Foreign Direct Investment and its relationship with Growth and Export in Ethiopia

By

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This is to certify that the thesis prepared by Endale Teshome Wodajo entitled: *Foreign Direct Investment and its relationship with Growth and Export in Ethiopia* and submitted in Partial Fulfillment of the Requirements for the Degree of Master of Arts in Regional and Local Development Studies complies with the regulations of the University and meets the accepted standards with respect to originality and quality.

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ABSTRACT

The main purpose of this study is to examine the relationship of FDI flow to Ethiopia with economic growth, export both at aggregate and sectoral level (manufacturing and agriculture).

A simple descriptive analysis, regression, causality, and correlation analysises techniques were employed. Data over 30 years (1981-2010) was used for regression and causality analysis. For sectoral level analysises data over 1993-2010 was used. The regression equation is modeled with RGDP as dependent variable and FDI stock/ flow entered as independent variable of interest with other control variables (domestic investment, labor force, total government expenditure, and inflation rate).

The largest share of FDI flow to Ethiopia is found to be in manufacturing sector which accounts about 52 % and the rest 22% and 26% goes to the agriculture and service sector respectively. Regionally, it is characterized by uneven distribution, though there is a differentiated incentive strategy to encourage investment in least developed regions. The long run regression result shows that FDI stock is found to be positively related to RGDP where as FDI flow is negatively related. In causality analysis, the Granger no causality test failed to reject the hypothesis that FDI stock does not granger causes RGDP. Conversely, the hypothesis that RGDP does not granger causes FDI stock is rejected at 5% significance level implying the direction of causality from economic growth to FDI stock. In case of aggregate export and FDI stock, the null hypothesis that both variable does not granger cause each other is rejected at 5% significance level implying bidirectional causality between the variables. In examining the relationship between sectoral FDI flow and sectoral export share as percentage of merchandise export, for agriculture it is found to be moderate where as for manufacturing it is quite low.

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List of abbreviations

ADF	Augmented Dickey - Fuller
AIC	Akaike Information Criterion
DI	Domestic Investment
EIA	Ethiopian Investment Agency
EX	Export
FDI	Foreign Direct Investment
FFDI	Flow of Foreign Direct Investment
FGM	Flying Geese Model
FPE	Final Prediction Error
GDP	Gross Domestic Product
HK	Hymer-Kinderberg
HQIC	Hanna–Quinn Information Criterion
IMF	International Monetary Fund
INF	Inflation rate
LF	Labor Force
LR	Likelihood Ratio
MNC	Multinational Corporations
MNE	Multinational Enterprises
NBE	National Bank of Ethiopia
OLI	Ownership, Location, and Internationalization
OLS	Ordinary Least Squares
PI	Portfolio Investment
RGDP	Real Gross Domestic Product
SAP	Structural Adjustment Programme
SBIS	Schwarz Bayesian Information Criterion
SFDI	Stock of Foreign Direct Investment

SNNP	South Nations and Nationalities and Peoples
TGE	Total Government Expenditure
TNC	Trans National Corporations
UNCTAD	United Nations Conference on Trade and Development
U.S.	United State
US$	United state Dollar
VAR	Vector Autoregressive
WDI	World Development Indicators
WIR	World Investment Report

Chapter One

Introduction

1.1. Background of the study

Since the mid-1980s, there has been a resurgence of Foreign Direct Investment (FDI). FDI has been directed by the Multinational Enterprise (MNE) into the economies of the developing world. The attitude of many developing countries towards the importance of (FDI) has changed remarkably and steps have been taken by these countries to ease restriction on their inflow. The benevolent policy towards FDI by these developing countries is the assumptions that FDI increases the country's output, productivity, and produces externalities and technology transfer (Damooei and Tavakoli, 2006).

Theoretically, FDI in the neoclassical growth model promote economic growth by increasing the volume of investment. In endogenous growth model, FDI raise economic growth by generating technological diffusion from developed countries to developing countries where lack of appropriate technologies and financial resource is hampering development (Borensztein, Gregorio & Lee, 1998).

Globally, beginning from the mid 1980s FDI has grown much faster than either trade or income. For instance, between 1985 and 1997 while worldwide nominal Gross Domestic Product (GDP) increased at a rate of 7.2 per cent per year, worldwide imports at 9.2 per cent, and the worldwide nominal inflows of FDI increased at 17.6 percent (Clark, Feldman, and Gerter, 2000).

According to the United Nations Conference on Trade and Development (UNCTAD) of 2005 world investment report, the average annual FDI flows to Africa doubled during the 1980s to 2.2 billion US$ compared to the 1970s, but increased significantly to 6.2

US$ Billion and $13.8 Billion respectively during the 1990s and 2000–2003. However, it is low compared to other developing regions. FDI inflows to the continent amounts to 36 Billion US$ in 2006, which was 20% higher than the previous record of $30 Billion in 2005 and twice the 2004 value of $18 Billion and rose to a historic value of $53 Billion in 2007 (UNCTAD, 2008). Moreover, recently (2009–2010) the trends of FDI flow to developing countries has been the main source of capital inflows with greater stability and productive investment. The total FDI inflow to these developing countries was 579 Billion US$ in 2005, this figure has increased to 1095 Billion US$ in the 2010, however, African share was 10 percent and the flow is characterized by uneven distribution among countries in the region (UNCTAD, 2011).

The total FDI inflows into Ethiopia have increased continuously from 135 Million US$ in 2000 up to 545 Million US$ in 2004. Since then up to 2007 the yearly FDI inflows have varied between 545 Million and 265 Million US$ (UNCTAD, 2008). According to World Investment Report (WIR) of 2011, Ethiopia is one among the developing countries receiving diversified FDIs. It has been categorized among countries receiving annual FDI ranging between 100 and 499 Million US$.

I academic and policy areas, the issue related to FDI is not only attracting a significant amount of foreign capital but also its likely impact on host economy. There has been a long debate in the literature on effect of foreign direct investment on host economy. The expected impact of FDI on the recipients countries remains more contentious in empirical than the theoretically leaving blind spots on FDI as a cure for development problem of developing countries. As result, in the recent literature attentions are diverted to the impact of FDI on host country/ recipient country.

1.2. Statement of the problem

Foreign Direct Investment (FDI) is considered as an option for financing development both in developed and developing countries. The vast body of literature asserts that FDI helps to promote economic growth through various channels. Precisely, three main channels can be detected through which FDI affects growth: increases capital accumulation, raises level of knowledge/ skills, and increases competition of firms in the host country. With these assumptions, developing countries are opting for policies to attract FDI to fill their development financing gap (Razafimahefa and Hamori, 2007).

Conversely, mixed empirical evidences are prevalent. Studies conducted in developing countries in particular are found to be contradicting with the above facts. FDI has an adverse effect on growth by crowding out domestic investment and hence affect economic growth negatively (Tang and Selvanathan, 2008). As a result, the role of FDI in promoting growth and curing development problems became controversial. Such conflicting evidence is not exception to Ethiopian economy. Besides, limited studies on effect of FDI on growth and macro variable such as export, recent empirical finding shows that FDI is negatively associated with economic growth (Wondoson, 2011).

In the case of examining whether FDI is stimulating export, most studies rely on aggregate data. This assumes that the effect of FDI same across all economic sectors which is unrealistic. The way FDI influences host economy depends on the sectors which FDI goes to and the linkages between the sector and the whole economy. In Ethiopian context, studies on sectoral export versus FDI are also scanty. Therefore, the

purpose of this study is to examine the relationships that FDI has with real gross domestic product and export both at aggregate and sectoral level.

Knowing the effect of FDI on overall economy and at sectoral level helps in holistic understanding of FDI benefit. Moreover, reason for sector specific variation in the FDI flows can be identified. This gives scope for necessary policy initiative in terms of attracting more FDI to sector which the country has a competitive advantage.

1.3. Objectives of the study

The study has one general objective and four specific objectives. Both objectives are indicated below.

1.3.1. General Objective

The general objective of this paper is to examine FDI with respect to growth and export in Ethiopian economy context.

1.3.2. Specific Objectives

The specific objectives of the study are:

- To analyze FDI flow to Ethiopia in terms of sectors, regional distribution, and employment opportunities.
- To examine the relationship between FDI and economic growth
- To examine the causal relationship between FDI and aggregate export
- To analyze the association between sectoral export and sectoral FDI

1.4. Hypothesis of the study

The relationship between FDI and the selected variables (economic growth and aggregate export) is hypothesized based on priori grounds of theories and empirical findings. Therefore the following hypothesizes are set to guide the study:

Hypothesis 1: FDI is positively related to economic growth and significantly affects economic growth measured in real gross domestic product.

Hypothesis 2: There is a causal relationship between FDI and real gross domestic product and the direction of causality is from FDI to real gross domestic product.

Hypothesis 3: There is a causal relationship between FDI and aggregate export; the direction of causality is from FDI to aggregate export.

Hypothesis 4: FDI flow to economic sectors (agriculture and manufacturing) is positively associated with respective sectoral export.

1.5. Significance of the study

This study examines the relationship between foreign investment and the main important macroeconomic variables (real gross domestic product and export). Given this, the significance of the study is threefold. Studies on effects of FDI on economic growth are scanty in Ethiopian context and hence it fills the literature gap particularly in country specific effects of FDI studies. Secondly, it brings evidence on the relationship of FDI both at aggregated level as well as at sectoral level. Policy makers can use this finding to look

at sectoral FDI policies; in which sector FDI are attracted and how is linked to the overall economy. Third, it would be a basis for academic researchers for further investigation.

1.6. Limitation of the study

The study is based on quantitative approach analysis. Due to lack of time and resource no attempt has made to complement the findings with qualitative data. Secondly, in analyzing the relationship between sectoral FDI flow and sectoral export due to lack of sufficient data we have used only correlation. As a result, robust analysis based on regression or causality analysis has not been made.

1.7. Scope of the study

This study is confined to the quantitative analysis of the relationship of FDI with the selected macroeconomic variable, namely: economic growth measured in real gross domestic product, export both at aggregate and sectoral level. Thus, the analysis does not go beyond this.

1.8. Organization of the paper

The paper is organized in to five chapters. Chapter one is the introductory parts of the paper; it includes the background, problem statement, objectives, hypothesis formulated, significance of the study, limitation, and scope. Chapter two is review of related literature and it has two parts: theoretical literature and empirical literature. Chapter three is about theoretical frame, methodology and data description. Chapter four is the empirical analysis; it is divided in to two the first part is the descriptive analysis and the second part is econometric analysis with model and causality relationship analysis. The final chapter is major findings and conclusions.

Chapter Two

Literature Review

Under this section, concepts, definitions, theories related to FDI, views on impact of FDI, role of FDI in economic growth and international trade have been reviewed. Finally, empirical literature including the case of Ethiopia has been discussed.

2.1 Concepts and definitions of FDI

Foreign direct investment (FDI) is defined as an investment involving a long-term relationship and control of a resident entity in one economy. FDI implies that the investor exerts a significant degree of influence and control over the management of the enterprise resident in the other economy. International Monitory Fund (IMF) defines foreign direct investment as "investment that is made to acquire a lasting interest in an enterprise operating in an economy other than that of the investor, the investor's purpose being to have an effective voice in the management of the enterprise" (IMF, 1977).

Similarly, UNCTAD (1999) defines FDI as "an investment involving a long term relationship and reflecting a lasting interest and control of a resident entity in one economy (foreign direct investor or parent enterprise) in an enterprise resident in an economy other than that of foreign direct investor. Further, FDI can be defined on a qualitative and quantitative basis. Qualitatively, it is about ownership and control. FDI is done by companies and individuals with the intent of having sufficient ownership to ensure a partial or total say on a lasting basis in the management of a corporate entity located in a foreign country. Quantitatively, it can be defined according to the nearly universally accepted definition of FDI, that is, the ownership of at least 10 percent of the common (voting)

stock of a business corporation operating in a country other than the one in which the investing company is headquartered (Cohen, 2006)

FDI is contrasted to Portfolio Investment (PI). PI occurs when an individual or financial institution (a mutual fund in most cases) buys a relatively small number of shares in a company located in another country. It occurs because of the expectation that those shares will appreciate in value and can be sold at a profit sometime in the future. In this case, the investor has no any influence over management decisions and no long-term commitment to the corporation (Ajami, 2006). In international business, FDI and Multinational Corporation (MNC) are two inextricably intertwined concepts but not perfect synonyms. They are subtly different aspects of the phenomenon of international business operations. FDI is a financial process associated with companies operating and controlling income-generating facilities in at least one country outside their country of origin. MNC is a tangible entity that in some way will impact a home country, which is where its main headquarters is located, and one or more host countries, the recipient of incoming FDI (Cohen, 2007).

According to Cohen (2007) the terms FDI and MNC share the problem of inexact definitions. Their definitions have been altered over the years and are likely to undergo further modifications in the future. Currently, at least FDI is defined in four ways:-

> *First, it is the corporate activity that confers the status of multinational on certain firms. It is what MNCs do to become MNCs. Second, FDI is a financial activity. It normally consists of an international capital flow from the home country to the host country for the purpose of acquiring partial or full ownership of a tangible business entity, such as a factory, extractive facility, or*

wholesale distribution system. As a branch of international finance, FDI has implications for the balance of payments of both home and host countries. Third, FDI is the generic term used to designate the economic policies toward MNCs and international investment flows maintained by governments and international organizations. Finally, FDI is the generic term used by official statistical agencies to measure in monetary terms the annual incoming and outgoing flow and the cumulative value, that is, the stock of inward direct investments, on a country-by-country basis.

The definition of MNE or Multinational Corporation (MNC) or Transitional Corporations (TNC) is not unique and there is no formal definition of a multinational corporation. Various definitions have been proposed based on different criteria However, the definition widely used in studies on FDI is the broaden definition of MNC as a firm which operates and controls income creation activities in more than one country (Ajami, 2006).

FDI inflows are combined by main three capital components. First is equity capital, which is the foreign direct investor's purchase of shares of an enterprise in a country other than its own. Second, reinvested earning which is the earning of the direct investor's share. Third, is an intra-company loan or intra-company debt transactions which involve borrowing and lending of funds between direct investors and affiliates enterprises (Jones and Wren, 2006)

2.2. Theoretical Review

2. 2.1. Neo classical Theories

Differential Rates of Return: The differential rate of return is the first attempt to explain FDI flows. According to this theory foreign direct investment is the result of capital flow from countries with low rates of return to countries with high rates of return. Firms consider and evaluate their investment decisions by equating expected marginal returns with marginal cost of capital in both abroad and at home country. Thus, rate of return is the only variable up on which investment decision are depend, Investors consider domestic and foreign direct investment to be perfect substitute assuming risk neutrality (Dunning and Rugman,1985)

This theory gained wide acceptance in the late 1950s when United States (U.S) foreign direct investment in manufacturing sector in Europe increased sharply. At that time, after tax, the rates of return of U.S. subsidiaries in manufacturing sector were consistently above the rate of return on U.S. domestic manufacturing. However, this relationship proved to be unstable. During the 1960s, U. S. foreign direct investment in Europe continued to rise, although rates of return for U.S. subsidiaries in Europe were below the rates of return on domestic manufacturing (Moosa, 2002)

There are certain aspects of foreign direct investment which cannot be explained by this theory. Since this theory postulates that capital flows from countries with low rates of return to countries with high rates of return, it assumes implicitly that there is a single rate of return across activities within a country. Therefore, this theory is not consistent with some countries experiencing simultaneously inflows and outflows of foreign direct investment.

Portfolio Diversification: - Portfolio diversification theory relaxes on the assumption of risk neutrality. Expected returns do not appear to provide an adequate explanation of foreign direct investment. The choices among various project by investors depends not only on rate of return but also risks. In choosing among the various available investment projects, a firm is presumably guided by both expected returns and the possibility of reducing risk. The idea behind this is that reducing risks through portfolios diversifications. Therefore, as the returns of activities in different countries are likely to have less than perfect, a firm reduces its overall risk by undertaking projects in more than one country (ibid).

The theory is an improvement over the differential rates of return theory by including the risk factor. In this case, it can accounts for countries experiencing simultaneously inflows and outflows of foreign direct investment. However, it cannot account for the observed differences in the propensities of different industries to invest abroad, that is, unable to explain why foreign direct investment is more concentrated in some industries than in others (Moosa, 2002).

2.2.2. Industrial Organization Theory

In neo classical theory, there is no any specific assumption about market imperfections or market failures. It was Hymer in 1960 for the first time pointed out that the structure of the markets and the specific characteristic of firms play a key role in explaining foreign direct investment. Moreover, distinction between FDI and portfolio investment has not been made (Bora, 2002). Stephen Hymer separated FDI from other foreign capital movement in 1960. According to the theory, the key concept which distinguishes FDI

from portfolio investment is the level of control over the production activities which gives the firm control over its investment (ibid).

The Hymer-Kindleberger (HK) theory addressed the question of why foreign multinational company is able to compete with indigenous firms in the host economy, given the various advantages of indigenous firms. The indigenous firm has knowledge of domestic market, consumer tastes, the legal and institutional framework of local business and customs. In contrary, foreign firms face costs of operating business such as the scarcity of the host country's information, difficulty in communication, fluctuation in exchange rates and sometimes discrimination from political instability when they enter a new business environment (Jones and Wren, 2006).

The theory states that the foreign firms must possess some compensating advantages which allow them to compete on equal terms with domestic firms. Foreign firms have advantages specific to their ownership in order to compete with domestic firms. These potential advantages include innovative, ownership of a brand name, the possession of special marketing skills, and access to patented or generally unavailable technology, favored access to sources of finance, team-specific managerial skills, plant economies of scale and economies of vertical integration. Thus, international production/ FDI/ arise due to the fact that it is difficult to sell these advantages. They cannot be sold because they are inherent in firms' managerial experiences and organizational capabilities (Moran, 1998). However, the theory could not explain certain aspect of FDI flows. While the existence of some firm-specific advantages explains why a foreign firm can compete successfully in the domestic market, such advantages do not explain why such competition must take the form of FDI. It over-emphasizes the role of structural market

failure and ignores the transaction-cost side of market failure. It also lack locational dimension and dynamic aspect to indicate what determines the timing of the foreign investment (Dunning, 2002)

2.2.3. Product Cycle Theory

This theory was developed by Vernon in 1966 focusing on an aspect that was not considered by Hymer. Hymer was not considered when and where the specific advantages of multinational enterprises would be exploited. This was explained by product life-cycle theory. According to the theory decision to locate production is not made by standard factor-cost or labour-cost analysis, but by a more complicated process (Jones and Wren, 2006).

According to Vernon, a product has a life cycle that has three main stages: product development, maturing product process, and standardized product. These stages have implications for the international location of firms. In the product development stages firms need to locate near to market, but as the product mature, the need for the product to be situated near to its market declines. This impacts the location decision of the firm, especially as the demand for the product is likely to grow in other countries. Firm will have to decide whether it is worth setting up production abroad. Thus, FDI results when firms react to losing markets as the product matures, by expanding overseas and capturing the remaining rents from development of the product.

The final stage is the extension of maturing of product where the standardization of the product reaches its peak and a final framework of the product is to be found. At this stage the low cost of labour in less-developed countries may provide an incentive for firms to reduce costs further and set up in these areas. As less-developed countries do not possess

a large industrial environment, the product should be of a highly standardized nature so that the inputs can be ordered with comparative ease. The product should be a small, high-value item with a high value-to-weight ratio. This argument may in turn apply to underdeveloped regions of developed countries.

The theory looks at a dynamic process of FDI in terms of why, when and where it occurs. Moreover, it was the first theory attempted to integrate a locational dimension of FDI. However, the theory was mainly concerned and intended to explain the expansion of U.S. multinational firms after World War II. This makes it lacking a truly international explanation.

2.2.4. Caves Theory

Caves developed a theory that distinguishes types of FDI in 1971. According to his theory, there are two types of firms that engage in FDI: horizontal and vertical FDIs. Horizontal FDI takes place when a firm enters into its own product market within a foreign country, whereas vertical FDI occurs when a firm enters into the product market at a different stage of production (Danning, 2002). Horizontal FDI firms will undertake if it either possesses a unique asset which others do not have or because of the adverse effects of tariffs on its exports. Both reasons are likely to result in FDI occurring in market structures characterized by oligopoly and product differentiation abroad. First, the asset must be a public good within the firm so that once provided the sunk cost has occurred and the firm's advantage can be used in other national markets, for instance, the possession of superior knowledge. This allows the firm to offset any informational disadvantages that compared with foreign local firms that will have accumulated knowledge on the social, economic and cultural factors in that market. Second, profits

made in the host country must depend upon production in that country, as this ensures that the firm has to locate abroad if it is going to be successful in production. The theory states that both characteristics will be found in a market with product differentiation so that the firm can move into these markets at minimum cost. In general, horizontal FDI is a feature of oligopolistic markets where products are differentiated (Caves, 2007).

Vertical FDI occurs when firms seek to avoid strategic uncertainty and put up entry barriers to prevent foreign firms from entering the market. It is argued by Caves that vertical FDI is more likely if profits in the foreign market are dependent on long-term prices and large investments size. These together ensure market structure that is characterized by a few suppliers. But, FDI is unlikely to occur when there is no technological complementarily between stages of production and competitive market (ibid).

2.2.5. Internalization Theory

Based on Coase's theory of firms, Buckley and Casson (1976) developed internalization theory. The theory examines the role that transaction costs play in the formation of organizations. Firm's internal procedures with certain transaction costs are better suited than the market to organize transactions. These transaction costs arose when strategic or opportunistic behavior is present among agents to exchange, the commodities or services traded are ambiguously defined, and contractual obligations extend in time. When these three conditions are present, enforcement and monitoring costs may become prohibitive. Under these circumstances, firms opt to internalize those transactions. Therefore, according to the theory the existence of FDI is as a result of firms replacing external

market transactions with internal transactions. FDI is seen as a way of avoiding imperfections in the markets for intermediate inputs.

Practically, modern businesses conduct many activities in addition to the routine production of goods and services. These activities include research and development, marketing, and training of labour which are interrelated. They are related by flows of intermediate products mostly in the form of knowledge and expertise. Yet, market imperfections make it difficult to price some types of intermediate products. For instance, it is hard to design and enforce contractual arrangements that prevent someone who has purchased or leased a technology such as computer software programme from passing it on to others without the knowledge of the original producer. This problem provides an incentive to bypass the market and keep the use of the technology within the firms. In general, according to the theory, firms turn away from sharing (or "externalizing") because they can get higher returns on their firm specific advantages by "internalizing" them (Johansson, 2009).

The main feature of this approach, therefore, is treating markets on the one hand, and firms on the other, as alternative modes of organizing production. It is the internalization of markets across national boundaries that give rise to the international enterprise, and hence foreign direct investment. This process continues until the benefits from further internalization are outweighed by the costs (administrative and communication expenses). The additional benefit of internalization is indicated in Agarwal (1980) which include avoidance of time lags, bargaining and buyer uncertainty, minimization of the impact of government intervention through transfer pricing, and the ability to use

discriminatory pricing. However, there are two problems; it is too general and no empirical content, second it cannot be tested (Moosa, 2002)

2.2.6. Location Theory

The Location theory is generally concerned with location specific advantages of production. It explains FDI in the context of the location specific factor differentials. Location theory explains about supply (cost factors) and demand (market factor) variables that affect the distribution processes of firms. The comparative advantage, the availability of raw materials, and transportation cost are main determinants in this theory. FDI exists because of immobility of these factors of production (Claudia, Kleinert, Lipponer, Toubal, Markusen, and Midelfart, 2005).

The theory's explanation for FDI can be discussed more by the following factors. First, the availability and cost of inputs can explain the existence of FDI. A firm considers the source of input and cost of production in order to choose the location. Thus, a firm investing abroad may be attracted by the availability of some inputs in another country, which are scarce at home, or by the lower cost of inputs abroad such as cheap labor cost. The lower labor costs can be the main reasons for FDI in developing countries (Jones and Wren, 2006).

Second, marketing factors are the main driving force that stimulates foreign firms to invest abroad. A firm can get many advantages by locating a production plant near the market. Firms can conduct business smoothly because of locating the firm abroad and hence can better exploit the local market. Furthermore, the production via the setting up of subsidiaries in a host country may be more accepted by the local people than direct exporting. Finally, FDI is stimulated by the existence of trade barriers. Subsidiaries of

foreign firms are often set up in another country that is not yet subject to trade restrictions. Then, the products are exported to those markets that have imposed restrictions on the exports of the investing country (ibid).

2.2.7. An Eclectic Theory

This theory integrates three strands of literature on foreign direct investment: the industrial organization theory, the internalization theory and the location theory (Dunning, 2000). According to this theory, there are three conditions that must be satisfied if firms to engage in FDI. First, the firm must have some ownership advantages with respect to other firms. These advantages usually arise from the possession of firm-specific intangible assets. Second, it must be more beneficial for the firms to use these advantages rather than to sell or lease them to other independent firms. Finally, it must be more profitable to use these advantages in combination with at least some factor inputs located abroad.

Thus, if FDI to take place, the firms must have ownership and internalization advantages, and a foreign country must have location advantages over the firms' home country. Dunning further divides these advantages into three groups. They are: (1) Ownership advantages, (2) Location advantages, and (3) Internalization advantages.

These three advantages constitute the famous OLI model. These advantages are: benefits the firm can obtain from its size, monopoly power and better resource capacity and usages; and benefits derived from the enterprise's ability of operation and management such as know-how, organizational and marketing systems.

There are two types of location advantages. The first type gained from attractions of special location advantages provided by the host country, such as cheaper labour forces

market for the product and the government's better policies. The second one is generated from the limitations of the home. The investors are forced to decide on direct investment abroad because they suffer from disadvantages in their own countries such as a small market for their products, lack of raw materials and higher production costs. Internalization advantages refer to the benefits that the firms can secure by using its ownership advantages internally between the parent company and its subsidiaries.

According to this theory, the importance and role played by O, L and I are different which determines the firms' choice of international trade or direct production abroad. Of the three advantages, ownership advantages are essential. There is no enterprise that can engage in FDI without any ownership advantages. However, if the firm has only ownership advantages without the other two advantages, it will benefit from licensing instead from FDI. If the firm has advantages of ownership and internalization but not location advantages, it will prefer to sell its products by exporting. In conclusion, FDI occurs only when a firm has all these three types of advantages. The combination of OLI not only makes the firm's FDI possible, but it also decides the firm's selection of FDI location for international production. The implication is that, countries with cheap labor costs and/or natural resources tend to have above average inward investment because of their locational attractions.

The theory asserts that all foreign direct investment can be explained by reference to the above conditions. Moreover, the advantages mentioned above are not likely to be uniformly spread among countries, industries, and enterprises, also they are likely to change over time. The flows of FDI to a particular country at a particular point in time depend on the ownership and internalization advantages of the country's firms and on the

locational advantages of the country at that point in time (ibid). However, one problem with this approach of FDI is that it draws no strong distinction between Greenfield and acquisition-FDI (Görg, Greenaway, and Kneller, 2005)

2.2.8. Other Hypothesis of FDI

In addition to the above main theories and paradigms, there are also hypotheses bout FDI. The main ones are: the internal financing hypothesis, the currency areas hypothesis (the effect of the exchange rate), and the Kojima hypothesis.

Internal financing: This refers to use profit generated by subsidiary to finance FDI expansion in countries were subsidiaries operate (Moosa, 2002). MNEs allocate only modest amounts of resources to their initial FDI and subsequent expansions of their activities were carried out by reinvesting local profits. Due to this, it has been postulated that there is a positive relationship between internal cash flows and the investment outlays of subsidiaries of multinational firms. This relationship is said to arise because the cost of internal funds is lower than the cost of external funds. The expansion of FDI seemed to be partly determined by the subsidiaries' internally generated funds. The hypothesis is appropriate for explaining FDI in developing countries owing to their restrictions on movements of funds of foreign firms and the underdevelopment of their financial and capital markets (ibid). Agarwal (1980) suggests that the internal financing hypothesis had some empirical support.

Currency area hypothesis: It is developed by Aliber in 1970 and postulates that the pattern of foreign direct investment could be best explained in terms of the relative strength of the various currencies. According to this hypothesis, the stronger the currency

of a certain country, the more the likely firms from that country would engage in foreign investment and less likely that foreign firm would invest in the domestic country. The argument is based on capital market relationship, exchange rate risks, and the market preference for holding assets in selected currencies (Dunning, 2002).

The key assumption of the hypothesis is the existence of a certain bias in the capital market. This bias is assumed to arise because an income stream located in a country with a weak currency has associated with a certain exchange risk. Investors, however, are less concerned with this exchange risk when a firm owns the income stream from a strong currency country than when owned by firms from a weak currency country. The hypothesis reflect the view that the strong currency firms might be more efficient in hedging the exchange risk or that the strong currency firms could provide the investors with a diversified portfolio at a lower cost than the investor could acquire on his own. Alternatively, investors might take into account exchange risk for a strong currency firm only if substantial portions of its earnings were firm foreign sources (ibid).

For any of these reasons, an income stream is capitalized at a higher rate by the market (has a higher price) when a strong currency firm than when owned by a weak currency firms owns it. As a result, firms from countries with strong currencies have an advantage in the capital market in acquiring this income stream. Strong currency countries, therefore, tend to be sources of foreign direct investment and weak currency countries tend to become host countries.

The Kojima Hypothesis: It was hypothesized by Kojima in 1973 based on the FDI out flow from Japan. He pointed out that the inability of the domestic firms in Japan compelled them to invest overseas. He observed that these firms were completed by the

more efficient local firms in the home country. This led the weaker firms find their way in some overseas countries. However, this hypothesis could not explain the expansion of business activities by the domestically competent firm overseas (Dunning, 2002).

2.3. Views on the Impact of FDI

There are two views on the impact of FDI on host economy: the benevolent model that argues for FDI and the malign model that argue against. These two alternative conceptualizations guide the understanding of the impact of FDI and its potential contribution to the economic development for the host economy.

The Benevolent Model of FDI and Development: This model assumes that FDI is more useful to the economies which are caught in the vicious circle of under-development. If the potential host economy is mired in poverty laden equilibrium with a vicious circle of poverty, FDI can break this circle by complementing local savings and supplying more effective management, marketing and technology to improve productivity. The gain in national income depends on the size of the capital flows and the elasticity of the demand for capital. Furthermore, technological and managerial inputs, transfers and spillovers to local firms may cause the nation's production function to shift upward. Thus, under competitive conditions (which the presence of foreign firms and FDI may enhance), FDI should raise efficiency, expand output and lead to higher economic growth in the host economy. The emphasis on the new resources that the foreign investors bring to remove the bottlenecks that deters the development process is a common theme among international business groups and multilateral agencies that urge greater acceptance of FDI in the developing countries (Moran, 1988).

The Malign Model of FDI and Development: The role of FDI in development has been doubtful for developing countries policy makers as well as in academic arena. There exists a long history of criticism of the MNEs. In the earlier stage, a few studies showed that foreign capital had a negative impact on the growth of the developing economies. The foreign firms made destructive impact on the host economy because they operated in industries where there were substantial barriers to entry and increasing market concentration (Moran, 1988). In this case, the foreign firms are found to lower the domestic savings and investment by extracting rent.

According to this model, foreign firms have a potential to drive out the local producers from business and substitute imported inputs. In such a situation, the foreign firms might not bridge the gap between domestic investment and foreign exchange. In addition, the repatriation of profit by these foreign firms drain out the capital from the host country. Moreover, the central argument of dependency theorist view of FDI is under this category (ibid).

2.4. Role of FDI in Growth and Employment creation

According to the neoclassical growth theory, long-run economic growth depends on technological progress and labor force growth, these are factors assumed to be exogenous. Under this assumption, FDI can only be expected to have a short-run effect on output growth. However, the development of endogenous growth theory came up with framework to analysis the relationship between DI and economic growth. FDI can be seen as a vehicle for industrial development and technological progress. It increases productivity and technological progress in a host country, FDI might therefore have positive impacts on economic growth. In developing countries like Ethiopia in particular,

a combination of advanced management skills and new technologies is likely to increase the efficiency of economy. Thus, FDI may be the main channel through which advanced technology is transferred to developing countries and hence affect economic growth positively (Neuhaus, 2005).

Contrary to the above argument for positive effect of FDI on economic growth, there is also debate on the possible adverse effects of FDI on economic growth. The debate has centered on the economic circumstances of the recipient economy. Human capital and the financial market development in the host country may influence the FDI effects. Borensztein, et *al* (1998) describes the importance of human capital in the host country. These authors suggest that the FDI effects on economic growth depend on the level of human capital available. Their empirical results indicate that the higher productivity of FDI holds only when the host country has a minimum threshold stock of human capital. If they are correct, FDI can only be expected to contribute to economic growth when the host economy has a sufficient capability to absorb advanced technologies. According to Alfaro, Chanda, Kalemli, and Sayek (2004) local financial market development matters for contribution of FDI to host country's economic growth.

Foreign Direct Investment affects employment in host country in two ways. It generates new employment (direct employment is higher in green filed investments) and creates jobs (indirectly) through forward and backward linkages with domestic firms. A number of studies have shown that MNEs pay higher wages than domestic firms even after controlling for firm and worker characteristics Lipsey (2002). Furthermore, the presence of multinationals generates wage spillovers: wages tended to be higher in industries and in regions that have a higher foreign presence (ibid).

2.5. Role of FDI in International Trade

The early model that link FDI with international trade is Flying Geese Model (FGM). This model was introduced into academia in the early 1960s. According to the model, labor costs and openness are the essential factors and hence there are shifts from high labour cost country to the lower labour cost country. The model implies that MNE subsidiaries increase the host country's export performance by using the host country's factor endowments to produce at lower cost. The increased export competitiveness of MNE subsidiaries directly enhances the recipient country's export supply capacity. Moreover, FDI also brings new technology, capital equipments and manufacturing expertise into the host countries which are behind in the availability and quality of factor endowment. Therefore, according to this model, spillover effects of FDI are likely to stimulate local firms' export ability which affects the overall export performance of the nation (Ros and Dutt, 2008).

The "factor-proportion hypothesis" of Markusen (1984) appears to predict that international trade and foreign investment are complements, as firms take advantage of factor price differences through cross-border vertical production integration. On the contrary, the "proximity-concentration hypothesis" suggests that greater transaction costs resulting from higher trade barriers and transportation cost lead to horizontal cross-border production expansion (horizontal FDI) and hence stimulates foreign direct investment. This implies that international trade is a substitute for international investment (United Nations, 2007).

According to the new trade theory the effect of FDI on host country's exports depends on foreign firm's circumstances. Foreign firms may resort to resources in host country and

search for exports to other countries or for the market of host country. The former is categorized under vertical FDI which is attracted by factor cost differentials and repelled by trade costs. The latter is horizontal FDI and is mainly market-seeking investment and aimed at penetrating the domestic market (Clark, Feldman, and Gerter, 2000).

2.5. Empirical Review

Empirical studies available in the literature comprises cross country and single country studies. We reviewed the empirical relationship of FDI with growth and export at macro level and economic sectors level. Finally, Ethiopian related empirical literatures have been discussed.

2.5.1. Impact of FDI: Macro level

At macro level empirical findings on the effect of FDI inflow on economic growth and export are mixed. The positive contribution of FDI to growth is argued for by many researchers. Li and Liu (2005) find that FDI has positive impact on economic growth of both developed and developing countries. In the analysis of comparison of FDI on economic growth between developed and developing countries, it is reported that in both cases FDI significantly and positively affects economic growth; however, the interaction of FDI with technology gap of the countries behaves differently implying the difference of technology and hence absorptive ability of nations. In sum, they concluded that there is a strong complementary connection between FDI and economic growth both in developing and developed countries.

The empirical analysis of Seetanah and Khadaroo (n.d) for 39 Sub-Saharan African countries over 1980 - 2000 revealed that FDI is an important element in explaining

economic performance of Sub Saharan African countries. Nevertheless, compared to the other types of capital it is lesser. Tang and Selvanathan (2008) investigated the causal link between foreign direct investment (FDI), domestic investment and economic growth in China for the period 1988-2003. The empirical result shows that there is single-directional causality from FDI to domestic investment and to economic growth.

Similarly, an emprical works of Magnus and Fosu (2008) for Ghanan economy indicated that the null hypothesis that FDI does not Granger cause GDP were not rejected, that is, there is a one way casual relationship between FDI and GDP growth in which the direction of causality is from FDI to GDP growth. Gohou and Soumare (2011) reported that FDI has a greater impact on welfare in poorer countries than it does in wealthier countries. For example, the relationship between FDI and poverty reduction is positive and significant for economic communities in central and east Africa, but not significant for northern and southern Africa.

On the other hand, some research work claim that the contribution of FDI to growth is not positive. For instance, Carkovic and Levine (2002) assert that FDI does not have a robust independent influence on growth based on their studies conducted for 75 countries. Similarly, the research work done by Mwlima (2003) does not support the importance of FDI in economic growth. He concluded that there is no real evidence that FDI brings development, noting that the aim of any MNE is to make profit and not to provide development.

For Sri Lanka, Athukorala (2003) tested the FDI-led growth hypothesis using time series data from 1959 to 2002. The result did not support the link between FDI and economic growth. In the same way, Nunnenkamp and Spatz (2003) claim that conclusive evidence

to support the view that developing countries should draw on FDI to promote economic development is hard to come by. They contend that results on the growth impact of FDI are ambiguous because of highly aggregated FDI data. This blur the differences between resource seeking, market-seeking and efficiency-seeking FDI and ignore the compatibility of different types of FDI with economic conditions of host country.

Serbu (2006) finds that FDI attraction to generate economic growth is not totally justified in central and eastern European countries. The empirical evidences obtained on a sample of Romanian companies, with or without foreign participation, contradict with the catalytic role of FDI contentions.

The works of Moss, Ramachandran and Shah (2005) on three African countries namely: Kenya, Tanzania and Uganda revealed that FDI has positive effect on export performance. It is reported that the percentage of export that is from MNEs is by far more than the one from local investors. The study conducted by Prasanna (2010) on impact of FDI on manufactured export performance in Indian shows that FDI is found to affect significantly and positively the Indian manufactured export performance during the study period.

The empirical finding of Njong (2008) indicated that FDI has significantly contributed to higher exports, through improvements in the supply capacity in Cameron. Miankhel, Thangavelu, and Kalirajan (2009) found the dynamic relationship between export, FDI and GDP for six emerging countries (Chile, India, Mexico, Malaysia, Pakistan and Thailand). Their empirical result suggests that in South Asia, there is evidence of an export led growth hypothesis.

2.5.2. Empirical literature: Sectoral level

Some research works asserts that the positive contribution of FDI to growth depends on factors in the host country. Alfaro (2003) finds that FDI flows into the different sectors of the economy (namely primary, manufacturing, and services) exert different effects on economic growth. According to his finding, FDI inflows into the primary sector tend to have a negative effect on growth, whereas FDI inflows in the manufacturing sector a positive. For service sector, it is ambiguous. Thus, the contribution of FDI depends on recipient sectors of economy. Similarly, Mathiyazhagan (2005) in India find that there is no relationship of FDI with gross output and export in core sectors of economy. But in same country, Chakraborty and Nnunenkamp (2007) showed that while FDI stocks and output are mutually reinforcing in the manufacturing sector, there is no causal relationship with the primary sector.

Recently, the study conducted by IMF (2011) on eastern central and southeastern Europe countries indicated that the impact of FDI on trade depends on whether the sectors are tradable or non tradable. In their study, the tradable sectors comprises : manufacturing, agriculture, mining, retail, hotels and restaurants and the non tradable sectors are construction, electricity, transport, communication, real estate, and financial intermediation. According to this research finding, FDI in tradable sector is positively associated with higher export implying that there is a positive correlation between stock of FDI going to these sectors and export performance of countries. On the other hand, their empirical finding shows that FDI in non tradable sector is positively associated with import. Both cross country and time series studies confirmed this link.

2.5.3. Empirical Studies in Ethiopian Case

Empirical studies on relationship of FDI with growth and export both at aggregate and sectoral level are few in number. Tagese (2001) analyzed foreign direct investment pattern and trends over the years 1992-2000. Getinet and Hirut (2006) studied the determinants of FDI using time series data. In the same way, Solomon (2008) analyzed determinants of FDI. These studies show only variables that affect attraction of FDI. Furthermore, at sectoral level only Weissleder (2009) that examined the trend of FDI flow to the agriculture sector.

Fikadu (2011) finds that foreign firms are more labor and export intensive than the domestic firms in Ethiopia. A recent study conducted by Wondoson (2011) on the impact of FDI on economic growth, indicated that FDI has negative influence on economic growth. A study on the relationship of FDI with export both at aggregate and sectoral level is untouched areas in Ethiopian context. Therefore, this study fills these gaps by looking at the relationship of FDI among these economic variables.

Chapter Three

Theoretical frame, Data, and Methods

3.1. Theoretical frame Work

In economic literature, the conventional wisdom posits capital formation as pre-requisites for economic growth and development. The present study concentrates on the impacts of foreign capital formation (FDI) on a host country's macro variables. In this vein, existing literature proposes several channels between FDI and economic growth as well as export supply capacity. These are shown in figure 1 below.

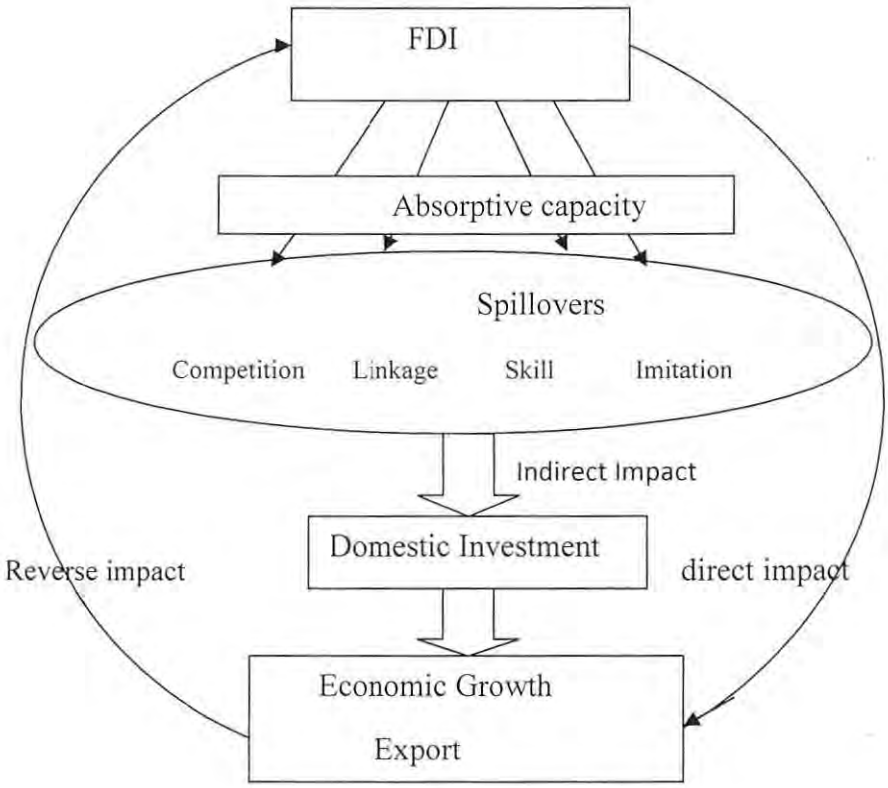


Figure 3.1: Schematic theoretical frame (Modified from Nowbutsing, n.d)

Figure 3.1 above, depicts the theoretical frame of FDI-growth and export nexus. The nature of the relationship is divided into three main impacts, namely: the direct impact, the indirect impact, and the reverse impact. The direct impact is shown by the arrow flowing directly from FDI to growth and export. In a conventional production function, Quantity (Q) is a function of capital (K) and Labor (L), this implies that FDI directly causes output through accumulation and increase in capital K. The direct impact of FDI is explained using the neoclassical growth model.

In fact, indentifying the direct impact only gives a partial understanding of the FDI-growth nexus. The new growth theorists reviewed to justify the importance of the indirect impact associated with FDI for host country. The indirect impact is shown in the figure by four arrows stemming from FDI to a through spillover indicated in ring. The four arrows represent four main channels of FDI spillovers, namely: competition; linkages, skills, and imitation. The spillovers imply the total spillovers generated by FDI, which is assumed to depend on the absorption capacity of host country. In the figure, the indirect impact is shown by the arrow moving from the spillovers to domestic investment and, finally, to export and economic growth.

Finally, the reverse impact is said to occur when economic growth leads to FDI (attraction of FDI as result economic growth of host country). The existence of reverse impact has been shown by studies that have investigated causality between FDI and economic growth.

3.2. Data source and type

The data used in this study is a time series/historical data/ and collected from different Sources: from Ethiopian Investment Agency (EIA), National Bank of Ethiopia (NBE),

and United Nations Conference on Trade and Development (UNCTAD) data base, and World Development Indicator (WDI).

Data on Foreign Direct Investment (FDI) was collected from two sources: UNCTAD data base and EIA. Domestic investment was derived from the gross domestic investment by subtracting FDI from gross investment. Exports of goods and labor are obtained from World Development Indicator (WDI) of the year 2011. Data on total government Expenditure, inflation rate, and real Gross domestic product (GDP) were collected from National Bank of Ethiopia. The length of the period is 1981 -2010 for regression and causality analysis. For correlation data over 1993-2010 has been used.

3.3. Model specifications

To analysis the relationship of FDI on growth, the conventional neoclassical production function was used.

$$Y = f(K, L) \quad \text{_____} \quad 1$$

Where, Y denotes real GDP, K = domestic capital measured by domestic investment and L= labor force

Foreign capital (FDI) is added as an additional variable. Furthermore, following an empirical study of (Graham, 2005) that has supported the export-led growth hypothesis, the variable export is introduced in the production function. This is done because export like FDI can result in a higher rate of technological innovation and dynamic learning from abroad. Thus, the functional relationships can be written as:

$$RGDP = F(DI, LF, DFI, EX, TGE, INF) \quad \text{_____} \quad 2$$

Where;

RGDP =Gross Domestic Product (GDP) in real terms

LF=labour force

DI =stock of domestic capital in real terms;

FDI= Foreign Direct Investment in stock / flow

EX= Exports in real terms

TGE = Total Government Expenditure

INF = Inflation rate

Assuming the production function is to be log-log:

$$lnRGDP_t = \alpha + \beta_1 \ lnDI + \beta_2 lnFDI_t + \beta_3 lnLF_t + \beta_4 \ lnEX_t + \beta_5 lnTGE_t + \beta_6 lnINF_t + \varepsilon_t \quad \text{_____3}$$

Where, t denotes time, α is constant term, and the *betas* are respective coefficients of the independent variables.

The effects of the independent variables on the dependent variable real gross domestic (lnRGDP) are expressed, via coefficient estimate, their signs and statistical significance. In the above model equation, the variable of interest is lnFDI and its coefficient.

Variable selection: Econometric analysis using regression model demands appropriate selection of variables. In any econometric modeling, the variables that are supposed to be included in the regression equation should have theoretical background and empirical justification for their selection. This avoids model specification error that affects the regression output and inferences. Accordingly, the rationales behind the inclusion of these variables are explained below.

Real Gross Domestic product (lnRGDP) and Foreign Direct Investment (lnFDI): These two variables are dependent and variable of interest respectively. The variables for FDI entered the model as stock and flow alternatively. It was measured in million US$.

Based on theoretical and empirical justifications it has been hypothesized that their relationship is expected to be positive.

Domestic Investment (lnDI): Domestic investment net of FDI and it was measured in million US$, as neo classical economic theory states economic growth is largely determined by domestic investment, even though there are also others factor that affects investment such as domestic saving. Thus, it affects economic growth positively and its coefficient is expected to be positive.

Export (lnEX): Export expansion can increase productivity, offering greater economies of scale. It alleviate foreign exchange constraints and can thereby provide greater access to international markets, it also captures the affects the international influence on economic growth, for instance similar to FDI, through export new technologies can be acquired, based on these assumption it is included in the model. The unit of measurement is in million US$

Total government expenditure (lnTGE): The variable total government consumption expenditure captures the effects of government role in economic growth and measured in million US$. Empirically, investigations of effects of government consumption turned out to have a negative impact on the growth rate. The underlying rationale is that public spending is supposed to be less productive than private (Neuhaus, 2006).

Inflation (INF): In economic literature the relationship between inflation and economic growth is negative; a higher volatility of inflation is harmful to the economy because it generally reflects a higher degree of macroeconomic instability. However, the empirical evidence is somewhat mixed.

Following regression model specification, models for causality analysis has been set to know the direction of causality.

In testing the causality of variables there are two approaches. The top - down and bottom up approaches. In the top-down approach, data generating processes of the different time series are independent of each other. This is a statistical approach that follows the proposals of Granger. The alternative top down strategy assumes that data generating processes are not independent. This approach is pursued in vector autoregressive (VAR) processes. This methodology goes back to Sims. While both approaches are employed to investigate the causal relationships between different time series data, the former is criticized for it incompatibility with economic theory as at least in principle all relevant variables of a system are treated jointly (Kinchagassner and Wolters, 2007).

In this study, the latter approach was employed for causality analysis. The Granger Wald test in the VAR model was used. The variables included in the VAR model are: stock of FDI, RGDP, and an aggregate export.

Thus, for RGDP and SFDI the following equations were set

$$\ln RGDP = \beta_0 + \beta_1 \ln RGDP_{t-1} + \beta_1 \ln RGDP_{t-p} + \alpha_1 \ln SFDI_{t-1} + \alpha_2 \ln SFDI_{t-p} + \varepsilon_t \quad (4)$$

$$\ln SFDI = \beta_0 + \beta_1 \ln SFDI_{t-1} + \beta_1 \ln SFDI_{t-p} + \alpha_1 \ln RGDP_{t-1} + \alpha_2 \ln RGDPI_{t-p} + \varepsilon_t \quad (5)$$

Where, t denotes observation period and P is optimal lag length.

From the above equation, the following null and alternative hypothesizes was tested for causal relationship of real gross domestic product and stock of FDI;

H0: $\alpha_1 = \alpha_2 = 0$ against H_1: $\alpha_1 \neq \alpha_2 \neq 0$

Similarly, for lnSFDI and lnEX

$$\ln SFDI = \beta_0 + \beta_1 \ln SFDI_{t-1} + \beta_1 \ln SFDI_{t-p} + b_1 \ln EX_{t-1} + b_2 \ln EX_{t-p} + \varepsilon_t \quad (6)$$

$$\ln EX = \beta_0 + \beta_1 \ln EX_{t-1} + \beta_1 \ln EXP_{t-p} + b_1 \ln SFDI_{t-1} + b_2 \ln SFDI_{t-p} + \varepsilon_t \quad (7)$$

From equations 6 and 7, the following null and alternative hypothesis was tested for causal relationship of aggregate export and stock of FDI;

Ho: $b_1 = b_2 = 0$ against H_1: $b_1 \neq b_2 \neq 0$

Granger causality from one variable to other variable is established if the null hypothesis of the asymptotic chi-square (x^2) test is rejected.

3.4. Methods of analysis

The methods of analysis employed were descriptive and inferential analysis based on log-log regression model, causality analysis and correlations. These are discussed below.

3.4.1. Descriptive Analysis

Before proceeding to other analysis a detail description of data has made. Trends of dependent and independent variables including the variable of interest were analyzed using simple descriptive statistics such as averages and percentages. Furthermore, tables and different graphs were used to depict the trends of data.

3.4.2. Regression analysis

In regression analysis we followed the following steps, first the collected time series data were tested for stationartiy, next we run long run regression and finally the long run relationship (cointegration) of variables was tested. Details are discussed below.

The first step in time series data econometric analysis is to check whether the variables under consideration are stationary or non stationery. If the variables follow a non-stationary process, the regression results might be spurious; there is a possibility of finding a positive relationship of variables in the absence true relationship (Gujaraty, 2003). Therefore, before running regression, the stationary of all data has been checked using Augmented Dickey Fuller (ADF) test for unit root test.

To test the presence of unit root in the data the basic equation that ADF applies is as follow:

$$Y_t = \rho Y_{t-1} \quad (8)$$

After subtracting the Y_{t-1}, from both side, the equation for ADF test will be:

$$\Delta Y_t = \alpha Y_{t-1} \quad (9)$$

Where $\alpha = \rho - 1$

Therefore, the following null and alternative hypothesis has been tested for all variables using ADF test:

H_0: $\alpha = 0$

H_1: $\alpha < 0$

Having confirmed the order of integration of the variables, log-log regression was run and static regression analysis has been made.

Following the stationary test of data, a cointegration test was applied. The long run relationships of the variables have been examined. The cointegration indicates that the series share a common stochastic trend, that is, they co-evolve together along a long-term path. In the absence of cointegration, the estimated relationship will have absolutely no economic meaning. The cointegration tests implemented in this study is based on the two-step Engel-Granger residual based methodology. That is, first estimating the relationship of variables by Ordinary Least Squares (OLS) and then applying a unit root test on the predicted residuals (ê) to see if the residuals found to be stationary at level, I (0).

3.4.3. Causality Analysis

In causality analysis first we determined optimal lag lengths and then we run pair wise causality test using Granger Wald test in VAR model. Since estimation of granger causality test depends on lag length of variables, a critical element in the specification of VAR models is the determination of the lag length of the VAR. The available lag length selection criterions: Likelihood ratio (LR), Final Prediction Error (FPE), Akaike Information Criterion (AIC), Schwarz Bayesian Information Criteria (SBIC), and Hannan-Quinn Information Criterion (HQIC) were used to identify optimal lag length. The following table shows, the lag order selected by these lag selection criterions.

Table 3.1: Lag order selection (STATA version 10 output)

Selection-order criteria
Sample: 1985 - 2010 Number of obs = 26

lag	LL	LR	df	p	FPE	AIC	HQIC	SBIC
0	-15.0613				.000805	1.38933	1.43113	1.53449
1	66.606	163.33	9	0.000	3.0e-06	-4.20046	-4.03325	-3.6198*
2	77.7499	22.288*	9	0.008	2.7e-06*	-4.36538*	-4.07276*	-3.34922
3	82.0853	8.6708	9	0.468	4.1e-06	-4.00656	-3.58854	-2.55491
4	89.3443	14.518	9	0.105	5.6e-06	-3.87264	-3.32921	-1.98549

Endogenous: lnrgdp lnsfd lnex
Exogenous: _cons

Looking at table 3.1 above, four lag selection criteria (LR, FPE, AIC, and HQIC) selected lag order two (see * in the table) where as SBIC selected lag order 1. Thus, as the majority of the information criterions selected 2 lags and this is found to be an optimal lag length for the data. Therefore, with lag two the following form of OLS regression has run

3.4.4. Correlations

When it is assumed that there is linear relationship between two variables, Pearson's coefficient of correlation (simple correlation) method is the most applicable to measures degree of relationship between the two variables (Kothari, 2004). Therefore, for sectoral FDI and sectoral export supply analysis the Pearson correlation was employed.

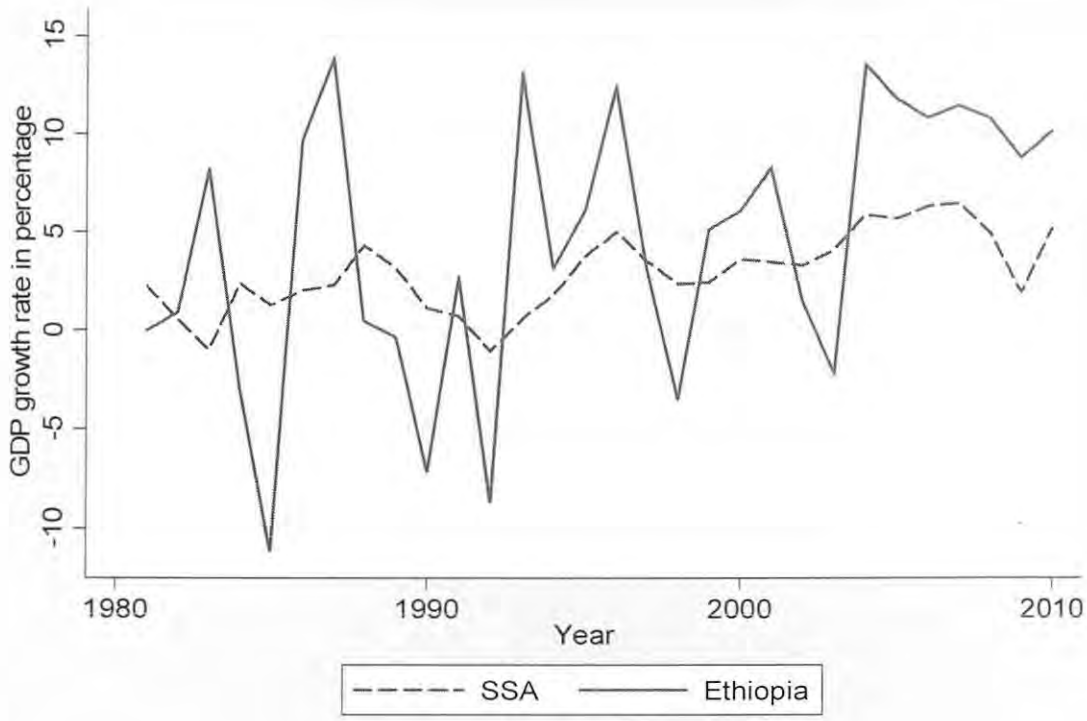
Chapter Four

Empirical analysis

The empirical analysis is divided in to four parts: the first part is the presentation of trends of selected macroeconomic and sectoral data. The second one is description of regression result. Third, discussion of causality analysis and finally the association between sectoral FDI and sectoral export has been discussed.

4.1 Economic growth trend in Ethiopia

The economic growth of Ethiopia has been stagnated for a long period of time for various reasons. It was characterized by backward and highly agrarian economy. However, since 2004 Ethiopia is experiencing strong economic growth. The real GDP growth was at or near double digit levels. The country has consistently registered and outperformed most African countries. In the past seven years, Ethiopia has been one of the fastest growing economies in Africa. Figure 4.1 below shows the comparisons of trends of GDP growth rate of Ethiopia with Sub Saharan African countries.



Source: Own computation based on data obtained from WDI (2012)

Figure 4.1: GDP growth rate comparison of Ethiopia and SSA (1981 - 2010)

As can be seen from figure 4.1 above, in the past seven consecutive years (1981-2010) the Ethiopian GDP per capita growth averaged 11.3 percent per annum. Registering consistent economic growth placed the country one of the top performing economies in Sub-Sahara Africa.

In terms of sectoral growth, later to economic liberalization, for the first decade (1992-2003) and for the half of second decade, the agricultural sector continues to dominate the economy. It accounts the highest share of GDP (46-56%). However, from the 2007 it slightly declined. The share of percentage increase of industrial GDP in total GDP is not satisfactory. On average, in the past two decade the share of industrial GDP has been 11.9 percent. The share of service sector GDP is greater than the share of industrial sector

GDP. Particularly, starting from the year 2008 its share in total GDP has increased and reached 46 percent in the year 2010 leading the two sectors. Figure 4.2 below shows the trends of sectors' shares in total GDP in the past two decades.

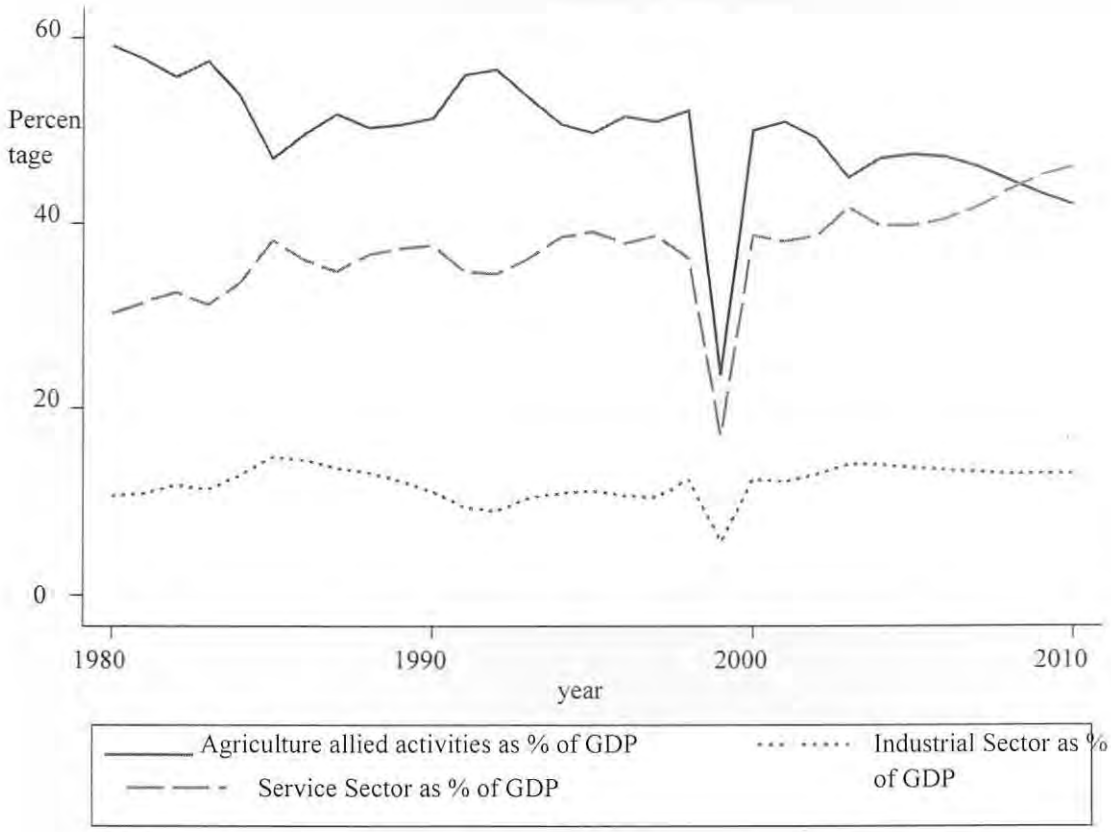


Figure 4.2: Trends of shares of economic sectors in total GDP, (1981-2010)
Source: Own computation based on national bank data (2012)

4.2. Export performance trend

The export growth of Ethiopia has been steadily improving. However, it is characterized by ups and downs growth. This ups and down growth is attributed to the export structure of the country, that is, low diversified export and dependence on primary commodity exporting. Over the three decades, the growth of export can be seen as follows: between

the years 1981 and 1990, the export growth rate was 2.97 percent, between 1991 and 2000; it was 7.08 percent, showing an increase approximately by 4 percent. The final decade (2001 – 2010) saw better growth compared to the previous decades; the average growth of export shows 10 percent per annum. In general, after 1990 it shows positive growth in most cases.

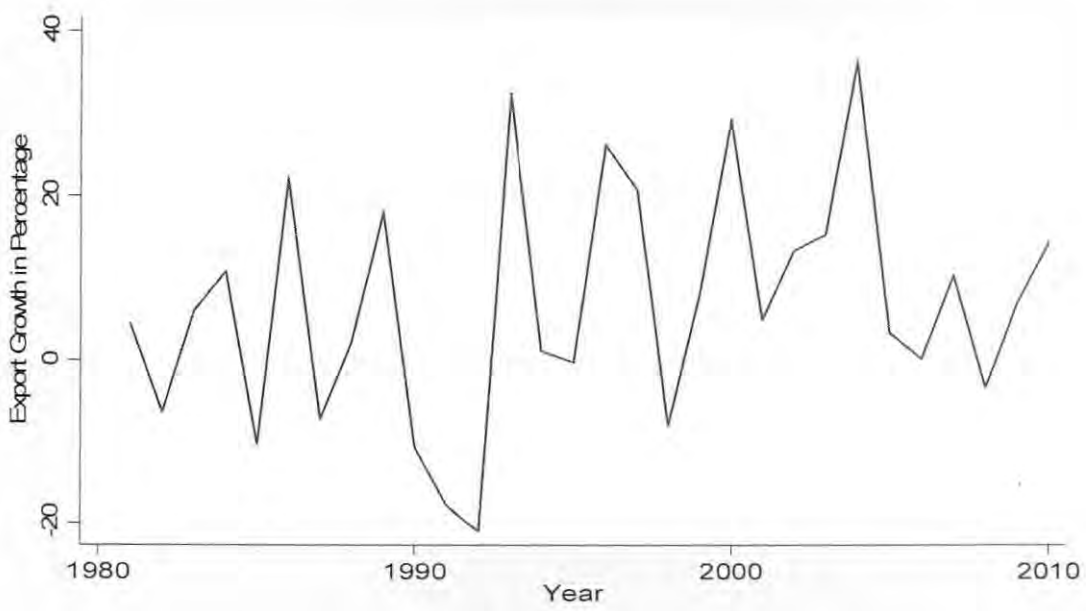


Figure 4.3: Trends of export growth of Ethiopia (1981-2010)
Source: Own computation based on data obtained from WDI (2011)

In terms of value, the country's total a value earned from export reached 2.5 Billion US$ in 2010, the average value of export over 2001- 2010 years is found to be 1.8 Billion US$. It was 529.5 Million US$ between the year 1901- 2000 and 620.4 Million USD$ over the years 1981 – 1990. Thus, both the growth rate of export performances and the value of the export are getting improved over time. Figure 4.3 above depicts the overall trend of the export growth of Ethiopia over the observation period. As can be seen from

the figure, though the growth rate of export is showing an improvement, in some years, negative growth has been registered. For instance, the first and second decade of the observation period is characterized by negative export growth episodes.

In terms of sector, we compared the share of agricultural raw material export as percentage of merchandise export and the share manufacturing export as percentage of merchandise export. Between years 1993 and 2010, though the export of agricultural raw material is showing a decline still its share is greater than former. The average percentage share of manufacturing export is found to be 8.6 percent where as that of agricultural raw material export share is 16.3 which is two times the manufacturing export share in the merchandise export. Table 4.1 below shows the percentage shares of agricultural raw material and manufacturing export in the merchandise export between 1993 and 2010.

Table 4.1: Sectoral export share as percentage in the merchandise export (1993-2010)

year	Agricultural raw material Export as % of Merchandise Export	Manufacturing Export as % of merchandise export
1993	26.00	0.71
1995	13.37	11.17
1997	10.75	9.65
1998	11.87	6.76
1999	17.34	6.71
2000	18.71	9.78
2001	23.22	13.43
2002	15.04	14.31
2003	25.87	11.38
2004	12.17	3.83
2005	15.30	4.58
2006	17.28	5.36
2007	20.41	13.75
2008	14.10	9.01
2009	11.92	8.65
2010	9.02	8.91

Source: World Development Indicator (WDI) data base (2011)

4.3. FDI inflow to Ethiopia

International capital inflow to Ethiopia is more embraced as result of policy shift from command economy to market oriented economy in 1992. Since the country adopted market oriented economy, the private sector has got place in the economic system. Following the economic liberalization, foreign investors emerged and the country able to attract a diversified FDIs in the past two decades.

To encourage the inflow of capital and technologies in to the country, various incentives have been introduced and granted under some conditions for both the foreign and domestic investors. Among the main ones are hundred percent exemptions from the payment of import custom duties on capital goods such as plant, machinery and equipment, provided that they engage in new enterprise. In accordance with Council of Ministers regulation number 146/2008 investors are eligible for income tax holding. For instance if the investment production is constitute at least fifty percent for export, the income tax holding period last up to five years. For underdeveloped regions it lasts six years. If the products are for domestic market still they are eligible for an income tax holding for two years.

Over the past two decade Ethiopia attracted on average a capital of 222.4 Million US$ of foreign capital. The minimum FDI was registered in 1993 which was 3.5 Million US$ as this is actually the beginning of economic reform. Contrary to this, the maximum FDI inflow reached 545.257 Million US$ in the year 2009. Figure 4.4 below depicts the trends of FDI inflow as percentage of GDP to Ethiopia over the past two decades.

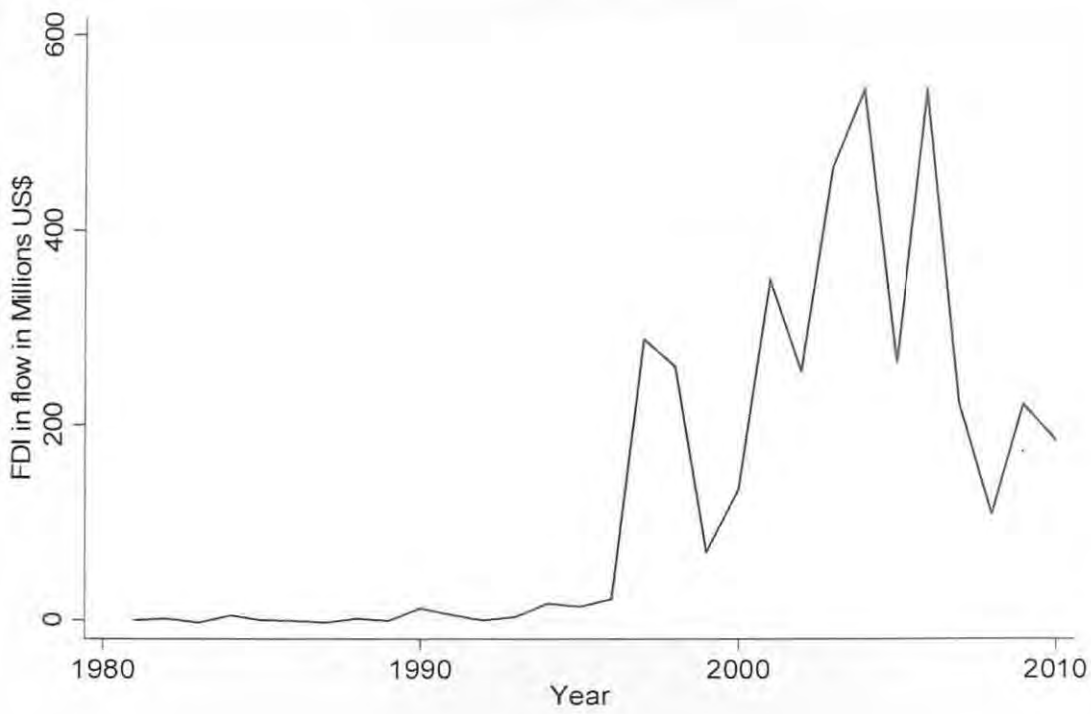


Figure 4.4: Trends of FDI inflow to Ethiopia (1981 -2010)
Source: Own computation using data obtained from UNCTAD database (2011)

Looking at above figure enables us to grasp the trends of FDI inflow to Ethiopia over the past two decades. The graph shows the fluctuating FDI flow in to the country over the period, FDI inflow reached relative pick in the years 2004 and 2006 as it shows the highest FDI inflow over the observation period.

4.3.1. FDI inflow by Economic Sectors

Foreign Direct Investment (FDI) flow to Ethiopia comprises the three main economic sectors: the agriculture sector, the manufacturing, and service sector. The agricultural sector's includes all types of agriculture allied activities. The manufacturing sector encompasses all kinds of industrial activities. The service sector includes electricity

generation, construction, real estate development, trade, hotel and tourism, transport service, education and health service.

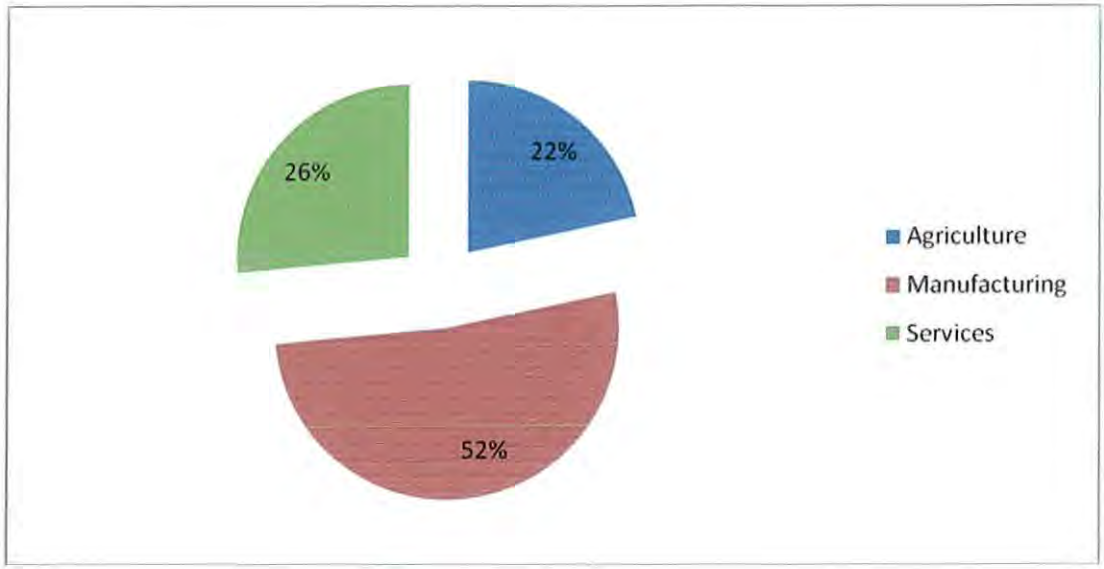


Figure 4.5: Cumulative percentage shares of implemented FDI inflow to Ethiopia by economic sectors (1993-2010).
Source: Own computation based on data obtained from EIA (2012).

As can be seen from figure 4.5 above, it is possible to compare the share of FDI inflow to the economic sectors. The highest share goes to the manufacturing sector which accounts about 52 percent of the total FDI over the period. The service sector received 26% following the manufacturing sector; in fact it is half of the manufacturing FDI. The agricultural sector is characterized by least percentage share of FDI (22%). Moreover, the trend of FDI going to the sectors shows us the same implication.

The FDI flow to manufacturing sector is growing by more than FDI going to both the agriculture and service sectors. The service sector is following the manufacturing sector

and the agricultural sector's FDI is growing least. Figure 4.6 below depict the trends of FDI for each sector.

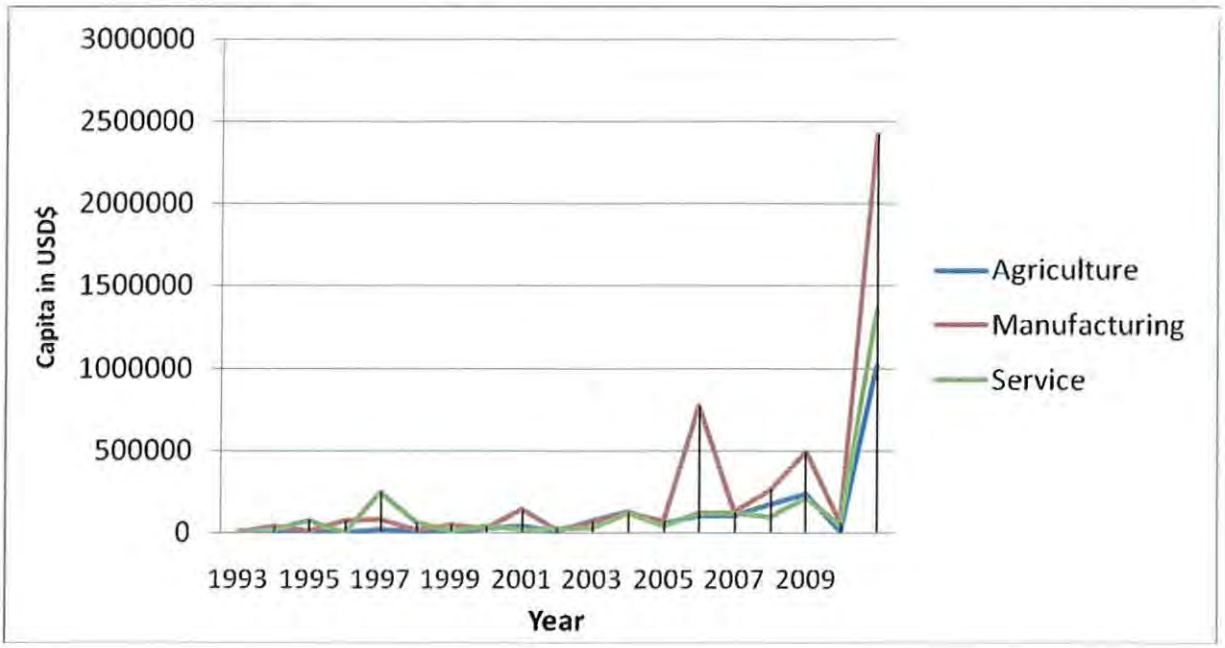


Figure 4.6: Trends of sectoral FDI inflow to Ethiopia (1992-2010)

Source: Own computation based on data obtained from EIA (2012).

The FDI flow to the manufacturing sector showed a sharp increase in the year 2005 and reached pick in following year (2006), in the same way the year 2009 saw relative increase of FDI inflow to the sector.

4.3.2. Regional distribution of FDI

The FDI distribution in the country is found to be uneven among the regional states. It is concentrated in a few regions. Looking at table 4.2 below, it can be seen that Oromia region and Addis Ababa take the largest share of FDI flows to Ethiopia. Over the period 1992- 2011 in terms of implemented investment/operation/, the FDI inflow to Oromia and Addis Ababa accounts 37.4%, and 32.4% respectively. This accounts 69.8% of the total FDI under operation over the period. With 4.4% of share from total FDI flow

attracted to the country, SNNP region is the third. Amhara region follows SNNP with 4% share of FDI. In extreme cases, the shares of Benshangul Gumuz, Dire Dawa, Somali, and Harari regions are found to be less than 1 percent.

Table 4.2: Cumulative regional distribution of FDI (1992 - 2010).

Regions	Implementation		Operation		Pre- implementation	
	Capital in Local currency (Birr)	Percentage share of regions	Capital in Local currency (Birr)	Percentage share of regions	Capital in Local currency (Birr)	Percentage share of regions
Addis Ababa	5,755,562	6.67	11,067,823	32.4	81,226,269	33.81
Afar	55,120	0.064	335,664	1.0	2,200,765	0.92
Amhara	17,139,260	19.85	1,432,095	4	20,847,749	8.68
B.Gumze	17,500	0.020	50,000	0.15	4,534,923	1.89
Dire Dawa	427,915	0.50	96,100	0.28	17,627,312	7.34
Gambella	4,074,803	4.72	774,900	2.3	8,187,832	3.41
Harari	1,500	0.002	2,500	0.01	257,500	0.11
Oromia	42,081,128	48.75	12,776,205	37.4	66,016,007	27.48
SNNPR	5,689,032	6.59	1,505,399	4.4	6,166,585	2.57
Somali	10,000	0.012		0	1,174,464	0.49
Tigray	257,399	0.30	689,534	2.02	2,390,529	1.00
Multiregional	10,819,032	12.53	5,415,732	15.9	29,623,587	12.33
Total	86,328,250	100	34,145,951	100	240,253,522	100.00

Source: own computation based on data obtained from EIA (2012).

Even though, there is an incentive system that encourages investment in the least developed regions (Gambella, Afar, Somali and Benishangul-Gumuz) of the country, the performance is poor. Oromia region and Addis Ababa are the major destination for FDI flows to Ethiopia. This uneven distribution of FDI might be attributed to location related advantages that regions possess, but finding the factor behind this is beyond the scope of this paper.

4.3.3. FDI inflow by home countries

The sources of FDI inflow to Ethiopia is from diverse regions. It comprises both from developed world and developing regions including African. FDI inflow to Ethiopia is from about forty countries from different regions of the world. Among these home countries, the main ones (the top 5) according to their capital are: India, Turkey, Saud Arabia, United State of America, and China. Investors from these countries invested a significant amount of capital in the country both alone and jointly with other investors of other countries including Ethiopians.

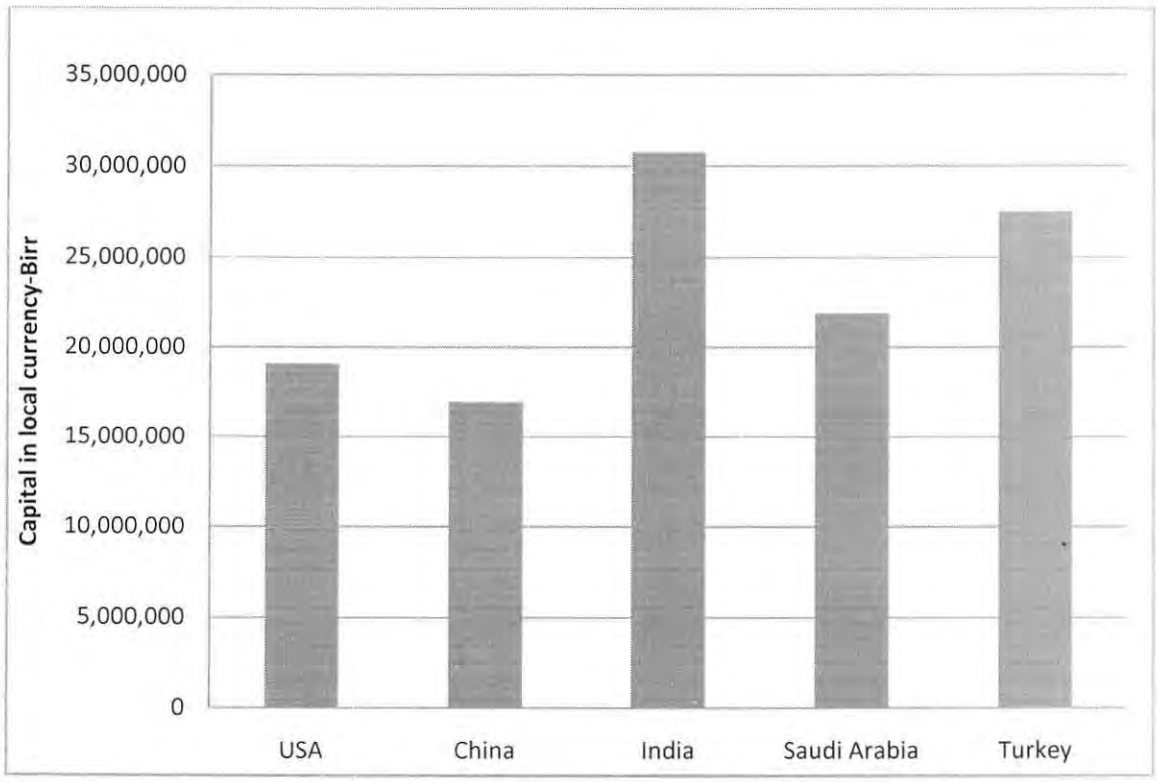


Figure 3.7: The top five home countries/origin/of FDI flow to Ethiopia (1992-2010)

Source: Own computation based on data obtained from EIA (2012).

The above figure does not include the joint investment made by the citizens of these countries and reinvestment. It simply a onetime investment and shows relative amount of investment based capital registered.

4.3.4. Employment opportunity

One benefit of FDI to the host country is employment opportunity to citizens. In looking at the employment opportunities created by foreign firms only the operation/ implemented/ investments were considered. According to data obtained from EIA over 1992 – 2010 about 1, 391 projects were implemented. Table 4.3 bellow depicts permanent employment created by FDI.

Table 4.3: Permanent employment opportunities created by FDI in Sectors (1992-2010)

Economic sectors	Permanent Employment Opportunities created	Percentage share of
Agriculture and allied activities	293,512	47
Manufacturing	176,370	29
Service	146,936	24
Total	616,818	100

Source: EIA (2012)

As can be seen from the above table, these projects were able to create permanent employment opportunities for total 616,818 million. When employment opportunities are seen in terms of sectoral distribution of FDI, the largest share goes to the agricultural and other primary sector activity which is about 47 percent. FDI in manufacturing shares 29 percent and FDI engaged in the service sector constitute 24 percent the of total employment opportunities created over the period.

4.2. Effect of FDI Growth and an Aggregate Export: Regression analysis

4.2.1. Unit root test result

To infer a meaningful relationship from regressions of time series data, it needs testing for the existence of unit root on variables. In applying unit root test the order of integration of variables under consideration are established. Accordingly, the variables: real gross domestic product (lnRGDP), foreign direct investment (lnFDI), domestic investment (lnDI), export (lnEXP) labor force (lnLF), inflation rate, and total government expenditure (lnTGE) are subjected to unit root test using Augmented Dickey- Fuller (ADF) test. The results of unit root result for the variables are indicated in the following tables. Table 4.4 presents unit root result with constant and table 4.4 indicates unit root result both with constant and trend.

Table 4.4: Stationartiy test result at level

Variables	ADF test Statistics With constant	ADF test statistics With Constant and Trend
lnRGDP	2.075718	-0.505268
lnSFDI	0.746512	-1.935442
lnFFDI	-1.825888	-3.193390
lnDI	-0.229800	-1.602408
lnLF	0.701990	-1.429611
INF	-2.808496	-2.951850
lnTGE	-1.996228	-1.719949
lnEX	0.514237	-1.618391
Critical values 1%	-3.6752	-4.3082
5%	-2.9665	-3.5731
10%	-2.6220	-3.2203

The results of unit root presented in table 4.4 above suggest that the null hypothesis of a unit root in the time series cannot be rejected at 1 and 5 percents of significance at levels. Thus, all the variables are non stationery at level and their stationartiy should be checked at difference level.

Table 4.5: Stationartiy test result at difference level

Variables	ADF test Statistics With constant	ADF test statistics With Constant and Trend
lnRGDP	-4.095195*	-4.831030*
lnSFDI	-3.313219**	-4.354335*
lnFFDI	-4.791209*	-4.696655*
lnDI	-6.414045*	-6.668413*
lnLF	-4.376973*	-4.356098*
INF	-6.130174*	-6.054834*
lnTGE	-4.184827*	-4.450154*
lnEX	-5.301878*	-5.478899*
Critical values 1%	-3.6852	-4.3226
5%	-2.9705	-3.5796
10%	-2.6242	-3.2239

**Stationary at 5%, *stationary at 1% significance level

At difference level, the hypothesis that the variables has unit root is rejected (see table 4 above) and the time series become stationary. Therefore, variables are integrated of order one, and considered as I (1) processes.

Following the unit root test and knowing the order of integration, we run two regressions to estimate the relationship between FDI and economic growth; one with FDI stock and the other with FDI flow variable. The results are discussed below.

After running the regression equation, the model is tested for the violation of the major classical assumptions so that a meaningful inference can be made from the output. The main classical ordinary least square assumptions (Multicollinearity, heteroskedasticity, serial correlation, test for omitted variable, and normality) has been checked using econometrically recommended tests.

First, the model is subjected to Ramsey test for omitted variable (specification error). The hypothesis that the model has no omitted variable is not rejected at 5 percent significance level confirming that the there is no omitted variable in the model. The Breusch–Pagan test was conducted for presence of constant variance of the error term/heteroskedasticity/. It is detected that error term do not exhibit constant variance; as this would lead to invalid variance of coefficients it calls for correction. Thus, the regression was run with robust which take in to account the presence of heteroskedasticity. A problem of Multicollinearity was also observed and as a remedy we run the final regression by excluding variable export to minimize the problem. Test for serial correlation- Durbin Watson test is 2.02, indicating that; there is no problem of serial correlation. Moreover, all the variables passed normality test.

Table 4.6: Regression result with FDI stock

Dependent variable: Real Gross Domestic Product

Explanatory Variables	Long run coefficients
Stock of FDI	.089
	(3.57)*
Domestic investment	.38
	(10.25)*
Labor force	.40
	(2.98)*
Total government Expenditure	-.01
	(-4.38)*
Inflation	-.005
	(-0.53)**

*significant at 5 % significance level, ** significant at 10%, *** insignificant

R-squared	0.98
Durbin-Watson stat	2.02

As shown in the table 4.5 above, the regression equation result indicates FDI measured in stock is found to affect economic growth positively and significantly at 5 percent significance level. This indicate that FDI stock and economic growth have a positive relationship. However, the size of the coefficient is less than 1 percent.

Contrary to FDI variable measured in stock, FDI variable measured in flow term is found to be negatively and insignificantly related to economic growth variable, real gross domestic product. The negative result of this variable is in line with previous studies of

Wondson (2011) that indicated the negative influence of FDI on economic growth. Table 4.6 below is regression result with FDI inflow variable.

Table 4.7: Regression result with FDI flow

Dependent variable: Real Gross Domestic Product

Explanatory Variables	Long run coefficients
FDI flow	-.008
	(-0.54)***
Domestic Investment	.47
	(9.48)*
Labor force	.79
	(5.23)*
Total government Expenditure	-.005
	(-1.58)***
Inflation rate	-.0014
	(-0.6)***
*significant at 1 % significance level, ** significant at 10%, *** insignificant	
Adjusted R-squared	0.93
Durbin-Watson stat	1.75

Most likely the reason behind the negative relationship between FDI inflow and economic growth is due to the fact that at flow level FDI is accompanied with high import of capital and intermediate goods that affects the trade balance.

Domestic investment is related positively to real gross domestic product and it is found to be highly significant; it is significant at 1 percent level. This implies that domestic investment is crucial in promoting economic growth. In the same way, the variable for

labor force (population in working age population) is positively associated with real gross domestic product and found to be significant in affecting the dependent variable at 5 percent significance level. The two variables, total government expenditure and inflation are as expected and they are negatively related to economic growth.

4.2.2. Cointegration test result

After running the regression, we proceed to examine the presence of cointegration among the variables. When a cointegration relationship is present, it implies that the variables share a common trend and long-run equilibrium as suggested by econometric theory. We employed the residual based cointegration test strategy; testing for unit root on the estimated residuals using ADF test. The residual is found to be stationery at level indicating the variables are a cointegrating regression. Below is the cointegration result on estimated residuals.

Table 4.8: Cointegration test result

```
. dfuller res, lags(0)

Dickey-Fuller test for unit root                   Number of obs   =        29

                         ------------ Interpolated Dickey-Fuller ------------
                 Test         1% Critical         5% Critical         10% Critical
                 Statistic       Value               Value               Value
------------------------------------------------------------------------------
 Z(t)             -5.302          -3.723              -2.989              -2.625
------------------------------------------------------------------------------
MacKinnon approximate p-value for Z(t) = 0.0000
```

4.3. Causal relationships of FDI with Growth and Export

The presence of co integration of the variables implies indirectly causality. However, it does not prove the direction of causality. To know the direction of causality, a pair wise

Granger no-causality test was employed. The hypothesis that FDI does not granger causes the other variables (real gross domestic product and export) was tested. The following table indicates the Granger no causality test result.

Table 4.9: Pair wise Granger no causality test result

S/No_	The null Hypothesis	Chi2	Probability
1	Real Gross Domestic Product does not Granger Cause FDI stock	5.6663	0.059**
	FDI stock does not Granger Cause Real Gross Domestic Product	4.0367	0.133***
2	FDI stock does not Granger cause Export	8.3611	0.015**
	Export does not Granger Cause FDI stock	14.977	0.001*

*Significant at 1 %, **significant at 5% ** significant at 10%, *** insignificant

Looking at the above table, Granger no causality test result, we can deduce the direction of causality among the variables. First, we looked at the causal relationship of FDI with real gross domestic product, then with export.

We fail to reject the null hypothesis that FDI stock doe not granger cause real domestic product. Conversely, the hypothesis that real gross domestic does not granger cause FDI stock was not rejected at 10 percent significance level. This amply that causal direction is from economic growth to FDI stock. Unlike the empirical finding of Magnus and Fosu

(2008) in case of Ghana, in which the causal directional was from FDI to GDP growth, this finding shows the reverse direction.

The null hypothesis that FDI stock doe not granger cause export is rejected at 5 percent significance level. However, unlike the causal direction between FDI and economic growth, the causality direction between FDI and export is found to be bidirectional. At 1 percent significance level, the hypothesis that export does not granger causes FDI is rejected. In empirical sense, this causal link between FDI and export at aggregate level supports the previous finding of Fikadu (2011) that identified foreign firms are more labor productive and export intensive than domestic firm in Ethiopia. Furthermore, it is in line with empirical works of Moss, Ramachandran and Shah (2005) on three African countries namely: Kenya, Tanzania and Uganda, that supported the positive effect of FDI on export performance.

Theoretically, it is in line with the early model that link FDI with international trade, the Flying Geese Model (FGM) which posits that multinational enterprises' subsidiaries increase the host country's export performance by using the host country's factor endowments to produce at lower cost and hence directly enhances the recipient country's export supply capacity. The implication of the bidirectional causality is the presence of feedback between the two variables; FDI impacts export and FDI impacts export.

4.4. Sectoral FDI and Sectoral Export

Due to lack of sufficient data, we have analyzed only the existence linear association between foreign investment flowing to the economic sectors and the corresponding sectoral export shares in a merchandise export. Below are the bivariate correlation results

between sectoral FDI flow (agriculture and manufacturing) and the corresponding share of each sector's export as percentage of merchandise export.

Table 4.10: Correlation between agricultural FDI and agricultural raw material export as percentage of merchandise export (1993- 2010)

		Agricultural Foreign Investment	Agricultural raw material export as % of merchandise export
Agricultural Foreign Investment	Pearson Correlation	1	.677**
	Sig. (2-tailed)		.002
	N	18	18
Agricultural raw export as % of merchandise export	Pearson Correlation	.677**	1
	Sig. (2-tailed)	.002	
	N	18	18

**. Correlation is significant at the 0.01 level (2-tailed).

Source: Computed based on data obtained from EIA and WDI (2012).

As can be seen from the table 4.10 above, the Pearson's correlation coefficient indicates that there is a positive association between agricultural FDI and agricultural raw material export as percentage of merchandise export. It is significant at 1 percent significance level. The correlation coefficient between FDI in the manufacturing sector and the manufacturing export as percentage of merchandise export is also positive. However, it is not significant. Moreover, its strength is low compared to that of the correlation between

the FDI in agricultural sector and agricultural raw material export as percentage of merchandise export. It can be noted that in the previous descriptive analysis the majority of the FDI flow is in manufacturing sector. Table 4.11 below, shows the correlation between FDI in the manufacturing sector and the manufacturing export as percentage of merchandise export.

Table 4.11: Correlation between FDI in manufacturing sector and manufacturing export as percentage of merchandise export (1993-2010).

		Manufacturing foreign investment	Manufacturing export as % of merchandise export
Manufacturing foreign investment	Pearson Correlation	1	.264
	Sig. (2-tailed)		.289
	N	18	18
Manufacturing export as % of merchandise export	Pearson Correlation	.264	1
	Sig. (2-tailed)	.289	
	N	18	18

Source: Computed by SPSS based on data obtained from WDI and EIA (2012)

The flow of FDI in terms of economic sector has its own economic implication. The recent empirical findings assert that if FDI is to benefit the host country, the sector to which FDI inflow takes place maters. For instance, the empirical finding of Alfaro (2003) suggests that FDI inflows into the primary sector tend to have a negative effect on

growth, where as FDI inflows in the manufacturing sector a positive. Moreover, the works Chakraborty and Nnunenkamp (2007) in the case of Indian supports the argument that FDI stocks flow to secondary sector is beneficial; it reinforce the manufacturing sector and there is no causal relationship with the primary sector. In general, it is FDI inflow to the secondary /manufacturing sector/ that believed to be essential in transforming the economic structures of the recipient country.

Therefore, when we look at the current flow of FDI to Ethiopia from economic sectors' perspective, it is in line with these arguments as nearly more than 50 percent of FDI are found to be in the manufacturing sector. However, from export versus FDI perspective, the association between manufacturing sector FDI and share of manufacturing export as percentage of merchandise export is low over the observation period.

CHAPTER FIVE

Major findings and conclusion

This study attempts to analyze the relationship of FDI flow to Ethiopia with economic growth, aggregate export and sectoral export. Furthermore, FDI flow in terms of economic sectors, regional distribution, and employment opportunities has been analyzed. We reviewed relevant theoretical and empirical findings. Based on both descriptive and inferential analysis undertaken, the major finding and the conclusions of the study are summarized below.

5.1. Major findings

The findings of this paper can be summarized as follows:

- In the past two decades, the country able to attract on average capital of 222.4 million USD$ foreign capital, nevertheless, the FDI flow to Ethiopia is characterized by fluctuations.
- In terms of implemented investment, the distribution of FDI in Ethiopia is uneven among regional states. It is concentrated in few regions; about 69.8% foreign capital goes to Addis Ababa and Oromia.
- Between the year 1992 and 2010, in terms of sectoral distribution, the majority of FDI flow is to the manufacturing sector which accounts about 52%, the agriculture and service sector FDI are found to be 22% and 26% respectively
- In same period above, about 616,818 million employment opportunities has been created by foreign firms.

- In terms of the home country, FDI flow to Ethiopia is both from developed and developing countries. Based on the amount of capital registered the top five are: India, Turkey, Saud Arabia, USA, and China.
- FDI measured in stock is positively related to economic growth in the long run; at 5 percent significance level it is found be significant to affect economic growth.
- In the long run FDI measured in flow terms is found be negatively related to real gross domestic product.
- The positive relationship of FDI with Economic growth is confirmed by Granger causality test and the direction is from real gross domestic product to stock FDI
- There is a bi directional causality between FDI and real export
- There is a positive association between sectoral FDI and sectoral export as a share of merchandise export. In the case of agriculture FDI and agricultural raw material export as percentage of merchandise export, the association is moderate (r =.67). The association between manufacturing FDI and manufacturing export is quite small (r =.26)

5.2. Conclusion

In terms of sectoral distribution of FDI flow, the orientation towards the manufacturing sector is crucial in transforming the economic structure of the country. The uneven distribution of FDI in terms of region has regional development implication for Ethiopia. The current differentiated incentive strategy to attract investors to the emerging regions is not working as practically justified by concentration FDI in few regions.

We failed to reject our working hypothesis that FDI is positively related to economic growth in case of FDI measured in stock, however, rejected in case of FDI inflow.

Regarding the direction of causality we rejected our hypothesis that the direction of causality is from FDI to economic growth; causality is in reverse direction. In sum, this positive relationship of FDI with economic growth is shows that FDI is contributing to economic growth. Interestingly, the economic growth of Ethiopia is playing a role in attraction of FDI.

Also, we fail to reject our hypothesis that sates positive relationship of FDI and aggregate export except the causal direction. The bidirectional relationship between FDI and export shows the importance of outward looking strategy and gain trade.

Finally, we fail to reject the positive association of sectoral FDF and sectoral exports (manufacturing and agriculture). This positive association of sectoral FDI and sectoral export for both sectors (agriculture and manufacturing) implies the contribution of FDI to sectoral export. However, the degree of associations varies.

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Declaration

I, the undersigned, declare that this thesis is my original work, which has not been presented for a degree in this or any other university; and all sources of materials used in the thesis have been duly acknowledged.

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Signature: 

Date of submission: **June 2012**

Advisor:

Name: **Issac Paul (PhD)**

Signature: 

Date: **June, 2012**

However, the support from the existing governmental and non governmental organizations is very minimal.

2. **Low emphasis and focus for traditional irrigation:** the emphasis given for traditional irrigation in the area is very poor both by governmental and non- governmental institutions. Even if the area is drought prone and food insecure, the potential of traditional irrigation in improving the food security situation and the efforts and potentials of farmer's irrigation practices are not well conceived by external institutional actors.
3. **Poor institutional set up at grass root level:** when we assess the existence and activities of institutions of the area, one can say that there is almost no formal grass root structure that follows the practice of traditional irrigation at Woreda and Kebele level. The farmers in the area have been practicing irrigation for many years without proper institutional support.
4. **Low availability of rainfall:** the major challenge for irrigation agriculture in the area is shortage and irregularity of rainfall. This has a direct impact on the size and sustainability of streams. Low water availability for irrigation affects the proper functioning of the irrigation system in terms of better production.
5. **Lack of appropriate technology:** Lack of skill of irrigators coupled with lack of external support increases the shortage of improved technologies in the scheme. Among others there is a need to ensure enhanced availability of irrigation water to the farming communities with improved spatial and temporal distribution and enhancing the technological efficiency of farm level application of irrigation water to a level that allows optimal utilization of the available resources.
6. **Poor transport infrastructure:** There are no access roads and vehicles available in the area. The farmers transport their produce by carrying it on their back. There fore, lack of transport constraints their irrigation system. Lack of training on how to construct local access roads using the available local materials both to the irrigation fields and to the major markets and communal institution is also observed. There is lack of improved transport mechanism; the farmers are not experienced in using pack animals and local carts.

7. **Lack of capacity building support:** The traditional water user committees and the scheme Qorros have good experience in how to manage their schemes for years in the past. However, they are not lack formally registered by the government and there is high skill gap to make the traditional irrigation better. Lack of capacity building support from external actors constraints the irrigation system in the locality.

The farmers try to minimize these external challenges by using their local resources and skills wisely. The farmers help each other in a cooperative manner. The actions of the scheme Qorros and the irrigation committee are highly valuable.

Chapter Six: Conclusions and Suggestions for Future Action

6.1. Conclusions

This study started off with the aim of studying the irrigation management practices, institutions and challenges of traditional irrigation in Amaro Woreda. In order to achieve this investigation was carried out to find answers for the following questions:

- How is a traditional irrigation system managed in Amaro Woreda?
- What are the institutional actors involved in irrigation management in Amaro?
- What are the major challenges that traditional irrigators encounter in Amaro?

Traditional irrigation management practices: The community in Amaro Woreda has a longstanding legacy of practicing well- developed traditional irrigation systems. The traditional experiences of the farmers in constructing irrigation structures locally available materials are remarkable. They can take water from one area to the other by using large wooden pipes. They are also experienced in transporting water from lower areas to higher.

The community also has long lived experience of managing the irrigation system through the irrigation users' committee and the Qorros. The Qorros are experienced in fair water allocation and distribution to all users. There are individual decisions taken by the irrigators regarding their crop selection, time of farming, and management of their individual plots. The community has communal decision making practices in all communal issues of the irrigation system managing water, farm implements, land and labor. The community has also transparent communication culture, excellent community resource mobilization skills, and effective conflict resolution mechanisms.

However, the traditional irrigation management of the area has some limitations: This study revealed that the traditional irrigation management uses only the available resources without any modification and improvement. The stream is used non-efficiently by many users. Most of these streams are seasonal that dry up during dry periods and usually provide in adequate flow that is short of satisfying the overall irrigation demand. Most of the decisions of the farmers in

cultivating different crops are not usually supported by training and education, they cultivate their crops through the experiences gained from their fore fathers and shared from each other. They do not properly manage their plots. The resources mobilized from irrigators are so traditional that they do not support further development of the system. No payment is collected as a fee; this strongly affects the sustainability and enhancement of the irrigation system. The communication mechanism is very good in that it is transparent, but it is very slow. The agricultural practices used by irrigators are very traditional which use only permanent crops and no improved varieties or inputs used. In general the traditional irrigation management in these schemes is traditional with non efficient and non economical use of resources and requires better focus which should base the indigenous practices.

Regarding the opportunities and threats of traditional irrigation management, the Ethiopian government water resource management policy emphasizes decentralization of irrigation management to give due consideration to communal and farmers management. This is a great opportunity to develop the irrigation system in Amaro. Another opportunity is that there are some NGOs that have interest in developing and improving the traditional irrigation system. The farmers can establish partnership with these organizations through their cooperatives. The major threat of the area for irrigation development is shortage of water, and poor irrigation infrastructures. Using the opportunities the threats can be reduced and make the irrigation system sustainable.

Institutional actors: The studied irrigation institutions in Amaro are well established and long lived. They are trusted by the community and other actors. The Kebele irrigators committee and the Qorro are efficient in mobilizing irrigators for participation in communal works of design, construction, and maintenance of the irrigation structure. They are democratically elected, if they do not perform well they will be punished by the community. They contribute freely and voluntarily, which is the strong point to the improvement of the system. However, as a weak point, the capacity of the committee and the Qorro is very limited as they have no formal training and they have no legal identity. There is a need to up grade them to get legal status so that they represent the irrigators legally.

There is no grass root institution of the government which is responsible for irrigation management. The task is conducted by the Woreda office of agriculture and Kebele extension agents. Their role in irrigation is very limited as they have many tasks to perform. There is a need to have a separate grass root institution that can manage and lead the irrigation activity at the Woreda level.

Challenges of irrigation: The major challenges are low agricultural extension service and research support, low emphasis and focus for traditional irrigation, poor institutional set up at grass root level, low availability of rainfall, poor transport infrastructure, and lack of capacity building support.

6.2. Suggestions for Future Action

To improve the traditional irrigation systems of the area all the institutional actors should fulfill their assignments individually and commonly. The irrigation potential of the area, the experience of the community, communal management skills of the community and the commitment of the community to abide by the local rules are the strong bases to improve the system therefore the following recommendations are forwarded:

The Woreda Government: To improve the traditional irrigation system in terms of management and institutional set up, and to reduce the constraints in order to enhance the benefits the local government has to:

- Coordinate additional studies to look into the potentials of the area in detail, encompassing the community and experts from diversified fields such as engineering, hydrology, economics, agriculture, and sociology. The result of the study will help to formulate appropriate strategies at local level and help the policy development process at higher levels.
- Establish appropriate grass root irrigation organization with the necessary staff to take the responsibility of mobilizing the community and other committed actors to improve

the traditional irrigation system with farmers' experience incorporated. Separate irrigation office at Woreda office is required in order to tap the advantages.

- Enhance the capacities of local community institutions; upgrade their capacity through legalizing the kebele committee and give capacity support to the Qorros. The Kebele committee could be upgraded to a level of irrigation cooperative following the guidelines of cooperative formation rule of the government. The individual scheme users can establish one irrigation cooperative at the Kebele level and they can form one apex cooperative at Woreda level.
- Initiate local partnership with other development actors. A type of joint committee can be established by including the community members to work jointly in upgrading and improving the systems.
- Improve its extension and research support for the farmers by assigning experts at Kebele level, and enhancing its staff capacity and organizational structure at Woreda level.

The Community: the irrigation community in Amaro can improve its traditional irrigation practices by upgrading its Kebele irrigation committee to a level of cooperative; set a fee for irrigation water use and increasing mobilization of local resources; make their practice more formal and improved. The community can establish partnership with local government and other actors, so that they can persuade government policy to their advantage. With their cooperative effort the community can construct access roads, improve irrigation infrastructures, and improve credit services and local markets conditions.

Other actors: the NGOs and the religious institutions can contribute to the improvement of the traditional irrigation practices of the area by supporting the community in agricultural extension activities to improve farm productivity, train the community on basic skills and provide general awareness on community problems. These institutions can also participate in research activities so that to tap the potentials of the area and to document necessary information for future development of the community. They can initiate and establish local partnership with the government and the community to participate in improvement of the traditional irrigation systems.

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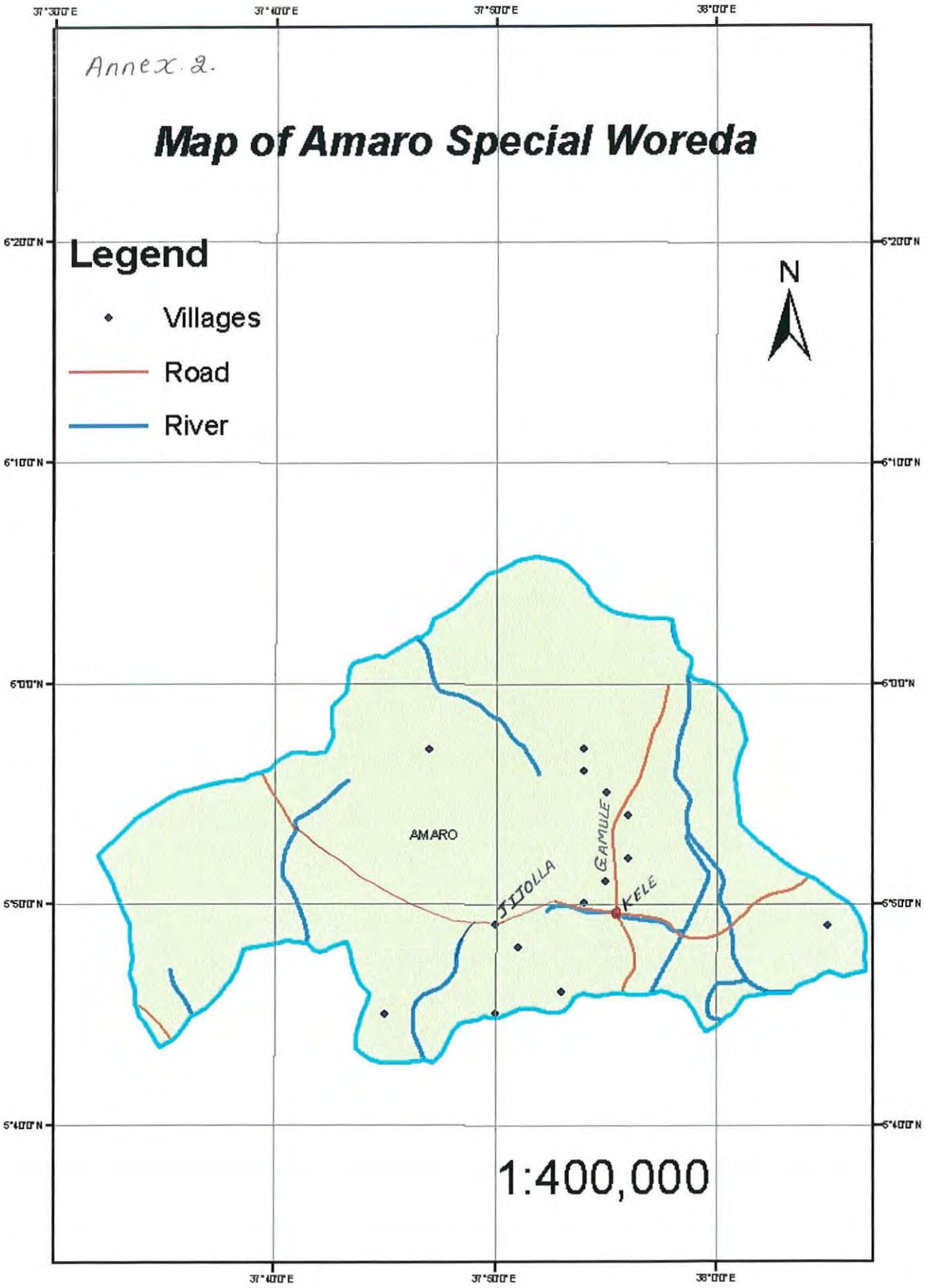
Annex 1.

Administrative Regions and Zones of Ethiopia

Annex 2.


Map of Amaro Special Woreda
Legend
Villages
Road
River
N
AMARO
JIJOLLA
GAMULE
KELE
1:400,000
37°30'E
37°40'E
37°50'E
38°00'E
6°20'N
6°10'N
6°00'N
5°50'N
5°40'N

Annex 3: Secondary Data Collection Checklist

I. General Information
   a) Location
   b) Climate
   c) Land use
   d) Population
   e) Topography
   f) Total land area
   g) Average land holding of the household heads
   h) Potential irrigable area
   i) Actual irrigated area
   j) Main problems of the area
   k) Infrastructure of the area

II. Agriculture
   a) Crop Production
      - Major crops grown in the area
      - Size of land covered by major crops
      - Three years data of cultivated area
      - Three years production data
      - Major crop production constraints of the area
   b) Animal Production
      - Major livestock types
      - Average livestock holding
      - Number of livestock
      - Major animal production constraints of the area
   c) Agricultural extension service
      - Input distribution
      - Farmers training
      - Credit supply
      - Market situation
   d) Irrigation Systems
      - Number of irrigation schemes in the Woreda
      - History of irrigation development
      - Potentials of irrigation development
      - Major problems of irrigation development
      - Major irrigation water sources
      - Types of irrigation
      - Major crops cultivated through irrigation

III. Major Institutional Actors for Irrigation Development
      - Formal Institutions
      - Informal Institutions
      - Major problems of institutions

Annex 4: Focus Group Discussion Checklist

Part I. General Information

Name of Irrigation Scheme _____

Name, sex and position of individuals participated in the discussion:

Group 1:

1. _____
2. _____
3. _____

Group 2:

1. _____
2. _____
3. _____

Group 3:

1. _____
2. _____
3. _____

Part II. The Indigenous Irrigation System Management

2.1.Water use

2.1.1. Acquisition

1) What is the scheme water source?
2) What is the mechanism of irrigation water acquisition
3) Is there any payment mechanism in the scheme?
4) Who collects the fee?
5) What are the basic rules, regulations, and values in water acquisition? (Formal and informal)
6) What is done for water acquisition defaultors?
7) Is the water available through out the year?

2.1.2. Allocation

1) Who controls water allocation?
2) Is the water sufficient for both the dry and wet season/
3) Is their equal allocation of water for each user?
4) Is their any crop water requirement rate?
5) What are the basic rules, regulations, and values in water allocation? (Formal and informal)
6) What is done to water allocation defaulters?

2.1.3. Distribution

1) How is land distributed to irrigation users?
2) How is water distributed for users?
3) What is done for water distribution defaulters?
4) Is there any rule to control water distribution?

5) Who is responsible to enforcing the rule?
6) Is there any special consideration for emergency?

2.1.4. Drainage

1) Is drainage a problem in the scheme?
2) How do you manage the drainage problem?
3) Is there any experience to re-use the drained water?
4) Who participates in the drainage work?
5) What measures taken for those who does not participate in communal drainage activities?

2.2. Structures

2.2.1. Design

1) Who are the major actors in designing the irrigation system?

2) How the users are participating in design?

3) What measures taken for those who do not participate in design?

2.2.2. Construction

1) Who are the major actors in construction of the irrigation system?

2) How the users are participating in construction?

3) What measures taken for those who do not participate in construction?

2.2.3. Operation

1) History of the irrigation system
2) Who are the major actors in operation of the irrigation system?
3) How the users are participating in the operation of the scheme?

2.2.4. Maintenance

1) Who are the major actors in maintenance of the irrigation system?

2) How the users are participating in maintenance?

3) What measures taken for those who do not participate in maintenance?

2.3. Organizational aspects

2.3.1. Decision-making

1) How is input and out put marketing managed?
2) What like is the input market for irrigation production?
3) Is there any special support to female-headed households using irrigation?
4) Who decides on major issues irrigation system management? (Crop selection)

2.3.2. Mobilizing resources

1) What are the basic resources required in the irrigation system?
2) How the resources are mobilized?
3) Who mobilizes the resources?

2.3.3. Communication

1) How is the communication mechanism among the users?
2) How is the communication mechanism between users and other actors?

2.3.4. Conflict resolution

1) Have there been any conflicts pertaining to irrigation in the community?
2) Conflict resolution, defaulters, enforcement of rules
3) How are the common reasons for the conflict?
4) Who resolves the conflict?

Part III. The Formal and Informal Institutional Actors Involved in Irrigation System Management

1) Is there a water users Association for the scheme?
2) Institutions involved in irrigation management
3) Water Users Association, legitimacy and function
4) Water users Association, charter, joint agreements, appeal for reform
5) Water Court, water use change, unused water disposal
6) Conflict with downstream water users (non-irrigators)

Part IV. Internal and External Challenges Interfering With the Performance of Irrigation Systems

1) What are internal challenges encountered that affect the performance of the irrigation system?
2) What are the major external challenges?
3) What efforts are done to reduce challenges?

Part V. The Benefits of Involving in the Irrigation Schemes

1) What are the major economic benefits that the scheme provides for actors?
2) What are the major social benefits that the scheme provides for actors?

Annex 5: Key Informants Interview Checklist

Part I. General Information

Name, Sex, and Responsibility of Key Informants:

1) _____
2) _____
3) _____
4) _____
5) _____
15)_____

Part II. The Indigenous Irrigation System Management

1.Water use

a) Acquisition (Water Supply)
b) Allocation (Scheduling)
c) Distribution (Utilization)
d) Drainage (Removal of Excess)

2.Structures

a) Design (To capture the water to safe direction)
b) Construction (To Provide the water safely)
c) Operation (Timely release required quantity and quality)
d) Maintenance (Sustaining)

3.Organizational Aspects

a). Decision making

b) Mobilizing resources

c) Communication

d) Conflict resolution

Part III. The Formal and Informal Institutional Actors Involved in Irrigation System Management

a) Who are the formal actors?
b) What are their roles in irrigation management
c) Who are the informal actors or institutions? (Market, transport, credit, agricultural service)
d) What are their roles in irrigation management

Part IV. Internal and External Constraints Interfering With the Performance of Irrigation Systems

a) Internal constraints in water use, structure, and organizational aspects
b) External constraints in water use, structure, and organizational aspects
c) How the constraints are solved?

Annex 6: Household Interview Survey Questionnaire

Addis Ababa University
Institute of Regional and Local Development Studies (RLDS)
Household Interview Survey Questionnaire

Dear respondent,
This is a household interview survey questionnaire designed to assess the kind of institutional and irrigation management practices in the community managed indigenous irrigation systems in Amaro special Woreda. The study focuses on the institutional aspects and management practices of irrigation system, and household interview survey with the aim of scrutinizing the institutional human behavior as well as collective action with particular reference to irrigation system management is one of its data gathering methods. The ultimate goal is to replicate appropriate management experiences in order to improve the irrigation system management. Thus, your genuine response is of paramount importance for the success of the study, and the researcher kindly requests your cooperation in so doing. Please be sure that any information you provide will be kept confidential and be used purely for the purpose of the study.
Thank you!

Kassaye Teshager

Part I. General Information

1.1. Date _____
1.2. Name of Enumerator _____
1.3. Name of irrigation scheme _____
1.4. Questionnaire code _____
1.5. Name of Household Head _____
1.6. Sex of Household Head _____
1.7. Age of Household Head _____
1.8. Ethnicity of Household Head _____
1.9. Religion of Household Head _____
1.10. Kinship of Household Head _____
1.11. Household Family Size _____
1.12. How long has the household head lived in the village _____
1.13. How long has the farmer practiced irrigation (years) _____
1.14. Where is your plot located? _____

a. Head end
b. Middle
c. Tail end

Part II. The Indigenous Irrigation System Management

2.1. Water use

2.1.1 Acquisition

1) What is your irrigation water source?

a. Well /borehole
b. Stream / river
c. Natural pool / pond
d. Shallow dug well
e. Others/specify

2) What is the mechanism of irrigation land acquisition in this irrigation scheme?

a. Inherited
b. Bought
c. Freely obtained
d. Leased
e. Others/specify

3) Do you pay for irrigation water?

a. Yes
b. No

4) If yes, how much do you pay for one year? (Birr)_____
5) How do you pay?

   a. Per month
   b. Per year
   c. Per plot
   d. Others/specify

6) What is the approximate distance of main water source from center of your plot/_____km?
7) Is the water available for both wet season and dry season irrigation?
   a) Yes
   b) No
8) If no, why not? _____

2.1.2. Allocation

1) Do you use water for supplementary irrigation (During the wet season)?

   a) Yes
   b) No
2) If no, why not _____
3) Do you feel you share equal water with every user in the scheme?

   a) Yes
   b) No

4) If no, what do you think is the reason for the inequality?

   a) _____
   b) _____
   c) _____
   d) _____
5) If there is inequality which groups of people get more water? _____
6) If there is inequality, which groups of people get less? _____
7) If there is inequality, do you get more or less?
   a) Yes
   b) No
8) If you get less, do you believe this is reasonable?

   c) Yes
   d) No

9) If no, what measures do you take in response?
   a) Become reluctant to participate in maintenance
   b) Try to over use water in my turn

c) Conspire with my likes in order to bring about equality
d) Others/specify
e) Any combination of the above

10) Do you use crop water requirement rates for watering your fields?
a) Yes
b) No

11) If yes, who gives you the rate?_____

12) If yes to Q 10, do you always stop watering when the rate is met even if the usual time given to watering turn is yet to get?

a) Yes
b) No

13) If no to Q 12, why do not you stop at the given rate? _____

2.1.3. Distribution

1) Who manages the distribution and how? _____
2) What is the role of Qorro or water father in distribution _____
3) What is your relationship of with the Qorro? _____
4) Do think that the activities of Qorro fair?

a. Yes
b. No

5) If no, what is the cause _____
6) Have there been any defaulters of water distribution in the scheme?
a. Yes
b. No
7) If yes, what is done in cases of water distribution defaults? _____
8) Does the community have a system of rule for controlling water distribution default?
a. Yes
b. No
9) If yes, what does the rule say? _____

10) If yes to Q8, do you believe the rule is enforced in the way formulated?
a. Yes
b. No
11) If no, what are the weaknesses? Please, list down in order of importance
a. _____
b. _____
c. _____
d. _____
e. _____
12) Who or what body is responsible for enforcing the rules?

_____

13) Whom, do you think; does the water in the source belong to?

_____

14) Whom, do you think; does water belong to when it is at the gate of your plot just getting to your plot at your watering turn? _____

15) Are there special considerations for crop-type and stage of growth during water allocation?
   a. Yes
   b. No

16) If No, what happens when somebody is convincingly in higher need of water for his/her field?

   a) Can do nothing until his/her term is up
   b) Can contact water controlling body in terms of emergency and get water

   c. Can negotiate with the irrigator of that turn and get water
   d. Other/specify _____
   e. Any combination of the above _____

2.1.4. Drainage

1) Is drainage a problem in your scheme?

   a. Yes
   b. No

2) If yes, how do you manage the drainage problem? _____
3) Is there any experience to re-use the drained water? _____
4) Is the irrigation community participate in solving drainage problems
   a. Yes
   b. No

5) Have you ever participated in draining of the irrigation scheme?

   a. Yes
   b. No

6) If no to Q5, why not? _____
7) If yes to Q5, how many times in a year do you participate approximately? _____
8) If yes to Q5, is it only your own plot or on the whole scheme?
   a. On my own plot
   b. On the source
   c. On the canals
   d. At any point of damage in the scheme
   e. Any combination of the above

2.2. Structures

2.2.1. Design

1) Who are the major actors in designing the irrigation system?
   a. _____
   b. _____
   c. _____
   d. _____
2) Have you ever participated in design of the irrigation scheme?

   a. Yes
   b. No

3) If no to Q2, why not? _____
4) If yes to Q2, how many times do you participate approximately? _____
5) If yes to Q2, is it only your own plot or on the whole scheme?
   a. On my own plot
   b. On the source
   c. On the canals
   d. At any point of damage in the scheme
   e. Any combination of the above

2.2.2. Construction

1) Who are the major actors in constructing the irrigation scheme?
   a. _____
   b. _____
   c. _____
   d. _____
2) Have you ever participated in construction of the irrigation scheme?

   a. Yes
   b. No

3) If no to Q2, why not? _____
4) If yes to Q2, how many times do you participate approximately? _____
5) If yes to Q2, is it on your own plot or on the whole scheme?
   a. On my own plot
   b. On the source
   c. On the canals
   d. At any point of damage in the scheme
   e. Any combination of the above

2.2.3. Operation

1) How much land do you have for cultivation? _____ha
2) From the total land you have how much is irrigated? _____ha

3) How is the land tenure system in your area? _____
4) Do you farm you land or are you hiring for some body?_____
   a. Farm my self
   b. Use other individuals
5) Do you care for improving the fertility of your irrigation plot?_____
   a. Yes
   b. No
6) If yes to Q4, what techniques do you use?_____
   a. Fallowing
   b. Crop rotation
   c. Manure
   d. Compost
   e. Chemical fertilizer
   f. Crop residue
   g. Others/specify
   h. Any combination of the above
7) Under whose title is the land you are using for irrigation?
   a. My self
   b. My spouse
   c. All the family
   d. My self and my spouse
   e. Other /specify
8) Do you have child who is at the age of claiming land under their own title?
   a. Yes
   b. No
9) If yes, how is the child going to get the land?
   a. Through redistribution of the whole irrigation land newly
   b. Through allocation of some marginal land not put under cultivation but potentially irrigable
   c. Through allocation of some marginal land not put under cultivation nor potentially irrigable
   d. Through inheriting land under my title at my will any time
   e. Through inheriting land under my title when I pass away
   f. Other/Specify
10) Do you think the land you are using will be under your title through out your life?
   a. Yes
   b. No

11) If yes, what relations does this feeling of yours have with improving productivity of your land?
   a. It motivates me to improve the fertility and conserve soil
   b. It assures me of the fact that the land is mine, and I have to take every care of it
   c. Both
   d. Does not make any sense
   e. Others/specify

12) How many times a year you produce by applying irrigation? _____
13) What are the major agricultural crops you produce using irrigation? _____
14) What are the major agricultural cash crops you produce using irrigation? _____
15) What amount you produce through irrigation and with rain fed recently, indicate your produce for last two seasons? In quintal or birr, which ever appropriate _____
16) How many months of the year you are engaged in irrigation activities?
17) Do you have labor shortage in operating your irrigation farm?
    a. Yes
    b. No
18) What type of labor do you use for your irrigation activity/
    a. Self
    b. Spouse
    c. Other household members
    d. Hire labor
    e. Other
19) If you hired labor how much do you pay per day per individual _____birr?
20) Did the payment for hired labor increased because of irrigation?
    a. Yes
    b. No
21) If you do not hire labor why?
    a. Have enough family labor
    b. Too expensive
    c. No available labor to hire
    d. Others/specify

2.2.4. Maintenance

1) is/are there practices in which livestock walk about in the irrigation/irrigated area or the scheme structure?
    a. Yes
    b. No
2) If yes, in what cases?
    a. For drinking water
    b. For grazing during fallow periods
    c. For feeding on crop residue after harvest
    d. Uncontrolled livestock feeding on irrigated crops
    e. Others/specify _____
    f. Any Combination of the above _____
3) If yes to Q1, what damages do they cause in the scheme?
    a. They eat up the irrigated crops
    b. They damage irrigation canals
    c. They cause soil compassion
    d. Others/specify_____
    e. Any combination of the above _____

4) Who are the major actors in maintaining the irrigation scheme?

a. _____
b. _____
c. _____
d. _____

5) Have you ever participated in maintenance of the irrigation scheme?

a. Yes
b. No

6) If no to Q5, why not? _____
7) If yes to Q5, how many times in a year do you participate approximately? _____
8) If yes to Q5, is it on your own plot or on the whole scheme?

a. On my own plot
b. On the source
c. On the canals
d. At any point of damage in the scheme
e. Any combination of the above

9) How frequently does the structure get damaged? About _____ times in a year.
10) What is/are the main cause/s of structure damage in your scheme? List down in order of importance.

a. _____
b. _____
c. _____
d. _____

2.3. Organizational aspects

2.3.1. Decision-making

1) Do you practice irrigation all dry seasons as long as water is available?
   a. Yes I do
   b. No I sometimes hire out my plot
   c. No, I sometimes leave my plot for fallowing
   d. Any combination of the above (use the codes)
2) If **b** above is taken as answers to Q 1, what is your reason?
   a. Shortage of labor
   b. Problem of ox/oxen
   c. Because I am not interested in undertaking the laborious practice of irrigation during the hot weather
   d. Because I can meet my household needs from other means
   e. Others /specify _____
   f. Any combination of the above (use codes)
3) If **d** above is taken as an answer to Q2, what is/are the other means?
   a. Relief assistance
   b. Rain-fed production

c. Fire wood selling
d. Wage labor
e. Other specify _____
f. Any combination of the above

4) If **d** above, is taken as an answer to Q 3, where do you get the job?
a. On irrigation fields of my community members
b. On farm fields of others than my community members
c. From non-farm activities in my own area
d. From non-farm activities in others than my area
e. Any combination of the above

5) If **b** above, is taken as an answer to Q 4, do you have to go out of your area for some time and stay there in order to accomplish the work mentioned?
a. Yes
b. No

6) If yes, how long do you have to stay there? _____

7) Do you know what crops have been recommended for irrigation production for your scheme by extension agent?
a. Yes
b. No

8) If yes, do you crop your field according to the recommendation for types of crop and area of land?
a. Yes
b. No

9) Is it on your discretion that you plant the crop types that you grow using irrigation?
a. Yes
b. No

10) If yes, list down the rank of crops you produce using irrigation in terms of area of land devoted to each. Take the crop to which the largest area is devoted as 1st rank.
a. _____
b. _____
c. _____
d. _____
e. _____

11) What is/are the reasons for devoting much area of land to your high ranked crops?
a. Household Consumption
b. Livestock feed
c. Cash income source
d. Being less laborious
e. Risk sharing with other farmers
f. Land size
g. Others, specify _____
h. Any combination of the above

12) If no to Q 9, who dictates you? _____

13) If no to Q 9, would you crop other crops than you do now if you were left free for choice?
a. Yes
b. No

14) If yes, what crop/s?

a. _____
b. _____
c. _____
d. _____

2.3.2. Mobilizing resources

1) Do you have community resources your irrigation scheme?
   a. Yes
   b. No
2) If yes, whose is it, your own or the community's? _____
3) What resources you contribute for the irrigation scheme?
   a. Labour
   b. Sand
   c. Grasses
   d. Small farm implements
   e. management
4) If the resources are the community's, do you think you are equally served to anyone in the community?

   a. Yes
   b. No

5) If no, who do you think uses it more? Why?
6) If no to Q4, who do you think uses it lesser? Why?
7) Do you feel this way of using it is fair?

   c. Yes
   d. No

2.3.3. Communication

1) Were you happy when you first heard that an irrigation scheme was going to be constructed in your area?
   a. Yes
   b. No
   c. Indifferent
2) If yes, why? _____
3) If No to Q 1, why not? _____
4) Whether yes or no to Q1, has your feeling held true after irrigation implementation?
   a. Yes
   b. No
5) Do you get enough information about the situation of the irrigation scheme?
   a. Yes
   b. No

2.3.4. Conflict resolution

1) Did you lose any asset of your own because of irrigation dam construction?
    a. Yes
    b. No
2) If yes what did you lose?
    a. Grazing land
    b. Cultivated land
    c. Residential house and place
    d. Others, specify _____
    e. Any combination of the above
3) If yes to Q no. 1, what was your response to your loss?
    a. Opposed the construction
    b. I accepted my loss assuming the future benefit
    c. Internally opposed; however I eventually yielded in as I didn't have the power
    d. Others, specify _____

4) If you opposed the construction, how was the conflict resolved?
    a. It wasn't resolved as the project designers went on with the process
    b. It was resolved by giving me compensation
    c. I was given compensation which I didn't agree upon; and I was driven out
    d. Others, specify _____
5) If you opposed then, has your feeling changed now?
    a. Yes, I am convinced that irrigation has brought me better advantages
    b. No, still I feel insecure
    c. I am now indifferent

6) If you were given compensation, please mention the case.

_____

7) If you still feel insecure, would you like if you could get back your original asset and give up your irrigation use?
    a. Yes
    b. No
8) Have you ever had a conflict related to irrigation production with anybody?
    a. Yes
    b. No
9) If yes to Q 8, how many times in an irrigation season would it be approximately?

_____

10) If yes to Q 8, please mention all cases and you remember.
    a. _____
    b. _____
    c. _____
    d. _____
11) What do you think is/are the main cause/s of conflict in your scheme?
    a. Water allocation

b. Water distribution
c. Storage sharing
d. Land redistribution
e. Others/Specify _____
f. Any combination of the above _____

12) Is there a problem of product theft in your scheme?
a. Yes
b. No

13) If yes, is the stealing from store or field? _____

14) If yes to Q 12, which groups of people steal do you think (know)? _____

15) If yes to Q12, at what time does the stealing take place?
a. At day time
b. At night time
c. Any time

16) If yes to Q 12, is the stealing related to conflicts pertaining to irrigation use?
a. Yes
b. No

17) What hostile activities are there among the community members resulting from conflict over irrigation production?
a. _____
b. _____
c. _____
d. _____

Part III. The Formal and Informal Institutional Actors Involved in Irrigation System Management

1) List the formal institutional actors involved in the irrigation system management of your scheme?
a. _____
b. _____
c. _____
d. _____
e. _____

2) What are the roles of actor **a** in:

2.1) Water use (acquisition, allocation, distribution, drainage) _____

2.2) Structures (design, construction, operation, maintenance) _____

2.3) Organizational aspects (decision-making, mobilizing resources, communication, conflict resolution)_____

3) What are the roles of actor **b** in:

3.1) Water use (acquisition, allocation, distribution, drainage)

3.2) Structures (design, construction, operation, maintenance)

3.3) Organizational aspects (decision-making, mobilizing resources, communication, conflict resolution)

4) What are the roles of actor **c** in:

4.1) Water use (acquisition, allocation, distribution, drainage)

4.2) Structures (design, construction, operation, maintenance)

4.3) Organizational aspects (decision-making, mobilizing resources, communication, conflict resolution)

5) Is there any water use association for the scheme?
   a. Yes
   b. No
6) If yes for Q5, how do you organize it?
   a. Democratic election
   b. Assignment by the community
   c. Assignment by the government
   d. Other/specify
7) How many executive members have the water committee? _____
8) How many years is its service term? _____
9) What other informal actors are involved in the management of the irrigation system?
   a. _____
   b. _____
10) What are the roles of informal actor **a** in?

10.1) Water use (acquisition, allocation, distribution, drainage) _____

10.2) Structures (design, construction, operation, maintenance) _____

10.3) Organizational aspects (decision-making, mobilizing resources, communication, conflict resolution) _____

11) What are the roles of informal actor **b** in?

11.1) Water use (acquisition, allocation, distribution, drainage) _____

11.2) Structures (design, construction, operation, maintenance) _____

113) Organizational aspects (decision-making, mobilizing resources, communication, conflict resolution) _____

12) How do you sell your produce?

a. Take produce to the market, where?_____
b. Consumers buy from field, where do they come from?_____
c. Traders buy from the field, where do they sell?_____
d. Contract with an institution, which?_____
e. Others/specify_____

13) How do you transport your produce to the market?

a. Through vehicles
b. Through public transport
c. Using pack animals
d. Carrying

14) How far is the market you mentioned from your plot?_____kms

15) Mechanisms of selling your produce?

a. As an individual
b. As a member of an informal group
c. As a member of cooperative
d. Others/specify

16) Do you face a problem in selling your produce?

a. Yes
b. No

17) If your answer is yes, what type of problems?

a. Low price
b. Lack of transport
c. Low demand for the produce
d. Others/specify

18) How are the prices fo your agricultural products at local markets during harvest season?

a. Very cheap
b. Cheap
c. Competitive
d. Expensive

19) Is there micro-financial institutions in your area?

a. Yes

b. No

20) If your answer is no, what other credit source do you use?
   a. Individual lender
   b. Relatives
   c. Friend
   d. Bank
   e. NGO
   f. Cooperatives
   g. Other/specify
21) Do you borrow money?
   a. Yes
   b. No
22) If yes, why?
   a. To purchase livestock
   b. To purchase farm implements
   c. To buy modern farm inputs
   d. To construct house
   e. Other /specify
23) Do you have experience of default on your repayment before?
   a. Yes
   b. No
24) If yes, what options do you have for the credit repayment?
   a. Selling of livestock
   b. Selling of house furniture
   c. Renting out land
   d. Borrowing from friends and /or relatives
   e. Others
25) If you do not borrow, why not/
   a. Fear of being in debt
   b. High rate of interest
   c. Fear of failure to repay
   d. I do not need credit
   e. Others/ specify
26) Do you save?
   a. Yes
   b. No
27) If yes, in what form do you save?
   a. Ikub
   b. Save in the form of livestock
   c. Save in the bank
   d. Others/specify
28) Do you pay tax?
   a. Yes
   b. No
29) How much do you pay per year _____birr?

30) What do you do to pay those taxes and contributions?
   a. Sell crops
   b. Sell animals
   c. Borrow money from other sources
   d. Others ?specify
31) Have you ever visited by an extension agent?
   a. Yes
   b. No
32) If yes, during which operation?
   a. Land preparation _____times
   b. Planting/transplanting _____times
   c. Weeding _____times
   d. Applying agro chemicals _____times
   e. Watering _____times
   f. Harvesting _____times

33) Do you have any relation with NGOs working in the area/
   a. Yes
   b. No
34) If yes what are the fields of your cooperation?
   a. Field day or demonstration
   b. On farm verification
   c. Market facilitation
   d. Input provision
   e. Others/specify
35) Do you have any relation with any research center/
   a. Yes
   b. No
36) If yes, what advice or support do you get? _____
37) What kind of institutional support you need in relation to the scheme?
   a. Organization and management
   b. Increase the scheme's capacity
   c. Maintenance
   d. Others/specify
38) What do you think the roles of women in?

   38.1) Water use (acquisition, allocation, distribution, drainage) _____

   38.2) Structures (design, construction, operation, maintenance) _____

   38.3) Organizational aspects (decision-making, mobilizing resources, communication, conflict resolution) _____

Part IV. Internal and External Challenges Interfering With the Performance of Irrigation Systems

1) What are the major internal challenges encountered that affect the performance of the irrigation system in your scheme?
   a. _____
   b. _____
   c. _____
   d. _____
2) How do you manage the internal challenges? _____
3) What are the major external challenges encountered that affect the performance of the irrigation system in your scheme?
   a. _____
   b. _____
   c. _____
   d. _____
4) How do you manage the external challenges?

Part V. The Benefits of Involving in the Irrigation Schemes

1) What are the major economic benefits you enjoy because of participating in the irrigation scheme?
   a. _____
   b. _____
   c. _____
   d. _____
2) What are the major social benefits you enjoy because of participating in the irrigation scheme?
   a. _____
   b. _____
   c. _____
   d. _____
3) What are the other benefits you enjoy because of participating in the irrigation scheme?
   a. _____
   b. _____
   c. _____
   d. _____

The End