship between FDI and the explanatory variables. Then the result of running the regression with the data for the period covered by the study will be discussed.
4.2 Data Compilation and Data Analysis:

4.2- I- Data Compilation:

Table (4): Data on FDI and its determinants during (1990-2006).

<table>
<thead>
<tr>
<th>Year</th>
<th>FDI</th>
<th>Y</th>
<th>OP</th>
<th>I</th>
<th>EX</th>
<th>R</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>59.93</td>
<td>6.69</td>
<td>980.14</td>
<td>7.95</td>
<td>4.99</td>
<td>67.0</td>
</tr>
<tr>
<td>1991</td>
<td>47.87</td>
<td>7.45</td>
<td>1847.22</td>
<td>11.04</td>
<td>8.83</td>
<td>122</td>
</tr>
<tr>
<td>1992</td>
<td>309.16</td>
<td>8.36</td>
<td>187.12</td>
<td>12.14</td>
<td>1.41</td>
<td>119</td>
</tr>
<tr>
<td>1993</td>
<td>259.66</td>
<td>9.00</td>
<td>211.11</td>
<td>13.00</td>
<td>1.40</td>
<td>101</td>
</tr>
<tr>
<td>1994</td>
<td>377.39</td>
<td>9.54</td>
<td>291.08</td>
<td>13.08</td>
<td>1.65</td>
<td>116</td>
</tr>
<tr>
<td>1995</td>
<td>496.57</td>
<td>9.97</td>
<td>221.50</td>
<td>13.86</td>
<td>1.27</td>
<td>69.0</td>
</tr>
<tr>
<td>1996</td>
<td>317.52</td>
<td>10.46</td>
<td>256.87</td>
<td>11.9</td>
<td>1.27</td>
<td>130</td>
</tr>
<tr>
<td>1997</td>
<td>541.51</td>
<td>9.97</td>
<td>263.17</td>
<td>11.7</td>
<td>1.31</td>
<td>47.0</td>
</tr>
<tr>
<td>1998</td>
<td>368.52</td>
<td>11.73</td>
<td>197.59</td>
<td>11.6</td>
<td>1.00</td>
<td>17.0</td>
</tr>
<tr>
<td>1999</td>
<td>338.18</td>
<td>12.43</td>
<td>149.71</td>
<td>12.1</td>
<td>0.91</td>
<td>16.0</td>
</tr>
<tr>
<td>2000</td>
<td>392.00</td>
<td>13.46</td>
<td>235.66</td>
<td>12.8</td>
<td>1.00</td>
<td>8.00</td>
</tr>
<tr>
<td>2001</td>
<td>619.92</td>
<td>14.28</td>
<td>302.37</td>
<td>15.4</td>
<td>1.08</td>
<td>5.00</td>
</tr>
<tr>
<td>2002</td>
<td>751.30</td>
<td>25.25</td>
<td>191.47</td>
<td>17.0</td>
<td>1.10</td>
<td>8.00</td>
</tr>
<tr>
<td>2003</td>
<td>1454.22</td>
<td>16.17</td>
<td>338.53</td>
<td>18.0</td>
<td>1.08</td>
<td>8.00</td>
</tr>
<tr>
<td>2004</td>
<td>1773.91</td>
<td>18.01</td>
<td>479.96</td>
<td>19.0</td>
<td>1.17</td>
<td>9.00</td>
</tr>
<tr>
<td>2005</td>
<td>3204.86</td>
<td>19.04</td>
<td>786.75</td>
<td>21.1</td>
<td>1.39</td>
<td>9.00</td>
</tr>
<tr>
<td>2006</td>
<td>5033.10</td>
<td>20.82</td>
<td>867.21</td>
<td>22.2</td>
<td>1.45</td>
<td>7.00</td>
</tr>
</tbody>
</table>

Source: Central Bank of Sudan annual reports, Central Bureau of Statistics, Ministry of Finance and Ministry of Investment. Values of FDI, Y and I are in million Sudanese pounds.

Note: I- The values of FDI, exports and imports have been changed to Sudanese Pounds by multiplying in the exchange rate counter value.

II- Where:

\( Y \equiv \text{Market size represented by Real GDP} \)

\( OP (X + M/Y) \equiv \text{Openness of the economy to the foreign trade} \)

\( I \equiv \text{Infrastructure} \)

\( EX \equiv \text{Exchange rate} \)

\( R \equiv \text{Economic instability} \)
Table (4) above demonstrates the data on the model's variables. The Net value of Foreign Direct Investment flow to Sudan during the period 1990-2006 has been taken from annual reports of the Central Bank of Sudan (CBOS) and the Ministry of Investment. The data on the domestic market size - proxied by the value of GDP and they were piled from the annual statistical book of the Central Bureau of Statistics (CBS). The data on infrastructure were also collected from CBS. But the source of exchange rate is annual reports of the International Monetary Fund.

Openness of the economy to the foreign trade included in the table is a summation of the volume of exports and imports divided by the real gross domestic product during the period covered by the study. All values of the variables are in Sudanese pound.

4. 2- II- Statistical Analysis:

The analysis in this part of the study starts with the statistics of the underlying time series of variables included in the model to be estimated. Statistics of the following six variables Net Inflow of Foreign Direct Investment to Sudan (FDI), Domestic Market Size (Y), Openness of the Economy to Foreign Trade (OP), Infrastructure (I), Exchange rate (EX) and Inflation Rate (R) is reported in table (5) below.
Table (5): Statistics of the variables (1990-2006)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Maximum</th>
<th>Minimum</th>
</tr>
</thead>
<tbody>
<tr>
<td>FDI</td>
<td>961</td>
<td>1309</td>
<td>5033</td>
<td>47.9</td>
</tr>
<tr>
<td>Y</td>
<td>13.10</td>
<td>5.19</td>
<td>25.25</td>
<td>6.69</td>
</tr>
<tr>
<td>OP</td>
<td>459</td>
<td>440</td>
<td>1847</td>
<td>149.71</td>
</tr>
<tr>
<td>I</td>
<td>14.35</td>
<td>3.86</td>
<td>22.20</td>
<td>7.95</td>
</tr>
<tr>
<td>EX</td>
<td>1.90</td>
<td>2.01</td>
<td>8.83</td>
<td>0.91</td>
</tr>
<tr>
<td>R</td>
<td>50.47</td>
<td>49.20</td>
<td>130</td>
<td>5.00</td>
</tr>
</tbody>
</table>

*Source: calculated from data on the variables contained in table (4).*

Table (5) above also indicates that the average annual value of FDI inflow to Sudan is 961 million Sudanese pounds with standard deviation 1309. The maximum amount of FDI entered Sudan was in 2006 and it was about 5033 million pounds. But the minimum size of FDI inflow was in 1991 and it was 47.9 million pounds.

It is obviously, as table (5) depicts, that the FDI rate of change during (1990-1999) was volatile and reflecting ups and downs manner. The average rate during this period was -10.5%.

But FDI inflow to Sudan during the period (2000-2006) tended to increase from year to the other with an increase from SDG 392 million in 2000 to 620 million Sudanese pounds in 2001. The amount of the foreign direct investment reached to SDG 1454 million in 2003 whereas it was only 751 million pounds in 2002 at a rate of increase registered 48 percent.

The volume of FDI inflow became SDG 1774 million in 2004 at a rate of 22% and it moved to 3205 million pounds in 2005 at an increase of 45%. Then jumped to 5033 million pounds in 2006 scoring the highest percentage of increase, 57% during the period of 2000s. The average rate of FDI increase
is found to be 33% during the period from 2000 to 2006.

With respect to the market size, represented by the real value of GDP, we found that its average size was about 13.10 with standard deviation 5.19. The maximum size of the domestic market was in 2002 and it was about 25.25 million pounds. Its minimum value was in 1990 when it was about 6.69 million pounds.

The average magnitude of openness of the economy to foreign trade, which is the summation of exports and imports divided by the real value of GDP, equals 459 with standard deviation 440. Its maximum value was 1847 million pounds in 1991 while its minimum value was 149.71 million pounds in 1999.

We also notice that the average size of the infrastructure, proxied by government spending on roads, electricity and communications, is 14.4 with standard deviation 3.9. The minimum spending was 8 million pounds in 1990 whereas the maximum size was 22.2 million pounds in 2006.

The exchange rate registered an average of 1.9 with standard deviation 2.0. The minimum rate of exchange is 90 piasters against one dollar in 1999 and maximum rate of 8.8 pounds per one dollar in 1991.

Economic stability, represented by the inflation rate, registered average value of about 50.5% and standard deviation of 49.2%. Its maximum rate of inflation was 130% in 1996 and the minimum was 5.0% in 2001. For more details see appendix (1).

4.3. The Model:

The general relationship between the dependent variable (FDI) and the explanatory variables (the size of domestic market Y, openness of the economy to the foreign trade OP, infrastructure of the host country I, exchange rate EX, and economic stability R) is expressed in the following regression equation.
FDI = f(Y, OP, I, EX, R) .................................................................(1)

Where:
FDI: represents the annual net inflow of Foreign Direct Investment to Sudan during 1990-2006.
Y: indicates the market size and is measured by the real gross domestic product (GDP).
OP: reflects openness of the economy to foreign trade and is computed by the ratio of the sum of exports and imports \((X+M)\) to real GDP \((Y)\).
That is \(X+M/Y\).
I: represents the infrastructure of the country and is approximated by the government investment expenditure on transport, energy (electricity) and telecommunication.
EX: points to the exchange rate of domestic currency and is measured by the amount of pounds exchanged for one US dollar.
R: denotes inflation rate and is used to represent the overall stability in the Sudan economy.

The existing literature suggests a positive relationship between FDI and each of Y, OP and I while assumes a negative relationship between FDI and each of EX and R.

Equation (2) below is used to specify the general function

\[ FDI = a + b_1Y + b_2OP + b_3I + b_4EX + b_5R + U_i \] …………………………………..(2)

Data on the variables are compiled from the sources of Central Bank of Sudan, Central Bureau of Statistics and Ministry of Investment on annual basis for the period (1990 – 2006). The run of the model with the data in table (4) gave the following results:

**4.4 Empirical Results:**
Depending on the E. Views programme, the model was run. Hereunder the results reached are given. As table (6) below shows, the model has been estimated by inclusion of all variables.
The results in Table (6) above suggest the following relationship between FDI, the dependent variable and its determinants, the explanatory/independent variables.

\[
FDI = -95 + 28Y + 6OP + 17I - 1331EX + 4R
\]

\[
(0.596) \quad (5.02)** \quad (0.202) \quad (4.63)** \quad (1.084)
\]

\[F\text{-statistic} = 32.73\]
\[D.W = 2.116\]
\[R\text{-squared} = 0.94\]
\[Adjusted\text{ R-squared} = 91\]

According to table (6) the overall model is significant (F-statistic 32.73). That is, all the variables could, as one bundle, be considered as determinants of FDI inflow to Sudan. But when taking the relation of the variables as individuals with FDI, we come up with the fact that Y, I and R are not significant, i.e. they could not be deemed as determinants of FDI inflow to Sudan.

---

1 (**): t- statistics indicates rejection of the null hypothesis that the variable is not a determinant of FDI at 1% significance level, i.e. at 99% degree of confidence level.
The signs of the variables are consistent with the theoretical backdrop and in line with the previous literature, the size of the domestic market is positively related to foreign direct investment inflows. The infrastructure, as the table (6) reflects, is also positively related to FDI. Its insignificance might result from the fact that the model takes the government expenditures on infrastructure to represent the importance of the variable to attraction of FDI. The value of government expenditures remained very small but the companies working in the oil sector spent much money for establishment of infrastructure to facilitate their tasks.

The empirical results suggest positive and semi-significant effect on FDI of economic stability (R), as measured by inflation rate. It can be accepted at 75% degree of confidence level.

The Openness of the economy to foreign trade (OP) is also, as the theory assumes, positively related to FDI and is significant.

Finally, exchange rate (EX) is proved to be negatively related to FDI in accordance with the theoretical assumption and is also significant.

The main reason of insignificance, as the empirical results revealed, is the existence of multi-collinearity problem between the explanatory variables. The following table (7) depicts this multi-collinearity.

<table>
<thead>
<tr>
<th>Table (7): Multi-collinearity &amp; Correlation Matrix</th>
</tr>
</thead>
<tbody>
<tr>
<td>FDI</td>
</tr>
<tr>
<td>1.00</td>
</tr>
<tr>
<td>1.00</td>
</tr>
<tr>
<td>1.00</td>
</tr>
<tr>
<td>1.00</td>
</tr>
<tr>
<td>1.00</td>
</tr>
</tbody>
</table>

Source: calculated from table (4).
As table (7) above presents, there is high multi-co-linearity between the domestic Market size "Y" and each of infrastructure "I" (0.84) and economic stability "R"(-0.73). A multi-co-linearity between openness of the economy to foreign trade "OP" and the Exchange Rate "EX" (0.89). Also multi-co-linearity found to be between the infrastructure "I" and the inflation rate "R" (-0.57).

To solve the problem, the three variables Y, I and R were excluded from the model. Accordingly, the study conducts a number of trials by dropping one variable from the model each time, repeatedly (i.e. omission of any one from Y, I and R interchangeably) to see the effect of its exclusion on the results of the model. All the attempts reflect the same result. That is, insignificance of the other two variables' results. The following tables show those trials.

As table (8) beneath reflects, the model has been estimated by including all the variables, except Y.
Table (8): Model Estimation by using all the variables, except Y

Dependent Variable: FDI
Method: Least Squares
Sample: 1990 2006
Included observations: 17

<table>
<thead>
<tr>
<th>Prob.</th>
<th>t-Statistic</th>
<th>Std. Error</th>
<th>Coefficient</th>
<th>Variable</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.7059</td>
<td>-0.386423</td>
<td>793.8599</td>
<td>-306.7659</td>
<td>C</td>
</tr>
<tr>
<td>0.0001</td>
<td>5.660410</td>
<td>1.007988</td>
<td>5.705628</td>
<td>OP</td>
</tr>
<tr>
<td>0.0002</td>
<td>-5.005438</td>
<td>241.5066</td>
<td>-1208.846</td>
<td>EX</td>
</tr>
<tr>
<td>0.4702</td>
<td>0.745623</td>
<td>2.426436</td>
<td>1.809207</td>
<td>R</td>
</tr>
<tr>
<td>0.2877</td>
<td>1.112434</td>
<td>53.5211</td>
<td>59.5388</td>
<td>I</td>
</tr>
</tbody>
</table>

961.5071 Mean dependent var 0.940800 R-squared
1309.886 S.D. dependent var 0.921066 Adjusted R-squared
14.89405 Akaike info criterion 368.0142 S.E. of regression
15.13911 Schwarz criterion 1625213 Sum squared resid
47.67552 F-statistic -121.5994 Log likelihood
0.00000 Prob(F-statistic) 2.033851 Durbin-Watson stat\n
Source: calculated from table (4).

FDI = - 307 + 6 OP + 60 I – 1209 EX + 1.8R
(5.66)** (1.11) (5.01)** (0.75)
Therefore, I and R are insignificant when taken with OP and EX.

Table (9): Model Estimation by using all the variables, except I

Dependent Variable: FDI
Method: Least Squares
Sample: 1990 2006
Included observations: 17

<table>
<thead>
<tr>
<th>Prob.</th>
<th>t-Statistic</th>
<th>Std. Error</th>
<th>Coefficient</th>
<th>Variable</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.9491</td>
<td>-0.065157</td>
<td>484.0941</td>
<td>-31.53950</td>
<td>C</td>
</tr>
<tr>
<td>0.2214</td>
<td>1.289988</td>
<td>28.92595</td>
<td>37.31414</td>
<td>Y</td>
</tr>
<tr>
<td>0.0000</td>
<td>10.19875</td>
<td>0.615386</td>
<td>6.276164</td>
<td>OP</td>
</tr>
<tr>
<td>0.0000</td>
<td>-0.020081</td>
<td>148.6749</td>
<td>-1341.060</td>
<td>EX</td>
</tr>
<tr>
<td>0.2451</td>
<td>1.222318</td>
<td>2.768338</td>
<td>3.383790</td>
<td>R</td>
</tr>
</tbody>
</table>

961.5071 Mean dependent var 0.942648 R-squared
1309.886 S.D. dependent var 0.923531 Adjusted R-squared
14.86233 Akaike info criterion 362.2243 S.E. of regression
15.10740 Schwarz criterion 1574478 Sum squared resid
49.30847 F-statistic -121.3298 Log likelihood
0.00000 Prob(F-statistic) 2.131568 Durbin-Watson stat

Source: calculated from table (4).
FDI = -35 + 6.28 OP + 37Y – 1341 EX + 3.38R
(10.2)** (1.3)  (9.02)** (1.22)

Hence, the two variables Y and R are not significant

**Table (10): Model Estimation using all variables, except (R)**

<table>
<thead>
<tr>
<th>Prob.</th>
<th>t-Statistic</th>
<th>Std. Error</th>
<th>Coefficient</th>
<th>Variable</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.8460</td>
<td>-0.198493</td>
<td>828.3348</td>
<td>-164.4186</td>
<td>C</td>
</tr>
<tr>
<td>0.9494</td>
<td>0.064842</td>
<td>35.22549</td>
<td>2.284080</td>
<td>Y</td>
</tr>
<tr>
<td>0.0002</td>
<td>5.325948</td>
<td>1.046295</td>
<td>5.572514</td>
<td>OP</td>
</tr>
<tr>
<td>0.4937</td>
<td>0.705936</td>
<td>74.36091</td>
<td>52.49408</td>
<td>I</td>
</tr>
<tr>
<td>0.0005</td>
<td>-4.769270</td>
<td>244.5027</td>
<td>-1166.100</td>
<td>EX</td>
</tr>
<tr>
<td>961.5071</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1309.886</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14.93899</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15.18405</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>45.44867</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.000000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Mean dependent var | 0.938079 | R-squared
S.D. dependent var | 0.917438 | Adjusted R-squared
Akaike info criterion | 376.3767 | S.E. of regression
Schwarz criterion | 1699913 | Sum squared resid
F-statistic | -121.9814 | Log likelihood
Prob(F-statistic) | 1.813627 | Durbin-Watson stat

Source: calculated from table (4).

FDI = -35 + 5.57 OP + 2.28Y – 1166 EX + 52.49I
(5.33)** (0.06) (4.77)** (0.71)

Thus, the two variables Y and I are not significant

Repeating the same experiments by omitting two variables from Y, I and R and using the other variable with the other two remaining variables of the model OP and EX, we come out with the same result that the variable is not significant. See appendices from 3 to 6, which illustrate the results.
Table (11): Model Estimation using the variables OP and EX

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>684.5398</td>
<td>135.8124</td>
<td>5.040334</td>
<td>0.0002</td>
</tr>
<tr>
<td>OP</td>
<td>6.370558</td>
<td>0.494570</td>
<td>12.88099</td>
<td>0.0000</td>
</tr>
<tr>
<td>EX</td>
<td>-1393.669</td>
<td>108.0797</td>
<td>-12.89482</td>
<td>0.0000</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.925900</td>
<td>Mean dependent var</td>
<td>961.5071</td>
<td></td>
</tr>
<tr>
<td>Adjusted R-squared</td>
<td>0.915314</td>
<td>S.D. dependent var</td>
<td>1309.886</td>
<td></td>
</tr>
<tr>
<td>S.E. of regression</td>
<td>381.1872</td>
<td>Akaike info criterion</td>
<td>14.88324</td>
<td></td>
</tr>
<tr>
<td>Sum squared resid</td>
<td>2034252</td>
<td>Schwarz criterion</td>
<td>15.03028</td>
<td></td>
</tr>
<tr>
<td>Log likelihood</td>
<td>-123.5076</td>
<td>F-statistic</td>
<td>87.46710</td>
<td></td>
</tr>
<tr>
<td>Durbin-Watson stat</td>
<td>1.859076</td>
<td>Prob(F-statistic)</td>
<td>0.000000</td>
<td></td>
</tr>
</tbody>
</table>

Source: calculated from table (4).

FDI = 685 + 6.37OP - 1393EX

(12.88)*** (12.89)***
F- statistic = 87.47
D.W = 1.86
R-squared = 93
Adjusted R-squared = 92

By dropping the variables caused the problem of multi-collinearity, as table (11) depicts, the model became very meaningful and having a robust fitness. The overall significance of the model changed to be very high (F-statistic = 87.47) at the degree of confidence approaches 100%. At the same time each one of the two variables (OP and ER) registered strong significance when it is taken as an individual determinant of the FDI inflow to Sudan.

As shown above, the values of R-squared and R-adjusted are 93 and 92, respectively which means that the independent variables explain the behaviour of the dependent variable with high degree.

The Openness of the economy to foreign trade (OP), as reflected by the table (11) above, is positively related to FDI and is highly significant. That is implementation of more liberal economic policies certainly attracted more foreign investments. As openness of the economy to free trade requires removing or decreasing the barriers to exports and imports, this would
facilitate the imports of raw materials or intermediate goods as well as the exports of finished goods.

Exchange rate is negatively related to FDI in accordance with the theoretical assumption and is robustly significant. Due to the empirical results, a decrease in the currency value against the dollar would encourage foreign investors to engage in FDI in Sudan whereas the increase will discourage inflow of FDI.

The influence of the other factors such as security and political instability, legal and legislative conditions and administrative environment and procedural aspects is positive and very high. That is, the value of $C$, the constant parameter is 685. This was due to the policy measures taken by the concerned institutions during the 2000s such as the Ministry of Investment and other concerned bodies. The Ministry of Investment adopted Investment Act that offers a number of facilities to investors, see chapter three for more details.

4.5 Conclusion:

The analysis indicates that the average annual value of FDI inflow to Sudan is 961 million Sudanese pounds with standard deviation 1309. The maximum amount of FDI entered Sudan was in 2006 and it was about 5033 million pounds. But the minimum size of FDI inflow was in 1991, which was 47.9 million pounds.

FDI inflow to Sudan during the period 2000-2006 tended to increase from year to the other. FDI size jumped from SDG 392 million in 2000 to 5033 million Sudanese pounds in 2006. Its average rate of increase during this period is 33%.

The average market size during the study period is about 13.10 with standard deviation 5.19. Its maximum size was in 2002 and it was about 25.25 million pounds whereas its minimum value was in 1990 when it was about
6.69 million pounds.

The average magnitude of openness of the economy to foreign trade was 459 with standard deviation 440. Its maximum value was 1847 million pounds in 1991 while its minimum value was 149.71 million pounds in 1999.

The average size of the infrastructure is 14.4 with standard deviation 3.9. The minimum spending is 8 million pounds in 1990 whereas the maximum size is 22.2 million pounds in 2006.

The average rate of exchange is 1.9 with standard deviation 2.0. The minimum rate of exchange is 90 piaster against one dollar in 1999 and maximum rate of 8.8 pounds per one dollar in 1991.

The average rate of inflation, represented economic stability was 50.5 with standard deviation of 49.2. The maximum rate of inflation was 130 in 1996 and the minimum was 5.0 in 2001.

The empirical results reflected that openness of the economy to foreign trade (OP) is positively related to FDI and is highly significant. That is implementation of more liberal economic policies certainly attracted more foreign investments.

The results also showed that the exchange rate is negatively related to FDI in accordance with the theoretical assumption and is robustly significant. A decrease in pound value against the dollar would encourage foreign investors to engage in FDI in Sudan.

The influence of the other factors such as security and political instability, legal and legislative conditions and administrative environment and procedural aspects is positive and very high. That is, the value of C, the constant parameter is 685. This was due to the policy measures taken by the country's authorities during the 2000s.
CHAPTER FIVE
Conclusion and Recommendations

5.1 General Conclusion:
The investment climate is the set of location-specific factors shaping the opportunities and incentives for firms to productively invest, create jobs and expands. It is a combination of surrounding circumstances under which investment process takes place such as political, economic, social, security, legal and administrative situations.

Since the Political and security stability constitutes one of the prerequisites of FDI influx, Sudan introduced political reforms include signing of peace agreements. It adopted many political measures to ensure respect of basic human rights. Furthermore, it boosted cooperation with the international community.

Sudan economy also witnessed, during 1990s and the early 21st century, crucial and comprehensive changes in its structure and performance such as adoption of economic liberalization policy. Thereby growth rates, inflation rates and exchange rate reflected positive trends and revenues increased. At the same time public budget deficit reduced to unprecedented level and foreign sector, balance of payments registered remarkable improvement due to enhancement of trade balance.

Regarding the legal and legislative reforms Sudan enacted Investment Encouragement Act. The act grants investors many advantages that enable them to do their business activities and investments in a fear-free atmosphere. Many reforms were also introduced to judicial and justice system ensuring fair filing of suits for the two parties in case of dispute.

Efforts are being exerted to improve situations of infrastructures. These efforts include projects of roads, railways, sea and airports,
telecommunications, electricity stations, water purification, drainage network, creation of advanced banking and insurance sector and establishment of free trade zones areas, ..etc.

Efforts of the government of Sudan to create conducive investment climate in the country encompass signing of a number of regional and international agreements. Sudan also joined many regional and international institutions. It is now endeavouring to join the World Trade Organization and at the same time seeking to be a member of Arab Free Trade Organization.

As administrative environment is an important factor for investment attraction and development, during the past few years, the government of Sudan was concerned over the administrative fields and the required measures for establishment of investment projects. Hence, the investment authority was upgraded to a ministry by issuance of the Republican Decree No. 24 for 2002.

The Ministry of Investment provides different services to investors such as issuance of investment licenses and provision of necessary information to investors about investment prospects in Sudan. It shoulders a responsibility for strengthening of economic relations with other nations.

The analysis indicates that the average annual value of FDI inflow to Sudan is 961 million Sudanese pounds with standard deviation 1309. The maximum amount of FDI entered Sudan was in 2006 and it was about 5033 million pounds. But the minimum size of FDI inflow was in 1991, which was 47.9 million pounds.

FDI inflow to Sudan during the period 2000-2006 tended to increase from year to the other. FDI size jumped from SDG 392 million in 2000 to 5033 million Sudanese pounds in 2006. Its average rate of increase during this period is 33%.

The average market size during the study period is about 13.10 with standard deviation 5.19. Its maximum size was in 2002 and it was about 25.25
million pounds whereas its minimum value was in 1990 when it was about 6.69 million pounds.

The average magnitude of openness of the economy to foreign trade was 459 with standard deviation 440. Its maximum value was 1847 million pounds in 1991 while its minimum value was 149.71 million pounds in 1999.

The average size of the infrastructure is 14.4 with standard deviation 3.9. The minimum spending is 8 million pounds in 1990 whereas the maximum size is 22.2 million pounds in 2006.

The average rate of exchange is 1.9 with standard deviation 2.0. The minimum rate of exchange is 90 piaster against one dollar in 1999 and maximum rate of 8.8 pounds per one dollar in 1991.

The average rate of inflation, represented economic stability was 50.5 with standard deviation of 49.2. The maximum rate of inflation was 130 in 1996 and the minimum was 5.0 in 2001.

The empirical results reflected that openness of the economy to foreign trade (OP) is positively related to FDI and is highly significant. That is implementation of more liberal economic policies certainly attracted more foreign investments.

The results also showed that the exchange rate is negatively related to FDI in accordance with the theoretical assumption and is robustly significant. A decrease in pound value against the dollar would encourage foreign investors to engage in FDI in Sudan.

The influence of the other factors such as security and political instability, legal and legislative conditions and administrative environment and procedural aspects is positive and very high. That is, the value of C, the constant parameter is 685. This was due to the policy measures taken by the country's authorities during the 2000s.
5.2 Recommendations

Implementation of rational liberal economic policies certainly attracted more foreign investments. As openness of the economy to free trade requires removing or decreasing the barriers to exports and imports, this would facilitate the imports of raw materials or intermediate goods as well as the exports of finished goods.

Due to the empirical results, a reduction in the local currency’s rate of exchange against the dollar would encourage foreign investors to engage in FDI in Sudan.

The implementation of liberalization process will increase inflows of foreign direct investment to Sudan. As we see from table 4, FDI increased from 60 million Sudanese pounds in 1990 to 309 million Sudanese pounds in 1992, the year in which the Sudanese government adopted the policy of the market-oriented economy.

To facilitate continuous increase in FDI, liberalization policies have to correspond with a free regime of exchange rate. There should not be any kind of intervention except in a case of market failure. The government should adopt economic policies help in building of confidence to the foreign investors. Investors are to be sure that their capitals will not be decayed by the fluctuations of the exchange rate due to intervention of the monetary authorities. Otherwise, they would not bet with their money.

The government has to accelerate the privatization programme and development of infrastructure projects by removing obstacles that slow down the process.

Attracting FDI of magnitude similar to that in other emerging markets depends largely on Sudan's ability to complete structural reforms in areas ranging from banking to agriculture.
### APPENDICES

#### Appendix (1)

**Correlation and Multi-co-linearity Matrix**

<table>
<thead>
<tr>
<th></th>
<th>E</th>
<th>FDI</th>
<th>I</th>
<th>OP</th>
<th>R</th>
<th>Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>1.900588</td>
<td>961.5071</td>
<td>14.34529</td>
<td>459.2624</td>
<td>50.47059</td>
<td>13.09588</td>
</tr>
<tr>
<td>Median</td>
<td>1.270000</td>
<td>392.0000</td>
<td>13.00000</td>
<td>263.1700</td>
<td>17.00000</td>
<td>11.73000</td>
</tr>
<tr>
<td>Maximum</td>
<td>8.830000</td>
<td>5033.100</td>
<td>22.20000</td>
<td>1847.220</td>
<td>130.0000</td>
<td>25.25000</td>
</tr>
<tr>
<td>Minimum</td>
<td>0.910000</td>
<td>47.87000</td>
<td>7.950000</td>
<td>149.7100</td>
<td>5.000000</td>
<td>6.690000</td>
</tr>
<tr>
<td>Std. Dev.</td>
<td>2.013205</td>
<td>1309.886</td>
<td>3.863150</td>
<td>439.9508</td>
<td>49.20000</td>
<td>5.192604</td>
</tr>
<tr>
<td>Skewness</td>
<td>2.815401</td>
<td>2.178491</td>
<td>0.648709</td>
<td>2.091904</td>
<td>0.532821</td>
<td>0.860804</td>
</tr>
<tr>
<td>Kurtosis</td>
<td>9.707244</td>
<td>6.838959</td>
<td>2.558547</td>
<td>6.846715</td>
<td>1.581846</td>
<td>2.849086</td>
</tr>
<tr>
<td>Jarque-Bera</td>
<td>54.32424</td>
<td>23.88564</td>
<td>1.330374</td>
<td>22.88020</td>
<td>2.228949</td>
<td>2.115586</td>
</tr>
<tr>
<td>Probability</td>
<td>0.000000</td>
<td>0.000007</td>
<td>0.514177</td>
<td>0.000011</td>
<td>0.328088</td>
<td>0.347221</td>
</tr>
</tbody>
</table>

Source: calculated from table (4).

#### Appendix (2)

<table>
<thead>
<tr>
<th></th>
<th>FDI</th>
<th>Y</th>
<th>OP</th>
<th>I</th>
<th>EX</th>
<th>R</th>
</tr>
</thead>
<tbody>
<tr>
<td>FDI</td>
<td>1.000000</td>
<td>0.659649</td>
<td>0.214067</td>
<td>0.871057</td>
<td>-0.218428</td>
<td>-0.476885</td>
</tr>
<tr>
<td>Y</td>
<td>0.659649</td>
<td>1.000000</td>
<td>-0.123392</td>
<td>0.839491</td>
<td>-0.418135</td>
<td>-0.725219</td>
</tr>
<tr>
<td>OP</td>
<td>0.214067</td>
<td>-0.123392</td>
<td>1.000000</td>
<td>0.011439</td>
<td>0.898989</td>
<td>0.191280</td>
</tr>
<tr>
<td>I</td>
<td>0.871057</td>
<td>0.839491</td>
<td>0.011439</td>
<td>1.000000</td>
<td>-0.381471</td>
<td>-0.570211</td>
</tr>
<tr>
<td>EX</td>
<td>-0.218428</td>
<td>-0.418135</td>
<td>0.898989</td>
<td>-0.381471</td>
<td>1.000000</td>
<td>0.436249</td>
</tr>
<tr>
<td>R</td>
<td>-0.476885</td>
<td>-0.725219</td>
<td>0.191280</td>
<td>-0.570211</td>
<td>0.436249</td>
<td>1.000000</td>
</tr>
</tbody>
</table>

Source: calculated from table (4).
Appendix (3)

model estimation using variables OP, EX and Y

Dependent Variable: FDI
Method: Least Squares
Sample: 1990 2006
Included observations: 17

<table>
<thead>
<tr>
<th>Prob.</th>
<th>t-Statistic</th>
<th>Std. Error</th>
<th>Coefficient</th>
<th>Variable</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.3594</td>
<td>0.950059</td>
<td>373.4905</td>
<td>354.8380</td>
<td>C</td>
</tr>
<tr>
<td>0.0000</td>
<td>9.943764</td>
<td>0.619605</td>
<td>6.161205</td>
<td>OP</td>
</tr>
<tr>
<td>0.0000</td>
<td>-8.801538</td>
<td>147.9208</td>
<td>-1301.9311</td>
<td>EX</td>
</tr>
<tr>
<td>0.4616</td>
<td>0.758723</td>
<td>25.31103</td>
<td>19.20407</td>
<td>Y</td>
</tr>
</tbody>
</table>

R-squared 0.935507  
Mean dependent var 961.5071
Adjusted R-squared 0.920624  
S.D. dependent var 1309.886
S.E. of regression 369.0433  
Akaike info criterion 14.86203
Sum squared resid 1770508  
Schwarz criterion 15.05808
Log likelihood -122.3272  
F-statistic 62.85771
Durbin-Watson stat 1.747193

Source: calculated from table (4).

Appendix (4)

model estimation using variables OP, EX and I

Dependent Variable: FDI
Method: Least Squares
Sample: 1990 2006
Included observations: 17

<table>
<thead>
<tr>
<th>Prob.</th>
<th>t-Statistic</th>
<th>Std. Error</th>
<th>Coefficient</th>
<th>Variable</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.8170</td>
<td>-0.236109</td>
<td>762.0624</td>
<td>-179.9299</td>
<td>C</td>
</tr>
<tr>
<td>0.0001</td>
<td>5.723829</td>
<td>0.970466</td>
<td>5.554779</td>
<td>OP</td>
</tr>
<tr>
<td>0.0002</td>
<td>-5.068065</td>
<td>229.4125</td>
<td>-1162.677</td>
<td>EX</td>
</tr>
<tr>
<td>0.3062</td>
<td>1.065125</td>
<td>52.36462</td>
<td>55.77486</td>
<td>I</td>
</tr>
</tbody>
</table>

Mean dependent var 961.5071  
R-squared 0.938057
S.D. dependent var 1309.886
S.E. of regression 361.6744  
Akaike info criterion 14.82169
Sum squared resid 1700508  
Schwarz criterion 15.01774
Log likelihood -121.9844  
Durbin-Watson stat 1.829964

Source: calculated from table (4).
Appendix (5)

model estimation using variables OP, EX and R

Dependent Variable: FDI
Method: Least Squares
Sample: 1990 2006
Included observations: 17

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>557.4744</td>
<td>164.7427</td>
<td>3.383910</td>
<td>0.0049</td>
</tr>
<tr>
<td>OP</td>
<td>6.641662</td>
<td>0.560058</td>
<td>11.85888</td>
<td>0.0000</td>
</tr>
<tr>
<td>EX</td>
<td>-1433.6061</td>
<td>33.5048</td>
<td>-10.73824</td>
<td>0.0000</td>
</tr>
<tr>
<td>R</td>
<td>1.554625</td>
<td>2.437586</td>
<td>-1.537772</td>
<td>0.5347</td>
</tr>
</tbody>
</table>

R-squared 0.934695    Mean dependent var 0.934695
Adjusted R-squared 0.916924
S.D. dependent var 1309.886
S.E. of regression 337.3607
Sum squared resid 502104.7
Schwarz criterion 15.07060
Log likelihood -122.4337
F-statistic 62.02173
Durbin-Watson stat 2.099280

Source: calculated from table (4).

Appendix (6)

model estimation using the two variables OP, EX

Dependent Variable: FDI
Method: Least Squares
Sample: 1990 2006
Included observations: 17

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>684.5398</td>
<td>135.8124</td>
<td>5.040334</td>
<td>0.0002</td>
</tr>
<tr>
<td>OP</td>
<td>6.370558</td>
<td>0.494570</td>
<td>12.88099</td>
<td>0.0000</td>
</tr>
<tr>
<td>EX</td>
<td>-1393.669</td>
<td>108.0797</td>
<td>-12.89482</td>
<td>0.0000</td>
</tr>
</tbody>
</table>
| R-squared            | 0.925900    | Mean dependent var 961.5071
| Adjusted R-squared   | 0.915314    | S.D. dependent var 1309.886
| S.E. of regression   | 381.1872    | Akaike info criterion 14.88324
| Sum squared resid     | 203425.2    | Schwarz criterion 15.03028
| Log likelihood        | -123.5076   | F-statistic 87.46710
| Durbin-Watson stat    | 1.859076    | Prob(F-statistic) 0.000000 |

Source: calculated from table (4).
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