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IS THERE A SPILLOVER EFFECT FROM FOREIGN DIRECT INVESTMENT TO LOCAL FIRMS? THE CASE OF MANUFACTURING SECTOR IN ETHIOPIA

BY

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This is to certify that the thesis prepared by Selamsew Mattewos entitled with: *Is there a spillover effect from foreign direct investment to local firms? the case of manufacturing sector in Ethiopia* and submitted in partial fulfillment of the requirement for the Degree of Master of Science in Development Economics complies with the regulation of the university and meets the accepted standards with respect to the originality and quality.

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Table of Contents

Contents **Page**

List of Tables

Page

List of Figures

Page

List of Acronyms

CSA	Central Statistical Agency
EIA	Ethiopian Investment Agency
EIC	Ethiopian Investment Commission
FAO	Food Agriculture Origination
FDI	Foreign direct investment
FE	Fixed Effect
FNG	Federal Negarit Gazeta
GTP	Growth and Transformation program
ISIC	International Standard Industrial Classification
MNCs	Multinational Companies
MoA	Ministry of Agriculture
MoFED	Ministry of finance and Economic Development
NBE	National Bank of Ethiopia
PMO	Prime MISTER OFFICE
RE	Random effect
SNNPR	South Nation Nationality and Peoples Region
TFP	Total Factor Productivity
UNCTAD	United Nations Conference on Trade and Development
WB	World Bank
WBI	World Bank indictor

Abstract

This study assesses the spillover effects from foreign direct investment on to local firms in the case of manufacturing sector in Ethiopia. Data was collect from central statistical agency of Ethiopia taking period (2013 -1017). The sample includes 11150 medium and large-scale firms from all regions of the country. The study addressed three questions. First, do foreign firms perform better productivity than local firms? Second, do local firms get positive spillover from foreign firms within the same sector? Third, does the spillover effect from FDI differ from regions that have a greater number of foreign firms to regions that have small number of foreign firms? In order to attain these objectives, both descriptive and econometrics analysis has been used. Fixed effect model is used in order to examine the spillover effect from foreign direct investment to local firms. Different diagnostic tests are used in order to verify the correctness of the model. The study found that, foreign firms have higher productivity compared to local firms. In addition, the study found FDI have positive horizontal spillover effects on local firms. Nevertheless, the study showed that positive spillover effects varied across regions. It is higher in regions that have more number of foreign firms than regions that have small number of foreign firms. The findings suggest that need to continue to implement policies that can encourage spillover effects between foreign and domestic firms and, create favorable conditions to maximize spillover effects from foreign firms.

Keywords: productivity, spillovers, FDI, determinant factors.

CHAPTER ONE

1. INTRODUCTION

1.1. Background of the Study

Foreign direct investment is a direct investment made by a foreign investor that may be company or an individual investor in the production or business of other country for a profit or other socio-economic purpose. Theory of capital movement state about foreign direct investment as a type of portfolio investment. The theory classified investment in to two types: first type is, the investment on the physical capital like that of buildings, machineries, and equipment. The second is the indirect investment; primarily of a portfolio investment. The merger and acquisition of a company or an enterprise outside the investing firm's home country has also been incorporated in the explanation for the foreign direct investment following the swift growth and change in global investment trends. Within it is the direct achievement of an ultramarine firm, construction of a transportation and other related facilities, or investment in a joint venture or strategic alliance with a domestic firm with assistant input of technology, and the licensing of intellectual property rights (Turi, 2015).

Foreign direct investment accelerates economic growth. It has vital role for economic growth in developing countries and makes easier to adopt a new technology and new products. It also increases competition and impose the firms to improve effectiveness by adopting new technologies. There are different ways through which FDI can support economic growth in the home countries such as relocate of technology, increase in tangible assets, managerial, and marketing skills (Khan, 2006).

According to the 2019 (UNCTAD) investment report, the global trend of FDI flows continued their side in 2018, falling by 13 per cent to 1.3 trillion USD and 23 per cent in 2017, to 1.43 trillion USD from a revised 1.87 trillion USD in 2016. The flow to the developing world remain stable rising by 2 per cent which was 706 billion USD in 2018 and 671 billion USD in 2017, seeing no recovery following the 10 per cent drop in 2016 . Africa saw 11 percent increase in 2018, that was 46 billion USD and 42 billion in 2017, a 21 per cent decline from 2016. FDI flow

to East Africa was largely unchanged at 9 billion USD in 2018. Ethiopia is second major recipient of FDI in Africa next to Egypt (UNCTAD, 2019).

Investment in Ethiopia has shown an incredible growth in the last few years reaching about 4 billion USD in 2018.Institutional reforms, decisions to privatization state owned companies and construction of industrial parks are the main pooling factors for the increase in the inflow of the foreign direct investment (EIC, 2019). On the top of this, cheap labor, low competitive energy cost and preferential market access to the foreign investors are the some of the other pulling factors. Light manufacturing like garment and textile, leather, and agro-processing sectors are the main sectors in which the country has attracted the foreign investors. In 2016, Ethiopia received one of the highest FDI inflows in Africa, US$3.2 billion, a 46 percent annual increase (World Bank, 2018).

The ideal economic theories postulates assume that FDI can generate positive spillover to domestic firms. It is seen as important sources of international technology and know-how, capital. Foreign firms existence in local economy get way of better transfer of managing experience and technical knowledge. This may eventually help as a productivity improvement tool for the local firms. Due in part of this idea, currently, least developed nations are gradually giving more attention to the value of FDI in their developmental policy (Mugendi, 2014)

The position of FDI has been well-known as being a factor in the economic growth of developing countries. It is seen as a way in diffusing technology and innovation from advanced world. Hence, the policy makers take considerable attracting measurements like tax holidays, building infrastructure, and issuing regulatory exemptions. The foreign investors are considered as a source of new technology, capital, and management expertise which in turn leads to the improvement in the productivity of domestic industries (Liang, 2008).

1.2 Statement of the Problem

Ethiopia is one of the least developed countries struggling with the way out of the poverty in the short term and achieves a sustainable and equitable economic development in the long term. The country has engaged in the attracting of FDI in part to fill the gap between local saving and preferred level of investment. FDI moreover seen as a means of capital needed to increase the country's growth progress with the belief of positive spillover towards the domestic firms. In 2010, Ethiopia has prepared a five-year strategic plan the 'Growth and Transformation Plan' (GTP) which is intended to encourage the development of the nation. It provides fundamental role for the manufacturing firms and more consideration given to foreign investors, that are expected transfer benefits to local firm's (Turi, 2015).

However, there is controversy on the effect of FDI on domestic firm's productivity. Empirical findings that have been studied in developed and developing countries have mixed results. Some studies, for example (Konings, 2000), (Harisson, 1999), and (Sasidharan, 2006) have found no positive spillover effects of FDI to domestic firms. Other studies like :(Tol, 2002), (Pamukcu, 2007) and (Christian Fons, 2016) have found positive spillover effects of FDI to domestic firms. Therefore, the impact of foreign direct investment on domestic firm's productivity is unclear. The same is true in case of Ethiopia. The result of (Getachew, 2013) and (Girum Abebe, 2016) shows the positive spillover effects. On the converse, (Woldekidan, 2015) finds the negative and insignificant relationship between FDI and spillover effects. The result of (Turi, 2015) suggests that there is an econometric evidence for positive vertical spillovers but negative horizontal spillovers to the total productivity of the manufacturing firms in the country. Thus, the effect of foreign direct investment on local firms is controversial. Different researchers found different result and it has still become unclear about the relation between FDI and local firms. Up on this, the study tries to clear the effect of foreign direct investment on domestic firms using recent literatures and data

Therefore, this study discusses the effect of foreign direct investment on local firms productivity. Specifically, the research question includes the following:

- ✓ Do foreign firms perform better in productivity than local firms?
- ✓ Do local firms get spillover from foreign firms within the same sector?

- ✓ Does the spillover effect of FDI differ among regions that have a greater number of foreign firms to regions that have small number of foreign firms?

1.3. Objectives of the Study

The general objective of this study is to investigate the spillover effect from foreign direct investment to local firms. In line with this general objective, the research will examine the following specific objectives.

- To evaluate the productivity performance of foreign firms and local firms with in the manufacturing sector
- To assess the effect foreign direct investment on local firms productivity within the same sector and
- To assess the spillover effect from foreign direct investment to regions that have more foreign firms and regions that have small number of foreign firms within the same sector.

1.4 Hypothesis

Hypothesis of this study are: -

- Ho: foreign firms do not perform better productive than local firms.
- Ho: foreign direct investment has no significant effect on local firms in the same Sector and
- Ho: the spillover effect from foreign direct investment within the same sector does not differ from regions that have more foreign firms to regions that have small number of foreign firms.

1.5 Significance of the Study

There are many theoretical and empirical works on the topic of the effect of foreign direct investment on the local firms. However, it is unclear how FDI affect local firms' different investigators found diffident result. In Ethiopia, there is no much empirical studies about the effect of FDI on Ethiopian domestic firms. Thus, this study tries to assess the spillover effect from FDI to local firms in Ethiopian by using existing literature and by analyzing the most recent

data. The finding of this study will provide additional information for researchers and policy makers as well as other concerned bodies.

1.6. Scope of the Study

This study investigates the spillover effect from FDI to local firms of Ethiopian manufacturing sector. The study will use panel data over the period of 2013 to 2017. The research will consider only the medium and large-scale industries from both foreign and domestic firms who participate in the manufacturing sector in all regions of Ethiopia.

1.7. Limitations of the Study

This study evaluates the intra- sector spillover effect from FDI to domestic manufacturing firms based on data available at Ethiopian central statistical agency (CSA and literatures available. Moreover, because of unavailability of data for service and agricultural sector, this study will focus on manufacturing sector.

1.8. Organization of Paper

The study has been organized in six chapters. The remaining part of the paper organized as follows: Chapter two is the literature review part which includes both theoretical and empirical evidences. The third chapter discusses on the overview of Ethiopian economy and current trends of Ethiopian foreign direct investment. The fourth chapter discusses, methodology; model specifications, method of analyzing data and estimation techniques. Chapter five presented estimation results and discussions. Based on the empirical results and discussions, conclusion and recommendations is drawn and presented in chapter six.

CHAPTER TWO

2. LITERATURE REVIEW

2.1. Definition and Concept of FDI

According International Monitory Fund (IMF) (2007), foreign direct investment (FDI) is an investment undertaken by foreign investor (individual or company) in production or business, which intended long term relationship and reflecting ending interest of profit or other socio-economic purpose on a host country economy. It indicates investor exercise a significant degree of power that affect the managing experience of the home countries firm. This investment consists both the preliminary transaction between the two body and all subsequent transactions between them and between foreign partners both combined and independent. FDI is usually defined as resident firms with minimum of 10% foreign participation (UNCTAD 2009).

Foreign direct investment (FDI) is a vital for rapidly growing international economic corporation. This economic corporation called globalization. FDI used for purpose of forming direct, stable, and continuing relations among diverse economies. When right strategic condition exist, it can provide as an important vehicle for local firms' growth, and it may also help improve the competitive position of both the local industries and the foreign investing industries. Moreover, FDI may help as means of the transfer of technology and knowledge between firms. FDI similarly offers chance for the local firms to promote its products more widely in global markets. FDI have helpful for the expansion of international trade, is a crucial source of capital for a range of local economies.

Foreign direct investment is categorized as Greenfield investment, Cross-border or International merger and acquisitions (M&A) and Reinvested earning. Greenfield investment consists of any investment initiated in another country where the finance is funded by capital raised indirect investor's country. Cross-boundary or international merger and acquisitions (M&A) is about the transfer of possession of a domestic productive action and assets from a local to a foreign firm. The profits are not taken by direct investors, but reserved in the home country to fund a futere potential project is called Reinvested earnings. These three categories of FDI more divided in to extra three types; Export-oriented FDIs, Market development FDIs, and Government originated

FDIs. Export-oriented FDI is done to extract row materials or produce factor parts or ending products at a minimum cost for export to investor's country or international market. The FDI intended for the production of goods and services for sale in the invested country is Market-development FDI. This kind of investment is also called Import-replacement FDI. Government originated FDI is the last group wherever the investment is originated and funded by the host country. This category of investment is usual in least developed nations so as to decrease unemployment, decrease of inequality between regions in the of the nation, decrease the deficit of the balance of payments, etc. (Accolley, 2003).

There are several known channels in that foreign firms induced benefits can transfer from foreign connected-firms to local firms. These perhaps includes spillovers related with: Demonstration effect that help the local firms to emulate; work force movement from the foreign firms towards the local firms; improvement of export facility through the reduction of costs linked with incoming the global market; formation of competitive environment in the local economic system, and Backward and forward linkages with the local firms (Greenaway, 2004).

2.2. Theories on FDI

After the end of Second World War foreign direct investment, become vital idea because of emergency of new globalization forces. The growing arrangement of multinational corporations (MNCs) and foreign investment since the 1950s and 1960s, mainly FDI flows from the United States of America to European countries, providing the stimulus for many researchers to observe the subject of MNCs and the being of international production. Therefore here by, this paper tries to discuss the the path for FDI theories and and theories that focus on the impact of FDI in host country.

2.2.1. The path of FDI

There are many theories that clarify the grounds of foreign investor invest one other country rather than home come country. Yet, this section discusses three best theories, which are identified by Mugendi (2014).

2.2.1.1. Mac Dougall –Kemp Theory

The Mac Dougall-Kemp is the oldest FDI theories initiated by Mac Douglas (1958) and expanded by Kemp (1964). The theory assumes a two-country model between investing and host countries, price of capital being equal to its marginal productivity, they explained that capital moved from a capital plentiful nation to a capital inadequate country, and thus, the marginal productivity of capital tending to equalize between the two countries. This leads to improvement in efficient use of resources that leads to an increase in welfare. Despite the fact that the output in the investing country decreases in the wake of FDI outflows, national income does not fall because the country receives returns on capital that is equal to the marginal productivity of capital times the amount of foreign investment. Thus, the income from foreign investment is larger than the loss of output, the investing nation continues to invest away as it relishes greater national income than prior to foreign investment. Here, equivalent degree the home country to observe raise in national income, because of increase in foreign investment inflow (Mugendi, 2014).

2.2.1.2. Industrial Organization Theory

This theory was developed by Hymer (1976), then elaborated by Kindlerberger (1969), Caves (1982) and Dunning (1988). The theory states when a firm begins a subsidiary in another nation, it faces some difficulties in competing with local firms. These difficulties originate from differences in language, culture, legal system and other inter-country differences. Despite these difficulties the firm involves in FDI, it must have some compensations arising from intangible assets such as a well-known brand name, patent protected technology, managerial skills and other firm specific factors. The comparative benefit has to be firm specific. It must be transfer to foreign firms and it should be large enough to overawe these shortcomings. This firm specific advantage that explains why a firm can compete successfully in a foreign market (Mugendi, 2014).

2.2.1.3. The Portfolio Diversification Theory

The theory of portfolio diversification was developed by Markowitz (1952), which came up with focusing on the role of risk. In choosing among the various available projects, a firm would presumably be guided by expected returns and the possibility of reducing risk. For reason of risk

aversion, a rate of return difference will not encourage capital flow in one way until the difference disappears through arbitrage. Rather, capital mobility will be constrained by the desire to minimize or reduce risk, which is achieved by diversification (Mugendi, 2014).

2.2.2. The Impact of FDI

The theories that clarify the outcome of foreign direct investment can be divided in to two broad types. These are modernization which include neoclassical and endogenous growth theories and dependency theories. The classification is not only predestined for illustrative resolution but mirrors the very real departures prevailing between the theories.

2.2.2.1. The Neo Classical Theory

Solow (1956) developed the neo classical theory and then by Rostow (1956) by extending Harrod (1939) and Domar (1947) growth models that saw savings are key driving capital accumulation and growth. The theory highlights on the augmented foreign capital, technical improvement, and workforce productivity in as significant variables for economic development. Moreover, giving this theory, economic progress arises from two bases, factor accumulation, and total factor productivity growth. As a result, FDI plays a double function by contributing to capital accumulation and by increasing total factor productivity (Lucas, 1990). Generally, neo classical theories for FDI have shown the following advantages that rise from FDI. (a) The introduction of technology from advanced economies to emerging economies. Furthermore, it announces new administrative(managing) skills by training of workers (b) create employment (c) foreign exchange and (d) increase balance of payment (e) rise competition which lead to proper utilization of resources and increase productivity (Mohammed, 2014).

2.2.2.2. Endogenous Growth Theory

Endogenous growth theory says foreign direct investment have positive impact on economic growth of country through labor training and skill acquisition not merely through capital formation/accumulation and technology transfer. The theory states that technology transmission, increase of the level of knowledge arises through labor training and skill acquisition. Likewise, FDI introduce better management and organizational provisions, domestic firms can learn or adopt it. Therefore, foreign direct investment probable contributes to production growth by

increasing total factor productivity because of apparent dissemination of technology and increased efficiency through better marketing, managerial structure, and superior technology (Blomstrom *et al*., 1996).

Besides, endogenous growth literature has acknowledged country situation that must be present for FDI to have a positive impact on growth such as the complementarities between domestic and foreign investment, suitable level of human capital, open trading system, and advanced financial markets. In the endogenous growth model, various channels are at work at which FDI can affect economic growth. One, by increasing of capital formation to the receiver country via introduction of new ideas and technology. Two, through increasing knowledge and skills, this is stimulated via management practices and labor tanning. Third, via competition, FDI rise competition in the host country industry by overcoming entry barriers and reducing the market power of existing firms (Gorg, 2000).

2.2.2.3. Dependency Theory

Dependency theory is embedded in the Marxist thinking. The powerful work of this discipline was thought of ontology of dependency; Karl Marx (1883) on development and under development. The theory was developed under the direction of the director of the United Nations for Latin America, Raul Prebisch (1949). The argument of dependency is that, foreign investment is predicted to have a negative outcome on economic development and income allocation in domestic economy. The foreign direct investment may generate a monopoly industrial arrangement that causes in under utilization of productive inputs. It gives attention on advanced nations become wealthy by extracting work force and material inputs from the least developed state. This sort of capitalism creates a global separation of labor that causes distortion, hamper growth, and raise income inequality in least developed nations. The case here is that advanced nations will control the local economy and would not show the way to progressive increase as the multiplier effect that creates demand in one area to produce demand in another area of a country is weak and thus decrease growth in the local economy (Hodrab *etl,* 2015).

According to Dixon and Boswell (1996), foreign direct investment may create crowd out effect in domestic firms through restrain know how, innovation, controlling domestic inputs and capital. Essentially, foreign investment has an original may have positive effect on development

at the begun. However, in the long run the dependence on foreign investment results a negative effect on development. The arrangement and structure that proceed by foreign investment sustain extra foreign investment and unpleasant effect/negative spillovers like unemployment, over urbanization, and income inequality.

From the Political point of view foreign direct investment, have two major inferences. Firstly, while foreign direct investment and international loan funding organizations deteriorate the autonomy of the developing countries. They manipulate in the course of economic policy making a situation that can assist them indirectly have power. They implicitly by using the power maintain threat of removal from and significant loss of capital by the host nation in the margin. Second, the pattern lead to the development of new class relations and an acceleration of social disparity in the margin; new groups emerge that are linked to the core, while the remainder of the margin population becomes increasingly marginal, in both economic and political terms (Jackman, 1982).

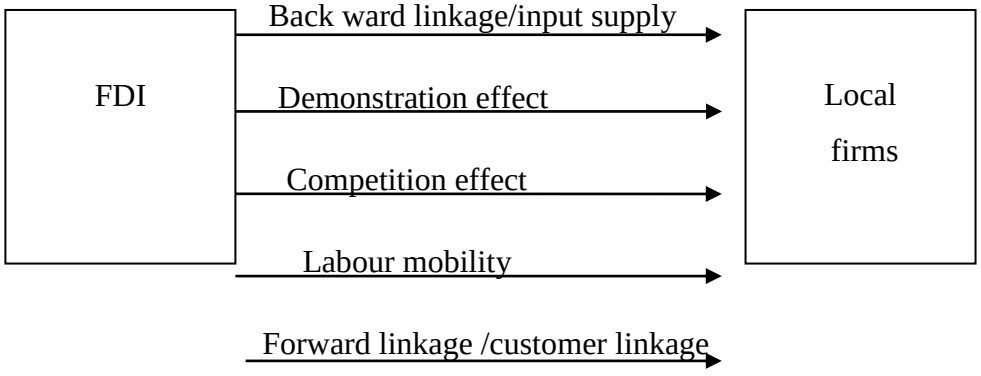
Although the effect of dependency theory pointed in the 1970s, debate on its reliability persists further than this decade. Bornschier and Dunn (1985), for example argue that flows of FDI have temporally positive effect on economic development; however collective stock of foreign capital has a preeminently retardant impact on economic development and associated with wider income inequality. The dependency theory was accepted by several nations in the 1970s, most evident in Latin America. Many of them take on import substitution policy and have a negative attitude on foreign investment. The inwardly oriented strategies and policies had harming impacts on Latin American economies (Hein, 1992). Consequently, their experiences variation with those of some East and Southeast Asian nations that were intended to enthusiastically to attract foreign investment into their local economies. These strategies were intended by a period of fast economic development in East Asia during the 1970s and 1980s (Hein, 1992). The reality generally limited the acceptance of the dependency theory, changing thought to the study of FDI's role.

2.3. Spillover Effect and FDI

In several literatures, FDI is seen as means for a nation's growth and development that is the motive behind for attracting FDI to a nation. The prospects of fortunate return from investment than local complement show the way a plant and function in other country. Domestic firms could ultimately benefit since foreign firms exist but foreign firms could not avert technological externalities. There is a broad economic prose that anxiety on the significance of FDI and its spillover effects to the local economy (Greenway 2004). The spillover effects may occur when the presence of foreign firms leads to productivity and effectiveness benefits in the local firms. Such benefits, still, may increase the productivity of home-grown plants without reimbursing the foreign firms.

The spillover effect takes place from non-market dealings when resources, mainly knowledge are comprehensive lacking a contractual connection, also called as positive externalities. There is deference among linkage and spillover: Linkages are a requirement for spillovers to happen. Though, MNCs might successful at guarantee that firm-specific assets and advantages do not spillover or at least will try to minimize technology leakages. Some literatures spot four means in which spillovers can take place, and thus, increase productivity and economic development in home country. but, the degree depends on the complication of products and processes, for instance, simple manufacturing and process, managerial and organizational innovation are said to be easier to imitate than production that is more complex (Turi, 2015).

Figure 2.1: FDI linkages and channels of spillover transfer to local firms



Source: Adopted from Joshua *et al.*, (2019) and D. William, (2019)

Foreign direct investment affects productivity local firms by direct linkages and indirect linkage. Spillovers that indicate knowledge spillovers in the form of technological knowledge on exporting or knowledge on new management techniques that has transferred from foreign to local firms. Such spillovers can occur through direct linkages, such as part of a supplier relationship, or indirect linkages, such as when local firms imitate what foreign firms are doing like; exporting, developing and adapting new technology. Direct linkages refer to backward and forward vertical linkages; indirect linkages go further than horizontal linkages and cover linkages between, firms at the same or different levels in the value chain as the foreign firm, as long as they are not directly buying or selling to each other (D. William, 2019).

Demonstration is perhaps the most marked spillover channel. The preamble of a new technology into a given market may be very costly and risky for local firm to undertake due to the costs inherent in attain its knowledge and the obtained results may be uncertainty. If a technology is used successfully by FDI, this will encourage domestic firms to adopt it. Obviously, the relevance of this effect increases with the match of the good produced by the two types of firms (Barrios and Strobl, 2002). Similarly, possibility the spillover effect transfer channel occur when, domestic firms hiring workers who, having previously worked for a foreign firms know about the technology and are able to realize it in the domestic firm. The impact of this labor mobility on the efficiency of domestic firms is, however, difficult to evaluate as it involves tracking the workers in order to investigate their impact on the productivity of other workers (Saggi, 2002). Competition between foreign and local firms in the domestic economy is also an incentive for the local firms to make a more efficient use of existing resources and technology or even to adopt new technologies; it may also restrict the market power of domestic firms (N. Crespo and M. Paula Fontoura 2002).

2.3.1. Determinant factors of FDI Spillovers

FDI spillovers to domestic firms depend on a variety of factors related to the characteristics of the foreign investment, as well as on the characteristics of local firms. N. Crespo and M. Paula Fontoura (2002) summarize the determinates of FDI spillover effect on domestic firms as follow;

Firstly, Absorptive capacity of domestic firms jointly with technological gap between foreign and domestic firms may determine spillover effect. Absorptive capacity comprises the ability to internalize knowledge fashioned by others and transform it to fit their own specific applications, processes, and routines. If the technological gap is high, FDI will transmit many benefits to the domestic firms. Secondly, the intensity labors mobility from foreign firm to local firms. On average, foreign firms pay higher wages than local firms among other reasons in order to evade labor turnover. In less developed countries, this wage differential is usually higher, making more difficult the transfer of workers from FDI to domestic firms. Thirdly, export capacity factor may affect the occurrence of spillovers. It has been argued that exporting firms already face significant competitive pressure in the foreign market and that foreign firms operating in the domestic market are not expected to create relevant additional pressures (N. Crespo and M. Paula Fontoura (2002).

Fourthly, spillover may also determined by the size of domestic firms. Small firms (in terms of employment or production) may be less to compete with foreign, suffering significant losses. Furthermore, such firms may not have a sufficient production scale to imitate some of the technologies introduced by foreign firms. Hence, assume larger firms to benefit more from the existence of foreign companies. Finally, geographical dimension determine the transfer of benefits from FDI to domestic firms. Several reasons have been recommended for this fact for example, labor turnover is considered to be regionally confined. The presence of demonstration effects is as well limited in location. Finally, because of transport costs, backward linkages are probable to occur mainly at a regional level (N. Crespo and M. Paula Fontoura 2002).

There are two main channels of spillover effects from MNCs can affect the productivity of domestic firms, the first one is horizontal spillover effect that can take place within the same industries through employment turnover, imitation, observational learning, and competition. The second is vertical spillover effect (forward and backward linkage) that can occur between different industries, through the leakage of their intellectual assets, management skills, and technology to their customers and suppliers (Javorcik2004).

2.3.2. Horizontal (Intra- Sectorial) Spillovers

This is the most studied area in the literature to the extent that benefits of FDI are apprehensive. Horizontal spillover take place from the existence of MNCs in a particular sector and its pressure on the local sector's contestant .Hence, local firms benefits due to occurrence of MNCs though productivity enhance in local economy through the mobility of work force from foreign firms to local firm via competition. At this point, a foreign firm encourage local firm to enhance its production techniques with demonstration effects such as repetition or imitation of foreign technology (Kasi, 2016).

According to Greenway (2004) and Javorcik, and Spatareanu (2008) there are four core transfer means of horizontal spillover effect MNCs to local firms. Firstly, the effect possibly appears from mobility of working force from foreign to local firms. The local firms obtain technical benefit by hiring working force that formerly practiced in foreign firms. This raise productivity and effectiveness of local firms. Secondly, domestic firms get benefit from know-how by watching managing experience and imitating technologies and innovations from foreign firms via reverse engineering. The local firms by imitation knowledge, new technology, and production method can raise productivity and decrease production cost. Thirdly, the presence of MNCs increase competition via well-organized and efficient use of resource allocation and lessen entry barriers by means of competing for input offered at local economy. Hence, local firms advance utilize of resources. Fourthly, spillovers come through export, if local firms gain knowledge to enter export market from foreign firms through partnership or imitation (Greenaway et al., 2004).furthermore, knowledge and relations among workforce and executives, foreign and local firms in terms seminars, shows and conference, domestic firm's employees are bare to sophisticated technologies and management experience. Therefore, they may implement these new technologies, procedures and practices in their own firms and increase their productivity (Hale and Long, 2005).

2.3.3. Vertical (Inter Industry) Spillover

Vertical Spillover arises from FDI flowing into segment whose output of intermediate products is used by other sectors of the economy. More over Vertical spillover effect come from mainly customer supplier relation in different sectors of MNCs and local industries. The effect appears

through formation of relation among the foreign and local firms and it course that is typically multi sectorial. This interaction increases the productivity of domestic firms across the sector (Sasidharan2006).

According to Smarzynska (2003), there are two types of linkage between domestic and foreign industries. Firstly, back ward linkage, take place when the local provider has to convene the demand from the foreign firm in the character of advanced quality, price and supply principles. Increased demand for intermediate inputs by foreign firms increase production possibility of the country. Besides forward linkage on the other way, happen foreign may provide new and improved intermediate inputs through logical prices to local market. Thus, this relation in the other sector may be key for the diffusion of technology.

2.3.4. Spillover and Regional Dimension

Geographical proximity between MNCs and local industries play important role for imitation and dissemination of technologies. Therefore, domestic firms that found closer to foreign firms benefit extra from the know-how spillovers. Given that, it is economical for local firms to imitate the technologies of foreign firms, visit and converse with foreign firm labour force and arrange particular training for domestic firm workers in alliance with foreign colleagues (Josue, 2009).Moreover, Girma and Wakelin (2009) pointed out four reasons for spillover that may have regional dimension. First, backward and forward between local firms and foreign firms increase because of reduction in transport cost and accelerate communication that come due to their geographical proximity .Second, closeness may also can create favorable environment for domestic firms to imitate in technologies. Third, proximity may create way for innovation in which workers mobility increase from MNCS local firms in the same region and organize training and communications between two industries.

2.4. Analytical Framework

Foreign direct investment is the dynamic force for improving economic growth and development of the local economy. It has been widely recognized that the inflow of FDI increases total factor productivity effects in the host country through transferring technology and increasing pre competitive effects (Clare, 1996). The analytical framework is drawn from both endogenous and neoclassical growth theories that illustrate the main factors raising total factor productivity.

2.4.1. Concepts of Productivity

In a simple expression, productivity is efficiency in production: how much output is obtained from a given set of inputs. As such, it is typically expressed as an output–input ratio. The Single factor productivity measures indicate a unit of output produced as per single unit of input. Labor productivity is the most familiar measure of productivity, while occasionally capital or even materials productivity measures are used. Obviously, single factor productivity levels may influenced by the intensity of use of the excluded inputs. The variation in labor productivity may occur between two producers even if they have the same production technology, thus one may use capital much more intensively, say because they face different factor prices (Syverson, 2011).

Given that, researchers frequently apply a productivity concept that is invariant to the intensity of use factor inputs, this measure also known as total factor productivity (TFP). In theory, variation of TFP illustrated by the shift in the isoquants of a production function: difference in output produced from a fixed set of inputs. The higher total factor productivity producers will produce greater quantity of output with the same set of visible inputs than lower total factor productivity producers and, therefore, have isoquants that are shifted up and to the right. The variation of factor price causes factor intensity disparity does not have impact on TFP while, it induces shifts along isoquants rather than shifts in isoquants (Syverson, 2011).

2.4.2. Measuring Total Factor Productivity

Total factor productivity can be defined as the part of output growth that cannot be explained by input growth and has become the choice measure of productivity. TFP is often called to as the Solow residual, TFP confine the effect of change in technology, institutions, and other productivity upset, but it gives little on the way as to what takes place inside the black box of technology (Kohli, 2015).

In measuring total factor productivity, both neoclassical and endogenous growth models employ an aggregate production function. Any such economy-wide function is theoretical and has no direct empirical counterpart in actual micro data. Conceptually, it can be aggregated from a perfectly competitive world, but not from the mixture of monopoly, oligopoly, monopolistic and perfect competition that characterizes real-world industrial structures. Moreover, the aggregation

requires the presence of the perfect competition rather than subsistence practice of competition that we essentially see in the real world (Carlaw, 2000).

The theories that measure total factor productivity in aggregation, assume the existence of end state competition. The aggregations cannot be made properly given continuing process competition. Obviously, still, it is process not end state competition that we see in the real world. The judgment of economists varies greatly on how much this matter.

Consider the simple Cobb-Douglas version of the aggregate function:

$$Y = AK^{\alpha}L^{\beta}$$

Aggregated total output is measured as Y, total aggregated labour index as L and total capital as K. Y,L and K are independently measured while A, β and α are statistical estimates. A is aggregate index of technology so called total factor productivity. It measure change in aggregate total output not due to change in aggregate inputs rather change in technology. It is calculated by dividing both side of production function by $K^{\alpha}L^{\beta}$.

$$\text{TFP} = A = Y / K^{\alpha} L^{\beta}$$

The growth rate also can be generated by derogating both side of the equation

$$\frac{\dot{A}}{A} = \frac{\dot{Y}}{Y} - \alpha\frac{\dot{K}}{K} - \beta\frac{\dot{L}}{L}$$

The dot superscript denotes the time derivative, α and β are the shares of output accruing to labor and capital. The production function can be changed in to a linear function by taking the log on both sides of equation and inter charge Y and A, in order to get total factor productivity function.

2.4.3. The Determinants of Total Factor Productivity

Determinants of TFP can be prearranged into several variables, each of can be operational zed with one or more variables;

Education and Training: education and training of the labor force, to improve skill and knowledge, will result in higher-skilled and more efficient workers, therefore it important to

better quality products and services. Human capital development has confirmed to be an effective means of improving productivity around the world (Jajri, 2007),

Economic Restructuring: it relates to movements of resources from less productive to more productive sectors of the economy. Essentially, the stages of development are associated with restructuring of economies toward higher value added activities. In agricultural economies and economies with labor-intensive manufacturing activities, labor is the critical factor driving growth. In industrialization development, the nation that have comparative advantage shifts toward activities that depend on rising capital investments, the series of industries broadens. If there is privileged level of capital intensity, with advanced technical and skills levels of the labor force describe country that have comparative. Lastly, when the economy matures, innovation and inversions becomes the engine of growth. At this stage, industrial widening deepening gives the country a broad and upgraded industrial mix. The transmission from one stage to another depends mainly on how booming the process of economy reform from the less productive to the more productive industries is managed (Jajri, 2007).

Capital Structure: It relates to the production of investment in productive capital inputs. The TFP growth can be affected by mix of capital investment because the yield from investments in equipment and machineries, that are productive capital inputs, yield direct output, whereas those in infrastructure, plant and buildings undergo a gestation period (Jajri, 2007).

Technical progress: it reflects the effective and efficient exploitation of technology, capital, work approaches and management effectiveness. Technical progress takes place from advance made in four main areas: personnel, capital, system and technology. Thus, it reflects the effect of a broad range of aspect, from labor work attitudes to technology utilization. Experiences advanced countries such as United States, Japan, France and the United Kingdom, and given the limits of economic reformation and progress of the educational profile of the labor force, technical progress should ultimately be the main source of TFP growth (Jajri, 2007).

Demand intensity: It reflects the extent of the productive capacity of economy. Change in demand influence total factor productivity though the capacity utilization rate of machinery and

equipment. A slowdown in demand intensity will result in lower utilization rate of machinery and equipment (Jajri, 2007).

Age of the firm: According to Waelchli (2009), the prior belief would seem to be that age benefits performance. On one way, firms learn about their capabilities and concerning how to do things improved, as they get older. On other way, the existing empirical evidence confirmed that life expectancy increases with age, and that better firms survive.

Size of the firm: It matters on the productivity of firms since larger size firms and smaller size firms have different characteristics. Larger firm got the advantage over small size firms by their better power on deciding on market related issues. This makes them to increase their sales and revenue. The increase in revenue makes enhances them to spend in research and development (Leung, 2008).

2.5. Empirical Evidence

Many of empirical investigation have been carried on foreign direct investment and its spillover effect on the local firms. The grounded empirical work concerning spillover effect of MNCs was by Caves (1874). He was the earliest to point out the presence of positive spillover effect following examine the effect of MNCs presence on manufacturing sector of Australia and Canada (Kien 2008). He asserts that productivity of local firms enhanced because of the competition effect. Several researches have been done following the original work of Caves (1874) in both advanced and developing nations on the effect of FDI on local firms using different methodologies.

Blomstrom and Woff (1989) examined the effect of FDI in Mexican manufacture firms from period of 1965 to 1982. The study found that FDI has a positive and significant effect on productivity of local firms and high rate of convergence of local firms due to active presence of foreign firms. In same sense, Borensztein *et al.* (1998) studied the the link between FDI economic growth by employing cross-country regression analysis. They used the data of FDI inflow in 69 developing countries for the period of 1970 to 1989. The result suggests that FDI plays vital role in transferring technology. They also examined that the effect of FDI on productivity can only be achieved when the host country has a maximum human capital and enough absorptive capacity for technology. In addition, Li and Liu (2005) investigated the panel

data for 84 countries for the period 1970-1999 by applying single equation and simultaneous equation system. They found that MNCs effect is though indirectly through improved human capital in the host country and direct affect the growth of economy.

At firm level, Rattsø and Stokke (2003) examined the learning and foreign know-how spillovers in Thailand by using firm-level data for Thailand manufacturing firms. They concluded that the presence of positive externalities. They clarified imitation via course of learning have a vast function for the domestic firms' productivity enhancement. In the same way, Görg and Strobl (2005) investigate by using the firm-level manufacturing sector in Ghana and conclude presence of positive horizontal spillover effect because of the channel of work force movement. Likewise, Ray (2004) studied year-specific firm-level total productivity for 27 industry groups of Indian manufacturing sector for1991–2001. Thus, he found that foreign firms significantly higher level of total productivity than domestic firms. Liu (2002) using pan l data verified the existence of positive horizontal spillover effect and, advised that technical and logical spillover with maintain of imitation plays important role.

In the direction with inter sectorial spillover effect, the work of Javorcik (2004) investigated FDI and the productivity of domestic firms. She used the analysis on the manufacturing firms that was accomplished by the Lithuanian from the period of 1996 to 2000. The finding implies existence of vertical spillovers resulting from the presence of foreign firms occurs via backward linkages; but she was unable found verification on the presence of horizontal and forward linkages. Similarly, by using firm level measures of backward and forward linkages of Czech Republic firms Vacek (2010) found positive spillover effect of the backward linkages. But he did unable to found significant effect of forward spillovers. Additionally, Joseph and Reddy (2009) investigated the effect of FDI through backward spillovers arising from the buyer-supplier linkages. They found that domestic firms resorted to exports because of increased competition and crowding-out of the domestic market by foreign firms.

Even the majority of studies showed the existence positive spillover effect of FDI on the domestic firms, other empirical works explain the existence negative or neutral effect. For instance, Haddad and Harrison (1993) examined the effects of presence of foreign firms on the Moroccan manufacturing firms. They conclude that FDI had an undesirable effect on the productivity of domestic firms, so, indicate FDI have negative spillovers effect on local firms.

On other hand (Josue, 2009) examined the cause of foreign direct investment on productivity of domestic manufacturing firms empirical study from South Africa. He found that here is negative intra industry spillover and positive inter industry spillover.

From the regional aspect, few researchers investigated the spillover effect of foreign firms' presence and they found mixed result. For example, Aiteken and Harrison (1999) examined the effect of FDI on local firms in Venezuela by using firm-level data. They were incapable to verify the presence of positive spillover form FDI to domestic firms however, they found that geographical nearness in the Venezuelan manufacturing firms is incapable to present technological spillover effects. In the same way, Sjöholm (1999) is also incapable to find geographical part for Indonesian manufacturing firms.

The empirical works on the effect of foreign direct investment on Ethiopian manufacturing firms also seems like controversial. From investigation, same showed positive effect other showed no positive effect or neutral. For instance, Getachew (2013) examined spillover impact of foreign investment inflow on the of local firms production by using firm-level cross-sectional data for the manufacturing sector of Ethiopia for the period 2009 for over 1,000 firms. He concludes that local firms gate benefit in terms of both total factor productivity (TFP) and labor productivity from foreign presence operating in the same sector. In the same line, Abebe, (2016) identified the local effects of FDI in Ethiopia. He found that the entry of a large FDI increases the TFP of domestic firms.

On the other hand, Turi(2015) studied productivity spillovers from foreign direct investment in case of Ethiopia by using panel data covering the time period from 2004-2010 which is collected from CSA. She found that there is an econometric evidence for positive backward spillovers and negative Forward spillovers to the total productivity of the manufacturing firms in the country. As well, her result shows the negative horizontal spillover effect of foreign direct investment the productivity of domestic firms.

To sum up, as the effect of FDI on the productivity of domestic firms is mixed and depends on context, This study expected to provide additional empirical evidence on the productivity effect of FDI on domestic firms in Ethiopia using firm level panel data.

CHAPTER THREE

3. OVERVIEW OF ETHIOPIAN ECONOMY AND CURRENT FDI TREND

3.1 Overview of the Ethiopian Economy

Ethiopia is located in the horn of Africa. The total area of the country is 1.14 million square kilometers. From this, the arable land accounts 45% and the irrigated land accounts only 3%.Ethiopia is the second populous country in Africa next to Nigeria. In 2019, the total population of the country recorded in 2019 was 112,078,730, increased by 2.65% from year 2018. The country has the largest working population in Africa with 41 % of the population aged between 15 and 40 (UNCTAD, 2019).

3.1.1. Growth Trend

Ethiopia has enjoyed a period of rapid growth in the past decade. The economy of the country exhibited a 9.1 % average annual growth during 2014/15- 2018/19.In 2018/19, GDP grew by 9%, showing improvement relative to the 7.7 % growth rate of 2017/18. The services sector contributed 4.1 percentage points of this growth followed by industry and agriculture contributing 3.6 and 1.3 percentage points, respectively. While the share of agriculture in the GDP declined over six years from 41.1% in 2013/14 to 33.3% in 2018/19, the services sector share slightly increased from 39.4% to 39.8% in the same period. Meanwhile, the industrial sector share to the GDP increased rapidly from 18.6% in 2013/14 to 28.1% in 2018/19, but the contribution is still remained low. The strong economic growth has been underpinned by the country's public sector-led development strategy, with its focus on heavy investment in infrastructure (NBE, 2019).

In spite of its declining contribution to GDP over the years, agriculture remains the foremost sector in terms of contribution to the country's overall economy. It is a main source of food for household consumption, input for the local manufacturing firms and leading primarily export of the country. Moreover, the sector contributes a lot in employing the rural population, and supplies of the raw-material requirements of local industries. From the share of agriculture crop and cereal production account 64.8%, followed by animal farming and hunting 26.2 % and forestry 8.8% in 2018/19(NBE, 2019).

The country's agriculture depends highly on traditional farming methods and a rain-fed farming system, and it is exposed to environmental and climate-related shocks. The effect of desert locust happened at the time when Ethiopia is straggling the impact of previous and current drought caused serious impediments to agricultural production and food and nutrition security (Ministry of Agriculture MoA 2019). The report of Agriculture of United Nations (FAO) in 2019 indicates 7.8 million people need food assistance. If the spread of desert increase likewise, it may cause disaster of crops and natural vegetation, generally may damage agricultural production. Therefore, before it harm, the government in collaboration with concerned bodies should undertake the necessary controlling measure.

The service sector continuing the dominant economy as its share of GDP was 39.8 in 2018/19, the growth rate of this sector on the year was 11%. From the growth rate transport and communications 21%, wholesale and retail trade 11.7% hotels and tourism 9%, public administration and defense 9 %, real estate, renting and business activities 7.5%and financial intermediation 6.9%. The growth in the industrial sector was showed 12.6% and constituted 28.1% of the total GDP and it contributed 39.5 % to the overall economic development in 2018/19. From this, Construction industry showed a 15 % expansion and contributed 72.5 % to the industrial output, signifying the leading role of the sector in roads, railways, dams, and residential houses. In addition, considerable amount of investment has been directed towards establishing cement factories in response to the strong surge in demand for cement emanating from major construction activities in the country. The manufacturing sectors grew by 7.7 % and, add up 24.3 % to the industrial sector in the same fiscal year. The limited change in the structure of the economy particularly, with in manufacturing, which partly showed by the low levels of investment and the slow growth of the private sector, which was too slow to affect its historically small share of labor-intensive manufacturing (NBE, 2019).

3.1.2. External Sector

Like other least developed countries, Ethiopia is net import country. The overall balance of payments deficit in 2018/19 was USD 941.6 million. It higher compared to USD 201.6 million deficits recorded in previous year. The performance of export has remained sluggish for years. The average value of export earnings between 2016/17 and 2018/19 was USD 2.8 billion. In 2018/19 total merchandise export earnings decline by 6% from last year. This due to fall in

volume of export and price of coffee and oilseeds, leather products, meat products, fruits and vegetables, gold. Consequently, the ratio of merchandise export to GDP fall to 2.8 % from previous year part. On the other hand, total merchandise import decline slightly for last few years. The average value of import of the country for three consecutive years is USD 15.4 billion. In 2018/19 total value merchandise import USD 15.1 billion, showed decline 0.9 % from last year. This is because of, mainly lower import bill of capital, consumer and miscellaneous goods. Hence, import to GDP ratio declined to 15.8% compared with 18.1% of earlier year. Private transfers and remittances also offset the rise in imports to reduce deficit. An improved environment for foreign direct investments (FDI) in the manufacturing sector and potential electricity exports has nonetheless boosted favorable prospects for export diversification (NBE, 2019).

The Corona virus poses an unprecedented existential challenge to Ethiopia. The effect of COVID-19 pandemic is vast. If projections of virus spread hold, the economic sector will be the most vulnerable. According to Alemayehu (2020), the pandemic is estimated to reduce GDP by 11.1 % in the fiscal year 2020/21. This shock will be felt most in the industrial sector, which is expected to decline by 17 % and will be followed by the services sector, expected to decline by 15.6%. The agricultural sector is expected to be the least affected as it is projected to decline by only 1.6%. The pandemic bring a number of shocks in a single package, namely health, supply, demand, and financial shocks. The impact of the pandemic on the supply economy is through loss of labor inputs due to social distancing, movement restriction, stay-at-home, sickness, and disruption to production. The demand side impact includes falling trade such as service, reduced tourism, and loss of income. Depending on efforts and duration the pandemic will slowdown economic growth and exacerbate poverty (Goshu *et al.*, 2020)

3.2. FDI Policies in Ethiopia

It is an indubitable fact that Ethiopia has made a significant progress in economic and social development since 1992 because of the realization of constructive policies and strategies that are influential in improving the national economy. The Rural Development Policy and Strategy, the Industrial Development Strategy, and other sectorial policies and strategies have prompt a new push towards creating frameworks conducive for economic and social development (EIA, 2015).

Ethiopian investment commission has been organized to support foreign investors and by eliminate FDI-related limits. The country has created a "one-stop" shop for counter with investor needs. Furthermore, better notice has been given to strategic initiatives at the bilateral, regional, and multilateral levels to advance international merger in matters regarding to FDI. The country has approved new measures and customized old foreign investment legislation, making it more and more liberal and development-oriented. Consequently, the investment atmosphere for FDI and MNCs in Ethiopia has gradually better over the decades (EIA, 2015).

After 1992, with the scheme of advancing local private investment and the inflow of foreign investment, many investment declarations have been approved. The first investment proclamation no. 15/1992 was approved in May 1992, to establish Ethiopian Investment Office. The declaration still offered only some inducement for the agricultural firms and no incentives for other firms. The Investment Proclamation No. 280/2002 was revised in 2003 and the 2003 guideline of investment incentives formed the major legal framework for both FDI and local investment (FNG, 2002). The arrangement of integrated forms of investment and capital prerequisite, investment permits, concession, incentives and facilities.

The 1992 investment proclamation introduced comprehensive set of fiscal and non-fiscal incentives are offered to encourage investment. This includes

- Customs duty exemptions of up to 100 percent on imports of capital goods for eligible areas of investment;
- Income tax exemptions for a period ranging between 1 and 9 years, depending on the specific activity and the location of the investor;
- Loss carry forward for business that suffer losses during the income tax exemption period for half of the tax exemption period;
- With the exception of a few products, no export tax is levied on Ethiopian export products;
- Various non-fiscal incentives for exporters
- Guaranteed remittance of capital for foreign investors

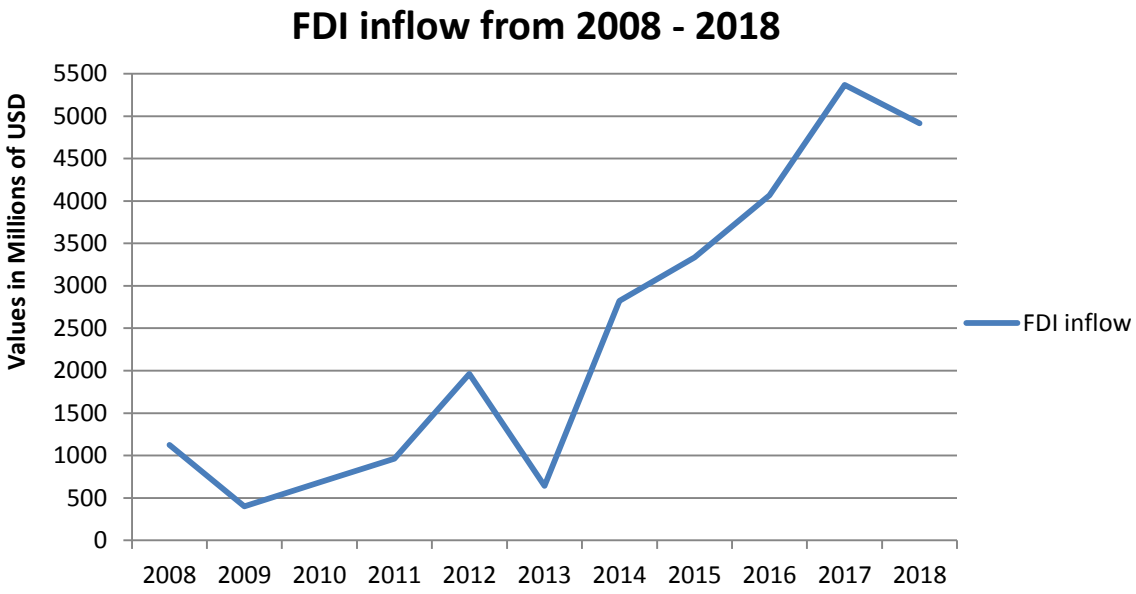
Under the Investment Proclamation No.769/2012, a lowest amount of capital of 150,000 USD is mandatory from a foreign investor who aims to enter in to a joint venture enterprise with a local investor. The limitation under the prior Investment Proclamation that requisite the local investor to own at least of a 27 percent equity share capital in a joint venture has now been canceled. Still, the lowest equity capital requirement for foreign investors investing in parts of engineering, architectural, accounting and audit services, undertaking studies or business and management consultancy services or publishing is only 50,000 USD when it is made jointly with a local investor and 100,000USD when it is entirely owned by a foreign investor. The foreign firm can fulfill this minimum equity capital in either cash, in kind or both (EIA, 2013)

The current government announced so called "Home grown economy reform" which is designed to maintain a rapid and comprehensive economic growth setting the country on a path to prosperity and to build a resilient and diversified middle income-level economy in next ten years. In this policy reform gave priority to manufacturing sector especially investment in agro- and leather products processing. The reform revisited and overhauls the structure of the sector industrial policy and incentives, Strengthen the backward linkage of emerging manufacturing value chains through encouraging domestic production of primary and intermediate industrial inputs, promote import competing industries, leveraging on large domestic market size and develop industrial relations framework to achieve fair pay and minimize disruptions (PMO, 2019).

3.3. The Trend of FDI in Ethiopia

The trend of Ethiopian foreign direct investment shows the improvement from time to time even though there is some fluctuation. Likely, the reason for the trend of foreign investment inflow in Ethiopia is typically none economic factor such as war, drought and political unrest. The inflow FDI increase constantly from 2013 to 2017 due to internal stability and construction industrial park. However, while the decline in 2008/09 reflects the global financial crisis worldwide, the decline since 2017 could be associated with internal instability of the country.

Figure 3.1: Trends of FDI in Ethiopia

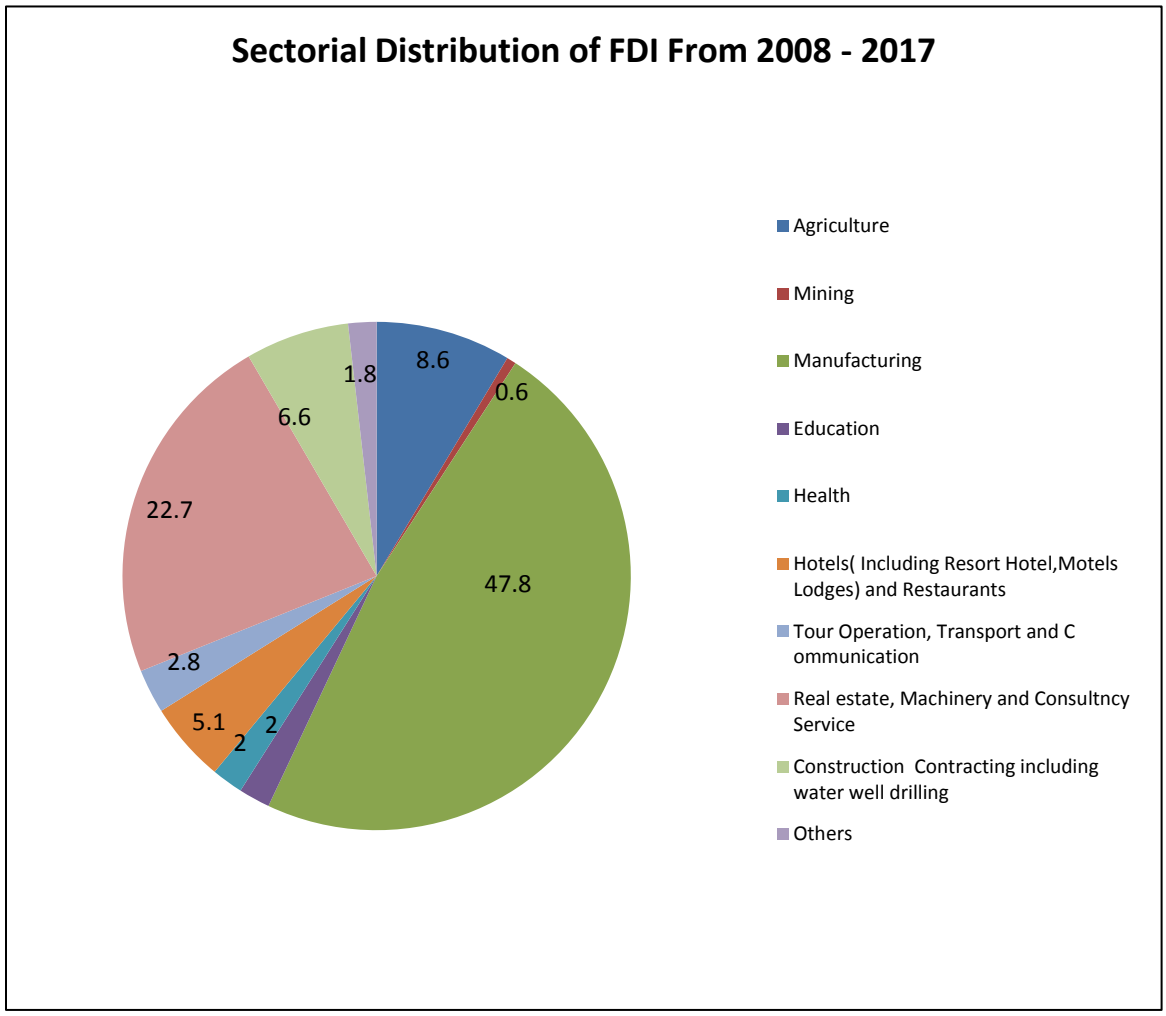


Source: Own computation from WBI data

3.4. Sectorial Distribution of FDI in Ethiopia

The sectorial sharing of FDI flows to Ethiopia is fairly distributed into various sectors ranging from the primary including all types of agricultural activities and mining and quarrying to secondary sector activities to the tertiary sector together with electricity generation, construction, real estate, trade, hotel and tourism, transport service, education and health service. The manufacturing sector accounted for 47.8% of the total FDI licensed, while real estate, machinery, and consultancy Service accounted for 22.7%. The share of agriculture was 8.6% from 2008-2017 of the total FDI flows to Ethiopia. Construction contracting including water well drilling, hotels (including Resort Hotel, Motels Lodges) and Restaurants, Education and health sector licensed projects accounted for 18.5% total FDI. However, the mining, electricity (generation, transmission, and distribution) and remaining are areas that have not received much FDI in the country with each accounting for less than 1% of the total inflow.

Figure 3.2: Sectorial Distribution of FDI in Ethiopia

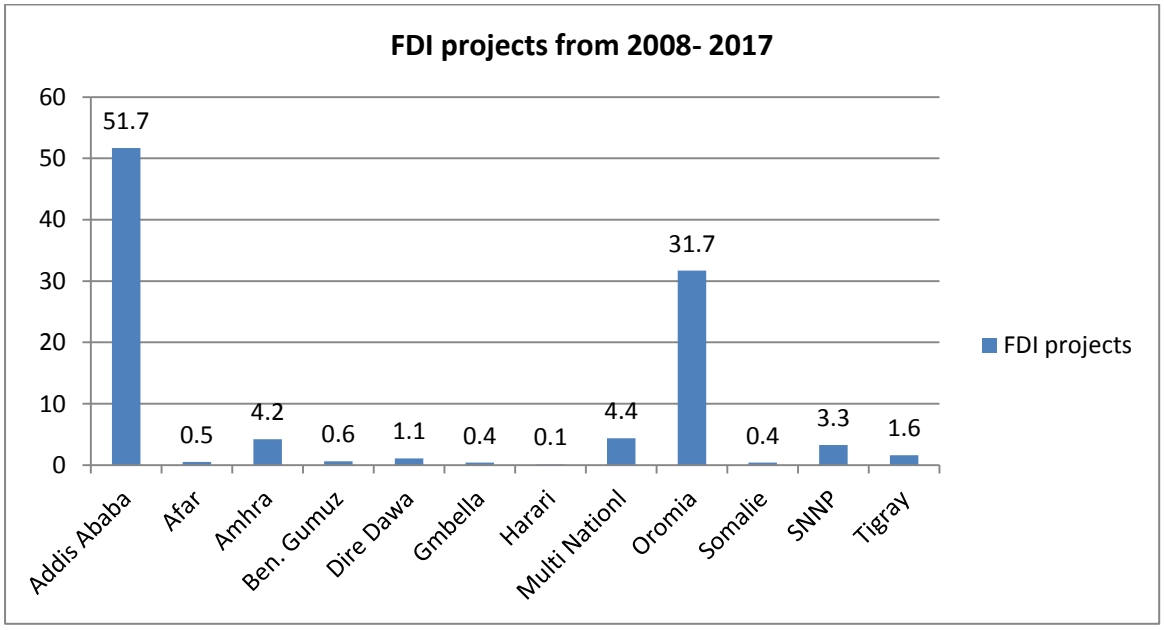


Source: Own computation from EIC data

3.5. Regional Distribution of FDI

Even though there is an incentive scheme encouraged for FDI to invest in the regions like; Gambella, Afar, Somali and Benishangul-Gumuz of the country by providing especial benefits including supply of land free of any charge, it is very poor attracting FDI in the regions. As result the flow of FDI to the country make the flow has been unevenly distributed among the various regions. (EIA, 2008).

Figure 3.3. Regional distribution of FDI in Ethiopia



Source: Own computation from EIC data

Most FDI is destined in Addis Ababa, account for 51.7% from the total FDI inflows. This is because of the regions' better infrastructure, stable political environment, and better supply of trained labor. Oromia region has attracted a sizable amount of FDI. That is, from the total FDI operating in Ethiopia, about 31.7% was invested in Oromia during 2008-2017. This may be due to the regions proximity to Addis Ababa, availability of natural resource (arable land and favorable climate) and large market size, as it is the most populous region in the country. However, other regions accounted for approximately 16.6% of the total which; can form and expanded the unequal economic growth and the supplementing social disparities.

CHAPTER FOUR

4. RESEARCH METHODOLOGY

4.1. Source of the Data

This study is used secondary source of data for all medium and large scale manufacturing firms of Ethiopia which is collected by central statistical agency of Ethiopia from the period 2013 to 2017. By using the working definition of CSA of Ethiopia, this study categorizes medium and large scale firms, which employs 10 persons & above and use power- driven machines for the production, which covers both the private, public and foreign owned industries in all regions of the country. The data set is covered a wide range of information on wages and salaries paid, number of persons engaged, total value of sales, value of raw materials, value of intermediate inputs, value of stocks and fixed assets, quantity and value of production, investment by type and source of individual firms in the manufacturing sector among others.

4.2. Method of Data Analysis

4.2.1. Descriptive Analysis

The method for analyzing the data includes both descriptive analysis and econometrics analysis. For the descriptive tools like tables, figures, percentages, and some statistical tools is used. With appropriate economic classification, economic analysis is made and inferences are drawn from the result obtained in the discussion. Econometrics analysis is used to test the spillover effect of foreign direct investment on the productivity of domestic firms in the manufacturing sector.

4.2.2. Econometric Estimation Method

In order to assess the spillover effect of foreign direct investment on the productivity of domestic firms, this study employed Fixed and Random Effect estimation techniques. The reason to choose random effect models and fixed effect model over pooled OLS is that, the pooled OLS neglects individual characteristics i.e. it assumes all entities are the same. But the random effect models and fixed effect model corrects this problem

4.3. Model Specifications

In adopting econometrics methodology to investigate, horizontal spillover effect from foreign direct investment to local firms, this study has employed fixed and random effect estimation techniques. According to Blomstrom (1999), Spillover effects of FDI can be highly related with the productivity of the domestic firms. Therefore, as seen as in theoretical framework this study will use Cobb – Douglas production function in order to measure the productivity of domestic firms. It undertakes non-linear relation between the factors of production and the outputs in the production process.

To develop the model, like pervious empirical models of (Javorcik, 2004), (Josue, 2009) and (Mugendi, 2014), this study will use total factor productivity as dependent variable.

The cob-Douglas production function is;

$$Y = AK^{\alpha}L^{\beta} \quad \text{.....4.1}$$

Where, Y is to total output; K and L are aggregate capital index and Labor inputs index, respectively while α and β indicate elasticity of capital and labour and are statistical estimates and A indicates technology that affect productivity of firms. The change in technology changes relationship between input and output that results efficiency or scale of operation of firms. The production function can be changed in to a linear function by taking the log on both sides.

$$lnY = lnA + \alpha lnK + \beta lnL \quad \text{.....4.2}$$

Change in A indicates total factor productivity (TFP) and factors that affect productivity of firms. Firm's productivity is measured by the total factor productivity (TFP), which represents the level of output that is not caused by inputs; indicate efficiency in inputs use by firms. Therefore, re-written equation 4.2 in the following manner:

$$lnTFP = lnY - \alpha lnK - \beta lnL \quad \text{..... 4.3}$$

Here, factors affect total factor productivity include capital, labour, foreign ownership, horizontal spillover, firm age, capital intensity and firm size. These variables will be used as explanatory variables of the model.

TFP = F (K, L, horizontal spillover effect, FO (dummy), firm age, capital intensity firm size)

The model for all firms in order to compare the productivity performance of foreign firms with domestic firms becomes:

$$lnTFP_{it} = \beta 0+\beta 1lnK_{it}+\beta 2lnL_{it}+\beta 3FO_{it}+\beta 4CI_{it}+\beta 4fage_{it}+\beta 6fsize_{it}+e \quad \text{.....4.4}$$

Where: lnTFP is log of total factor productivity, lnK is log of capital, lnL is log of labor, FO is foreign sector, fage is firm age, CI is capital intensity, fsize is firm size and e is the error term. The subscript t and i stands for firm and time period respectively

The main model that assesses the spillover effect from foreign direct investment to local firms will be;

$$lnTFP_{it}=\beta 0+\beta 1lnK_{it}+\beta 2lnL_{it}+\beta 3horspil_{it}+\beta 4CI_{it}+\beta 5fage_{it}+\beta 6fsize_{it}+e \ldots. \ 4.5$$

Where, lnTFP and horspil represent total factor productivity for local firms and horizontal spillover variable respectively.

Lastly, the regional effect of FDI can be seen in the following equation

$$lnTFP_{irt} = \beta 0+\beta 1lnK_{irt}+\beta 2lnL_{irt}+\beta 4horspil_{jrt}+\beta 5fr age_{irt}+\beta 7CI_{irt}+ \beta 8frsize_{irt}+e \quad \text{.....4.6}$$

The subscript *irt* stands for firm *i* in region *r* at time *t*

Descriptions of the variables

Dependent variable

Total factor productivity (TFP); it is used as proxy for productivity and measures increase in total output other than change in inputs. Moreover, TFP indicate change in output due to advanced technology that increase production and reduce cost of production.

Independent variables

Labor (L); indicate total physical work force measured in terms of cost of labour.

Capital (K); referred to the value fixed asset of firm which is proxy of capital stock.

Foreign Sector (FO); it will captured by dummy variable. It took the value one if foreigners own more than ten percent of company's share otherwise it took the value of zero.

Horizontal spillover effect (Horsipil); it stands for horizontal spillover effect which is a mechanism for the transfer of spillovers from a foreign to domestic firms. And it is measured as a share of output produced by foreign firms in total output of industry j at time t (Javorcik, 2004).

$$\text{Horsill} = \frac{\Sigma for\ all\ iE\ j\ \text{FOit} * \text{Yit}}{\Sigma \text{for all i E jYit}}$$

Capital Intensity (CI); it measured by dividing fixed asset to over all employees.

Firm Age (fage); it is managed for measuring the manufacturing and business experience of firms. The productivity of firms may be different because of the production and marketing experience of firms (Javorcik, 2003).

4.4. Diagnostic Tests

Diagnostics tests are undertaken to ensure the estimated models were appropriate for ensuring consistent coefficient estimates. Test of independence of error term is done in order to identify which model to use between fixed and random effects model. A test of the model specification will also be done in order to select the functional form that represented the data well. Tests like heteroskedasticity and serial correlation test are used. To identify the appropriate model between the random and fixed model Hausman test is used.

Hausman Test: This test is conduct on TFP model in order to ascertain the most appropriate model and method of estimation to use between fixed and random effect models. The random and fixed effects models yield different estimation results, especially if the number of years covered is small and the sample is large. A specification test based on the difference between these estimates is given by (Hausman, 1978). The Hausman test is a useful device for determining the preferred specification of common effects model (Greene, 2012). To decide between fixed or random effects, a Hausman test is conducted. It basically tested whether the unique errors were correlated with regressors by comparing random effects estimates and fixed effects estimates.

Heteroskedasticity test: Heteroskedasticity is created when the distribution of the error term around the explanatory variables is not constant (no constant variance). It signifies that the individual variance of the disturbance term around the independent variable may be different (Wooldridge, 2002). In the presence of heteroskedasticity, the variances of OLS estimators are not provided by the usual OLS formulas. Thus, the t- test and F-tests based on them will be

highly misleading and it results in an erroneous conclusion. To test whether there is heteroskedasticity or not, modified Wald test is used.

Serial correlation test: this test is used to check whether there is serial correlation in the residual. In order to discuss on the estimation result, residuals shouldn't be serially correlated. To test whether residuals are serially correlated or not Wooldridge serial correlation test is used.

CHAPTER FIVE

5. ESTIMATION RESULTS AND DISCUSSIONS

This study investigates the spillover effect from foreign direct investment to local firms. Before doing this objective, first, the question "do foreign firms are more productive than local firms?" should be addressed. Additionally, the study assesses the regional variation of spillover effect in the same sector. To achieve this, the study employed both descriptive and econometric model.

5.1. Descriptive Analysis

In the descriptive analysis, descriptive statistics were used to explain the basic features of the data used in this study. These included percentages of local and foreign firms in the manufacturing sector summaries of the main variables and their discussion. This study used secondary data of medium and large-scale manufacturing firms from Central Statistics Agency (CSA) of Ethiopia, by covering the period from 2013-2017. The data covers public, private, and foreign owned firms in all regions of the country that employ ten and above persons and use power driven machines. The data contains information concerning on wages, number of persons employed , total value of sales, value of raw materials, value of stocks and fixed assets, quantity and value of production, investment by type, ownership and location of investment. Those observations, which have zero values for the important variables like capital, output, and labor, are excluded from the list. To make it a balanced panel data, firms that have less than five years are also excluded from sample and finally the total number of 11150 firms was sampled.

From the 11150 firms, 92% were domestic firms and the rest 8% were foreign firms. Addis Ababa and Oromia have high concentration of both local and foreign firms, each accounting for 27.17% and 3.3% and 27.03% and 2.84%, respectively

Table 5.1: Total number of sample firms, 2013- 2017

Region	Domestic		Foreign	
	Number	Percent	Number	Percent
Tigray	803	7.2%	26	0.23%
Afar	76	0.68%	5	0.04%
Amhara	1170	10.49%	76	0.68%
Oromia	3014	27.03%	317	2.84%
Somalie	150	1.35%	6	0.05%
Benishangul-Gumuz	51	0.46%	-	0%
SNNP	1435	12.87%	80	0.72%
Gambella	26	0.23%	-	0%
Harari	131	1.18%	4	0.05%
Addis Ababa	3030	27.17%	368	3.3%
Dire Dawa	372	3.34%	10	0.09%
Total	10258	92%	968	8%

Source: Own computation from CSA data

The value of total factor productivity (TFP) for firms (in log terms) ranges from a minimum of 0.0000178 to a maximum of 4.247 with an average of 0.288. The value shows Ethiopian firms have lowest level total factor productivity. TFP can increase and decrease for different reasons. For example, in practical situation, with the potential diffusion channel of imitation (copying the technologies of nearest productive firms), an individual firm's productivity can rise. However, lack of information leakages, that deemed critical in significant functions, may impede the productivity of firms because of physical reasons (Greenaway, 2004). Similarly, the value of capital in log terms ranges from0.0435 to 9.98 with an average of 5.88. The value of labor in log terms ranges from a minimum of 2.25 to 9.32, with an average of 5.47. The variation on the amount of capital and labor depends on firm's decision.

The value of the spillover variable (horispil) ranges from a lowest of 0 to a maximum of 0.996 with a mean of 0.0552 This value shows the share of foreign firms output to the overall sectorial output. Firm size ranged from minimum of 0.00001 to 1, with a average value of 0.025 This value shows a huge variation between firms for their total sales with the overall sectorial sales. Firm age found between 5 and 111 years with an average firm age of 20.4years. The age of firms

increases, we expect rise in the productivity of firms because of the augmented learning effect, that can advance with the experience overtime. Capital intensity of firms ranges from a lowest of 0.0000249 to a maximum of 34.976 with a mean of 5.35. This indicates that on average 5.35 capital are occupied per worker. In general, it is anticipated that an increase in the usage of machineries by workers have `a tendency to improve the productivity of firms.

Table 5.2: Summary of variables

Variables	Obs	Mean	Std.Dev	Min	Max
Ln TFP	11150	0.2886137	0.2989379	0.0000178	4.247084
Ln Labor	11150	5.467698	0.889538	2.25042	9.322339
Ln Capital	11150	5.889916	1.222833	0.004354	9.980912
Horizontal spillover	11150	0.055268	0.1379334	0	0.9964973
Capital intensity	11150	5.356031	6.818949	0.0000249	34.97604
Firm size	11150	0.0250303	0.0933435	0.00001	1
FO (dummy)	11150	0.0799103	0.2711665	0	1
Firm age	11150	20.40179	12.18051	5	111

Source: Own computation from CSA data

5.2. Econometric Analysis

In order to estimate the model, first the right model should be selected. The model is regressed by using fixed effect and random effect models presented in appendix. After such regression, diagnostic tests are used. To do this, Hausman test is used, this test selects the appropriate model between fixed effect model and random effect model.

5.2.1. Hausman Test

Before estimating the model, the test of independence of the error term was conducted in order to find out whether to use fixed effect model or random effect model. Hausman test is a useful device for determining the preferred specification, which tests whether the unique errors are correlated with regressors (Greene 2012). The null hypothesis was that the preferred model was the random effect against the alternative that it was the fixed effect. The summary of Hausman tests for the model presented in equation 4.4 is shown in Table 5.3. The result indicates rejection the null hypothesis (Prob<chi2). Therefore, the Hausman test tells that fixed effect model is the appropriate model.

Table 5.3 Hausman specification test

Variables	(b) Fixed	(B) Random	(b-B) Difference	Sqrt (diag(V_b-V_B)) S.E.
lnLabour	-0.0349492	-0.0373186	0.0023694	0.0007864
lnCapital	0.6476949	0.6689938	-0.0212989	0.0040788
FO(dummy)	1.390748	0.3471863	1.043559	1.220794
Firm size	2.053769	2.180607	-0.1268375	0.1403224
Capital intensity	0.0109079	0.0118324	-0.0009245	0.0015564
Firm age	0.0383041	0.0120007	0.0263034	0.007232

b = consistent under Ho and Ha; obtained from xtreg
B = inconsistent under Ha, efficient under Ho; obtained from xtreg
Test: Ho: difference in coefficients not systematic

chi2(6) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 67.43
Prob>chi2 = 0.0000

Source: Own computation from CSA data

5.2.2. Comparing Productivity Performance of Foreign Firms with Local Firms

The Hausman specification test for all firms concluded that, the fixed effect model is the appropriate model. Thus, to compare the productivity performance of foreign firms and local firms, fixed effect model is estimated. The regression is implemented by including other independent variables. The foreign ownership (FO) variable was a dummy variable where foreign firms took the value of one and domestic firms took the value of zero.

The coefficient of foreign ownership is positive and significant at 5 percent level, suggesting rejection of null hypotheses foreign firms does not perform better than local firms. This shows that the productivity of foreign firms is higher by 39 percent than that of local firms. Thus, the result shows that foreign firms are more productive than local firms.

Table 5.4: Fixed effect estimation result for firm ownership

Dependent variable Ln TFP

Variable	Coefficient	Robust Std. Err.	t	P>|t|
Constant	2.166179	0.204191	10.61	0.000
Ln Labor	-0.0349492	0.0020868	-16.75	0.000
Ln Capital	0.6476949	0.0095181	68.05	0.000
FO(Dummy)	0.390745	0.0312906	44.45	0.000
Firm size	2.053769	0.2743182	7.49	0.000
Capital intensity	0.0109078	0.0042265	2.58	0.010
Firm age	0.0383042	0.007694	4.98	0.000

R^2 = 0.6673 Prob > F = 0.0000 N 11,150

Source: Own computation from CSA data

According to industrial organization theory, when foreign companies invest in another country, they face several disadvantages in competing with local firms. For them to be able to overcome these disadvantages, foreign firms must be large enough, use patent protected technology and better managerial skills. In addition, locals as risky regard employment in foreign firms hence, they pay higher wages in the host country. High wages attract the most skilled workers and hence higher productivity. Therefore, these results are consistent with other studies done by (Harisson, 1999), (Tol, 2002) and (Sasidharan, 2006).

5.2.3. Do Local Firms within the Same Sector Benefit from Foreign Firms?

Given that foreign firms have better productivity over local firms, it is useful to assess whether or not local firms within the same sector get benefits from foreign firms. To capture this, the spillover variable (horispil) is used. Thus, the model presented in equation 5.5 is estimated. Before doing the estimation result, Hausman test is used to select the appropriate model between random effect and fixed effect model.

Table 5.5: Hausman Specification Test 2

Variables	(b) Fixed	(B) Random	(b-B) Difference	Sqrt (diag(V_b-V_B)) S.E.
LnLabour	-0.03502	-0.0372579	0.0022379	0.0007796
LnCapital	0.6459135	0.672727	-0. 0268134	0.0041603
Horizontal spillover	0.3067651	-0.02266223	0.5333875	0.0820097
Firm size	2.045826	2.223982	-0.1781558	0.1400105
Capital intensity	0.0106911	0.0119989	-0.013079	0.0015385
Firm age	0.0420725	0.0121935	0.029879	0.007397
b = consistent under Ho and Ha; obtained from xtreg B = inconsistent under Ha, efficient under Ho; obtained from xtreg Test: Ho: difference in coefficients not systematic				
chi2(6) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 102.50 Prob>chi2 = 0.000				

Source: Own computation from CSA data

The result of Hausman test rejects the null hypothesis, i.e. fixed effect model is the appropriate (Table 5.5). Total factor productivity of local firms is used as a dependent variable and the spillover variable (horispil) is used as main variable followed by other control variables. The coefficient of the spillover variable, horizontal spillover is positive and significant at 5% significant level, suggesting rejection of the null hypothesis of foreign direct investment has no significant effects no local firms' productivity within the same sector. That means an increase in foreign investment leads to increase the productivity of domestic firms by 30 percent. This result is consistent with the work of (Mita Bhattacharya, 2008), (Getachew, 2013), (Tol, 2002) and (Girum Abebe, 2016) in which, they all find the positive spillover effect however, it is inconsistent with the work of (Turi, 2015), (Javorcik, 2004) and (Liang, 2008) in which, they found the adverse effect of foreign direct investment on local firms within the sector.

Table 5.6: Fixed effect estimation result for spillover effect
Dependent variable LnTFP

Variable	Coefficient	Robust Std. Err.	t	P>|t|
Constant	2.235008	0.20504	10.90	0.000
Ln Labour	-0.03502	0.0020866	-16.78	0.000
Ln Capital	0.6459135	0.0096171	67.16	0.000
Hor. spillover	0.3067651	0.1447867	2.12	0.034
Firm size	2.045826	2.2738872	7.47	0.000
Capital intensity	0.0106911	0.0041918	2.55	0.011
Firm age	0.0420725	0.0079051	5.32	0.00

R^2 = 0.6329 Prob > F = 0.0000 N = 11,150
Source: Own computation from CSA data

The positive horizontal spillover from foreign firm to local firms may be raised by different means. One means is the imitation of foreign firms' know-how and management practices by the local firms, which is known as demonstration effect. Another means of horizontal spillovers may be labor turnover, which occurs when employees from foreign affiliates leave multinationals to join local firms. Through this, knowledge and skills are passed from the foreign to local enterprises. Moreover, competition effect, which occurs when the presence of a foreign firm exerts pressure on local firms to adopt methods that are more efficient. This can allow the domestic firm to survive successfully or even compete with foreign firms. By these and other reasons, domestic firms can get benefit from their competitor foreign firms.

The coefficient of log of capital is positive and significant to show a one percent increase in the use of capital input lead to 64% increase in productivity of domestic firms. Except the coefficient of labor, the rest of explanatory variables are positive and significant at 5% significance level. The positive coefficient of firm age implies that, additional years of firms increase the productivity of firms by 4.2 percent. This may be occurred due to as the age of firm increase, they can accumulate much knowledge, better management, and the company becomes well organized. The coefficient of capital intensity shows, an increase in capital per labor results in a

consequent rise in the productivity of local firms. Lastly, the coefficient of firm size shows the increase in size of the firm have a positive effect on the productivity of firms. This result is in line with the work of which he got a positive effect of firm size on productivity (Danny Leung, 2008)

5.2.4. Regional Spillover Effect of FDI

This section discusses about another objective of the study; "does the positive spillover from FDI differ from region to region?" In order to achieve this objective the same model is applied except this section categorizes firms based on region. To do so, Addis Ababa and Oromia region is categorized under region group that have more foreign firms, because from the sampled firms in this study more than 80% of foreign firms are destined in this two regions. The rest regions are categorized under regions that have small number of foreign firms. The estimation result is presented in the below table 5.7. The result shows the spillover variable (horispil) for Addis Ababa and Oromia is significant and positive; the same is true for the rest regions. But the effect is much more for the two regions than the rest regions. This result indicates rejection of null hypothesis the spillover effect from foreign direct investment within the same sector does not differ from regions that have more foreign firms to regions that have small number of foreign firms. A one percent increase in foreign investment leads to17.7 percent increase in the productivity of local firms that are located in Addis Ababa and Oromia.

The positive spillover effect from FDI to the rest regions is very small, a one percent increase in foreign investment in the rest regions leads to 0.9% increases in the productivity of local firms that is found in these regions. The reason for such differences of positive spillover effect may be geographical proximity advantage of Addis Ababa and Oromia regions over the rest regions domestic firms. Firms located around foreign firms can imitate technology easily as compared to firms that are located far from foreign firms. (Murakozy, 2007) specifically investigates geographical distance as a determinant of FDI spillovers. He assess the relation between the TFP level and the FDI spillovers in light of the distance from foreign firms to domestic firms in Hungary by using panel data by covering a time period from 1992-2003 and confirmed that distance indeed matters for horizontal spillovers.

Table 5.7: Fixed effect result for the regional spillover
Dependent variable; Ln TFP

Variables	Addis Ababa &Oromia	rest regions
Ln Labor	-0.03276***	0.0393***
	(0 .00258)	(0.0035)
Ln Capital	0.6422***	0.640***
	(0 .01226)	(0.016)
Hor.spillover	0.177**	0.00958**
	(0.0275)	(0.5843)
Capital intensity	0.0094*	0 .0115**
	(0.0053)	(0.0046)
Firm size	2.194**	1.343**
	(0.2910)	(0.6205)
Firm age	0.0490**	0.0261**
	(0.0101)	(0.0118)
Constant	2.236***	1.236***
	(0.2930)	(0.3039)
R^2	0.6650	0.6313
Sample size	6,732	4,418

Robust standard error parentheses
*** P < 0.01, ** P < 0.05, * P < 0.1
Source; Own computation from CSA data

5.2.5. Post Regression Diagnostic Test

5.2.5.1. Test for Heteroskedasticity

Heteroskedasticity is created when the distribution of the error term around the explanatory variables is not constant (no constant variance). It signifies that the individual variance of the disturbance term around the independent variable may be different (Wooldridge, 2002). This study used modified Wald test of heteroskedasticity to detect whether there is the problem of Heteroskedasticity presented in the annex. The null hypothesis of the test is residuals are homoscedastic against the alternative hypothesis of heteroskedasticity. The result of test in fixed effect regression model indicates presence of heteroskedasticity as the null hypothesis was

rejected at 5 percent of significance level. Thus, the problem of heteroskedasticity is corrected by re- estimating the fixed effect model with robust standard errors.

5.2.5.2. Multicollinearity Test

Multicollinearity is the case of multiple regression when the predictors or independent variables are highly correlated themselves, which may cause biased regression model. It also causes the problem of regression coefficient confidence interval vary wide (Paul, 2014) in table 5.8 below.

Table 5.8: Multicollinearity test result

Variable	VIF	1/VIF
LnCapital	4.92	0.203325
Firm age	3.79	0.264054
LnLabour	1.70	0.586901
Firm size	1.11	0.904056
Capital intensity	1.10	0.909198
Hor.spillover	1.04	0.962881
Mean VIF	2.28	

Source: Own computation from CSA data

The test indicates Multicollinearity is not the problem of this study since VIFs Multicollinearity test is conducted by calculating the VIF for each variable, and the result are presented for all explanatory variables are less than ten

5.2.5.3. Test of Cross Sectional Dependence

Pesaran CD (cross sectional dependence) is used in to test whether the residuals are correlated across entities or not was test presented in annex. The null hypothesis of the test is that, there is no correlation against the alternative hypothesis there is correlation. According to the test, the researcher rejected the null hypothesis at 5% significant level. Therefore, residuals are section correlated across entities. Thus performing fixed effect regression with clustering errors makes standard errors robust to very general form of cross sectional.

5.2.5.4. Test of Serial Correlation

In order to test whether, the residuals are serially correlated or not Wooldridge test is used. The null hypothesis of the test is that, there is no serial correlation against the alternative hypothesis there is serial correlation. The result is presented in table 5.9 and it shows does not reject the null hypothesis because the probability value of 0.0956 is greater than 5% significant level Therefore, residuals are not serially correlated.

Table 5.9. Wooldridge serial correlation test

H0: no first-order autocorrelation	
F(1, 2229) =	2.779
Prob > F =	0.0956

Source: Own computation from CSA data

CHAPTER SIX

6. CONCLUSIONS AND RECOMMENDATION

Foreign direct investment is one of the main features of the current globalized world (UNCTAD, 2017). Policy makers in least developed nations are implemented policies that can attract foreign firms by anticipating they can get benefits from foreign firms directly or indirectly. Regarding on the spillover effect from foreign direct investment to local firms, different papers are prepared from developed as well as from least developed countries by using different methodology, sample, country and estimation techniques. However, their result is mixed.

This paper investigates the spillover effect from foreign direct investment to local firms in case of Ethiopian manufacturing sector. Panel data is used by taking a period from 2013-2017 that is obtained from CSA of Ethiopia 11150 medium and large-scale manufacturing firms are used as a sample. This study is discussed on three objectives: 1) Do foreign firms perform better productivity than local firms? 2) Do local firms get benefits from foreign firms within the same sector? 3) Does the spillover effect from foreign direct investment geographically limited? In order to achieve these objectives, fixed effect model is used.

The first finding of this study shows foreign firms performed better productivity than local firms. The productivity of foreign firms was 39% higher than that of local firms. The second finding of this study shows the coefficient of horizontal spillover variable is significant and positive; shows local firms get benefit from foreign firms within the same sector. The result is consistent with the work of (Mita Bhattacharya, 2008), (Getachew, 2013), (Tol, 2002) and (Girum Abebe, 2016) in which, they all find the positive spillover effect. But it is inconsistent with the work of (Turi, 2015), (Javorcik, 2004) and (Liang, 2008) in which the find the no positive spillover effect from foreign direct investment to local firms within the same sector.

Finally, this paper addresses the question of does the positive spillover effect geographically limited. Yes, the result of this paper shows the spillover effect from FDI to local firms within the

same sector is higher in regions that have a greater number of foreign firms than regions that have small number of foreign firms. The reason for such disparity can be the advantage of geographical proximity to foreign firms for domestic firms that are located in Addis Ababa and Oromia region. As far as local firms far from foreign firms, it reduces the degree for the transfer channel of positive spillover.

Based on the findings of this study, many recommendations can be given to the government as well as the firm. From the government side, policy makers should continue to make policies that can attract foreign firms. In addition to the direct benefit that the country get from FDI, this study shows the country, get benefit indirectly by raising the productivity of domestic firms within the same sector. However, the project site of foreign firms should be distributed evenly between regions, in order to enhance better distribution of benefits among different regions. Thus, policy makers doesn't focus only on attracting foreign firms, but also focus on the distribution of their investment location. This makes the increase in the productivity of domestic firms by the cause of FDI, to distribute the benefit equally throughout the country. Even though there are different policies that can encourage investment in developing regions of Ethiopia, still the result of this study shows that more investment projects are found in the two regions. Great implementation is expected from the government more than this.

From the firm side, domestic firms try to create better environment for their interaction with foreign firms, in order to get advantage from the superiority of foreign firms. Domestic firms should see in detail about the transmission channel for the transfer of the positive spillover effect. Once they can get better information about the transmission channel, they should select their best way; transmission channel that is easy to get, lowest cost, higher return and less risky. This enhances them to raise their productivity.

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Appendixes

Appendix 1, Hausman test

```
. xtreg lntfp lnl lnk fsize ci fage horspil ,fe

Fixed-effects (within) regression               Number of obs      =     11,150
Group variable: id                              Number of groups   =      2,230

R-sq:                                           Obs per group:
     within  = 0.5544                                         min =          5
     between = 0.7163                                         avg =        5.0
     overall = 0.6329                                         max =          5

                                                F(6,8914)          =    1848.65
corr(u_i, Xb)  = -0.0852                        Prob > F           =     0.0000

------------------------------------------------------------------------------
       lntfp |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
         lnl |    -.03502   .0018536   -18.89   0.000    -.0386536   -.0313864
         lnk |   .6459135   .0068998    93.61   0.000     .6323883    .6594387
       fsize |   2.045826   .1987257    10.29   0.000     1.656278    2.435374
          ci |   .0106911   .0042908     2.49   0.013      .00228    .0191021
       fage |   .0420725   .0074864     5.62   0.000     .0273974    .0567477
     horspil |   .3067651   .1274004     2.41   0.016      .057031    .5564993
       _cons |   2.235008   .1801808    12.40   0.000     1.881812    2.588204
-------------+----------------------------------------------------------------
     sigma_u |  .76827984
     sigma_e |  1.0924154
         rho |  .33092933   (fraction of variance due to u_i)
------------------------------------------------------------------------------
```

```
. xtreg lntfp lnl lnk fsize ci fage horspil ,fe

Fixed-effects (within) regression               Number of obs      =     11,150
Group variable: id                              Number of groups   =      2,230

R-sq:                                           Obs per group:
     within  = 0.5544                                         min =          5
     between = 0.7163                                         avg =        5.0
     overall = 0.6329                                         max =          5

                                                F(6,8914)          =    1848.65
corr(u_i, Xb)  = -0.0852                        Prob > F           =     0.0000

------------------------------------------------------------------------------
       lntfp |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
         lnl |    -.03502   .0018536   -18.89   0.000    -.0386536   -.0313864
         lnk |   .6459135   .0068998    93.61   0.000     .6323883    .6594387
       fsize |   2.045826   .1987257    10.29   0.000     1.656278    2.435374
          ci |   .0106911   .0042908     2.49   0.013      .00228    .0191021
       fage |   .0420725   .0074864     5.62   0.000     .0273974    .0567477
     horspil |   .3067651   .1274004     2.41   0.016      .057031    .5564993
       _cons |   2.235008   .1801808    12.40   0.000     1.881812    2.588204
-------------+----------------------------------------------------------------
     sigma_u |  .76827984
     sigma_e |  1.0924154
         rho |  .33092933   (fraction of variance due to u_i)
------------------------------------------------------------------------------
```

```
. estimates store random

. hausman fixed random
```

	Coefficients			
	(b) fixed	(B) random	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
lnl	-.03502	-.0372579	.0022379	.0007796
lnk	.6459135	.672727	-.0268134	.0041603
fsize	2.045826	2.223982	-.1781558	.1400105
ci	.0106911	.0119989	-.0013079	.0015385
fage	.0420725	.0121935	.029879	.007397
horspil	.3067651	-.2266223	.5333875	.0820097

```
                b = consistent under Ho and Ha; obtained from xtreg
     B = inconsistent under Ha, efficient under Ho; obtained from xtreg

  Test:  Ho:  difference in coefficients not systematic

              chi2(6) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                      =      102.50
            Prob>chi2 =      0.0000
```

Appendix: 2. Heteroskedasticity test

```
. xttest3

Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (2230)  =  7.3e+05
Prob>chi2 =      0.0000
```

Appendix: 3. Multicollinearity test

```
. vif,uncentered
```

Variable	VIF	1/VIF
lnk	4.92	0.203325
fage	3.79	0.264054
lnl	1.70	0.586901
fsize	1.11	0.904056
ci	1.10	0.909198
horspil	1.04	0.962881
Mean VIF	2.28	

```
.
```

Appendix: 4. Cross-Section Dependence Test

Residual Cross-Section Dependence Test
Null hypothesis: No cross-section dependence (correlation) in residuals
Equation: Untitled
Periods included: 5
Cross-sections included: 2230
Total panel observations: 11150
Cross-section effects were removed during estimation

Test	Statistic	d.f.	Prob.
Breusch-Pagan LM	3150178.	2485335	0.0000
Pesaran scaled LM	297.2024		0.0000
Bias-corrected scaled LM	18.45242		0.0000
Pesaran CD	7.362797		0.0000

Appendix: 5. Serial correlation test

```
. xtserial lntfp lnl lnk fsize ci fage horspil

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
    F(  1,    2229) =      2.779
           Prob > F =      0.0956
```

Appendix 6: List of Industries Included in the Study with ISIC code

1511	Production, processing and preserving of meat, fruit and vegetables
1513	Production, processing and preserving of meat, fruit and vegetables
1514	Manufacture of vegetable and animal oils and fats
1520	Manufacture of dairy product
1531	Manufacture of grain mill products
1532	Manufacture of grain mill products
1533	Manufacture of prepared animal feeds
1541	Manufacture of bakery products
1542	Manufacture of sugar and sugar confectionery
1543	Manufacture of sugar and sugar confectionery
1544	Manufacture of macaroni and spaghetti
1549	Manufacture of food products n.e.c.
1551	Distilling, rectifying and blending of spirits
1552	Manufacture of wines
1553	Manufacture of malt liquors and malt
1554	Manufacture of soft drinks & production of mineral waters
1600	Manufacture of tobacco products
1710	Spinning, weaving and finishing of textiles
1711	Spinning, weaving and finishing of textiles
1712	Spinning, weaving and finishing of textiles
1720	Spinning, weaving and finishing of textiles
1721	Manufacture of cordage, rope, twine and netting
1723	Manufacture of cordage, rope, twine and netting
1729	Manufacture of cordage, rope, twine and netting....
1730	Knitting mills
1810	Manufacture of wearing apparel except fur apparel
1910	Tanning and dressing of leather, luggage and handbags
1911	Tanning and dressing of leather, luggage and handbags
1920	Manufacture of footwear
2000-2029	Manufacture of wood and of products of wood and cork, except furniture
2100	Manufacture of paper and paper products
2101	Manufacture of paper and paper products
2102	Manufacture of paper and paper products
2109	Manufacture of paper and paper products
2200-2320	Publishing and printing services
2411	Manufacture of basic chemicals, except fertilizers and nitrogen

	compounds
2412	Manufacture of basic chemicals, except fertilizers and nitrogen compounds
2421	Manufacture of paints, varnishes and mastics
2422	Manufacture of paints, varnishes and mastics
2423	Manufacture of pharmaceuticals, medicinal chemicals and botanical products
2424	Manufacture of soap and detergents cleaning and polishing, perfumes and toilet preparations
2429	Manufacture of chemical products n.e.c.
2499	Manufacture of chemical products n.e.c.
2510-2595	Manufacture of rubber products
2610	Manufacture of glass and glass products
2623	Manufacture of glass and glass products
2691	Manufacture of non-metallic mineral products
2693	Manufacture of structural clay products
2694	Manufacture of cement, lime and plaster
2695	Manufacture of articles of concrete, cement and plaster
2696	Manufacture of non-metallic mineral products
2699	Manufacture of non-metallic mineral products
2710	Manufacture of basic iron and steel

2810	Manufacture of structural metal products, tanks, reservoirs and containers of metal
2811	Manufacture of structural metal products, tanks, reservoirs and containers of metal
2812	Manufacture of structural metal products, tanks, reservoirs and containers of metal
2891	Manufacture of other fabricated metal products
2892	Manufacture of other fabricated metal products

2893	Manufacture of cutlery, hand tools and general hardware
2899	Manufacture of other fabricated metal products
2912	Manufacture of ovens, furnaces and furnace burners
2913	Manufacture of machinery for food and beverage processing
2914	Manufacture of other general purpose machinery
2919	Manufacture of machinery for food and beverage processing
2921	Manufacture of machinery for food and beverage processing
2922	Manufacture of machinery for food and beverage processing
2924	Manufacture of machinery for food and beverage processing
2925	Manufacture of accumulators, primary cells and primary batteries
2927	Manufacture of accumulators, primary cells and primary batteries
2930	Manufacture of other fabricated metal products
3110	Manufacture of other general purpose machinery
3130	Manufacture of other general purpose machinery
3140	Manufacture of other general purpose machinery
3150	Manufacture of other general purpose machinery
3210-3312	Manufacture of furniture; manufacturing n.e.c.
3410-3420	Manufacture of parts and accessories for motor vehicles and their engines
3430	Manufacture of passenger cars, commercial vehicles and busses
3591-4100	Manufacture of furniture; manufacturing n.e.c.

DECLARATION

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

Declared by: Name: Selamsew Mattewos

Signature: _____

Date: _____

Confirmed by advisor: Name: Tadele Ferede (PhD)

Signature: _____

Date: _____