

The Impact of Foreign Direct Investment
on Exports in COMESA Countries

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Table of Contents

1. Abstract	3
2. Introduction	4
3. Stylized facts on FDI in Africa: COMESA Countries	8
4. Literature Review	12
4.1. Background	12
4.2. The effect of FDI flows on host country	13
4.3. Determinants of FDI into African countries: COMESA	17
4.4. Relationship between FDI, exports and economic growth.....	18
5. Data and Methodology	21
5.1. Data	21
5.2. Methodology	22
5.2.1. Dependent variable: Exports	24
5.2.2. Explanatory Variables	24
6. Results and interpretations	28
6.1. The impact of FDI on total exports with fixed effects	28
6.1.1. Impact of FDI on total exports	28
6.1.2. Relationship between total exports and other explanatory variables	30
6.2. The Impact of FDI on sectoral exports with fixed effects.....	31
6.2.1. Agricultural exports.....	31
6.2.2. Manufacturing exports	33
6.2.3. Natural resources exports	34
6.3. The impact of FDI on exports without fixed effects	36
6.3.1. Total exports.....	36
6.3.2. Manufacturing exports	36
6.3.3. Agricultural exports and natural resources exports.....	37
7. Conclusion.....	41
8. Appendix	48

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1. Abstract

Foreign Direct Investment has the potential to increase exports which plays a great role in the economic growth of a country. This paper examined the impact of foreign direct investment on disaggregated exports in countries that are members of COMESA for the period of 1993-2012. The empirical results found that there is a positive and significant relationship between foreign direct investment and exports in the agricultural, manufacturing and natural resources sectors. In addition, the magnitude of FDI effect was relatively high. The results also showed that the impact of FDI on exports is larger on manufacturing exports.

2. Introduction

Foreign direct investment (FDI) has increased radically in the last few decades, especially in developing countries. This flow of FDI is proven to have many benefits to a country. It has become an important alternative way for gaining capital flows for many countries. It creates new job opportunities, is a pathway for technology transfers and expedites access to foreign markets (Adams, 2009). On the other hand, FDI may not be helpful for the host country's economy for the following reasons: i) FDI may lower or replace domestic savings and investment, ii) FDI may allocate unhelpful technologies, iii) FDI may aim only at expansion of domestic markets, iv) FDI may eliminate small domestic firms through fierce competition, and v) FDI might only focus on exploiting local cheap labor and raw materials (Zhang & Song, 2000). Therefore, many studies, both empirical and theoretical, have been done to identify the role of Foreign Direct Investment (FDI) on the economy in both developed and developing countries.

Even though there are many impacts of FDI on a country, this paper aims to find the effects of FDI on exports and ultimately on economic growth. There is a growing amount of empirical evidence supporting the positive effects of FDI on exports and growth. For example, Balamoune-Lutz (2004) found that FDI has a direct and indirect impact on economic growth through exports. This is also supported by Fry (1996) who examined the effect of FDI flows in Indonesia, Korea, Malaysia, the Philippines, Singapore and Thailand. In addition, Goh et al. (2013) found evidence identifying exports as the engines of economic growth. Exports facilitate efficacy in production of goods and services, encouraging countries that have comparative advantage to specialize in certain goods and services. Through

exporting these goods and services, the income of a country increases, leading to economic growth.

However, the analysis of the relationship between FDI and exports creates obstacles linked to the reverse causality between the variables. FDI may affect exports; however, exports may in turn affect FDI flows (Zhang and Song, 2000). Current exports can have an effect on current year FDI, because the level of exports- which is correlated with openness to trade is one of the determinants of FDI flows to a country. Thus, countries that export more attract more FDI (Singh & Jun, 1999). At the same time, current year FDI will also have an effect on current year exports. One of the spillovers of FDI on a country is to open the doors to foreign country markets and increase exports. Some studies show that FDI Granger causes exports and exports Granger cause FDI (Tekin, 2012; Abdullahi et al., 2012) However in several papers such as Zhang & Song (2000) and Sharma (2000), that problem was fixed by using the lagged value of FDI. The lagged value of FDI does not have a reverse causality problem because there is no reason to believe current exports could affect last year FDI.

There are a large number of studies on the relationship between FDI and exports. This paper will contribute to the existing literature by examining an understudied area, which is FDI's effect on different categories of exports. Exports are grouped in various categories: manufactured exports, oil and mineral exports, and agricultural exports. FDI effects in these different categories of exports are different. Alfaro (2003) has shown that the benefits gained from FDI depend on the type of sectors in which the FDI is invested. For example, technological and skills transfer gained from FDI is more evident in the manufacturing sector than in the primary sector. In addition, exports demand and supply functions are not identical

in all categories (Goh et al, 2013). Moreover, the flow of FDI varies by sector in different countries. For instance, in most African countries FDI mainly goes to the primary sector, especially the oil and mineral industry (UNCTAD, 2008). In this paper we plan to provide insight on the effect of FDI on these different types of exports.

Knowing the precise impact of FDI on the different types of exports is important because, firstly, it will help countries create policies that fit their economic growth strategies. If the benefits of FDI can be proved, countries can adopt policies that are known for attracting FDI such as improving openness to trade, upgrading infrastructure, and training human capital; which then can lead to higher economic growth (Morisset, 2000). Differential effects on sub-sectors may indicate the need for differential policy treatment. Because, the bulk of FDI in Africa is targeted towards oil and natural resources sector, by implementing policy reforms, African countries can also be successful in attracting FDI that does not only target oil and natural resources but also other sectors and serve to regional and global markets. This could lead to a positive effect on economic growth.

This paper will explore the effect of FDI on exports in African countries who are members of the Common Market for Eastern and Southern Africa (COMESA)¹ trade bloc. The interest in this area of Africa is motivated, firstly, because although numerous studies have been done on various countries there is little work investigating the effect of FDI on exports, especially at the disaggregated exports level of most African countries. In addition, recently a large amount of FDI has been flowing in most of the African nations. For example, in 2011 African countries that are members of COMESA had significant growth in FDI.

¹ There are 20 members of this trade bloc: Burundi, Comoros, Democratic Republic of the Congo, Djibouti, Egypt, Eritrea, Ethiopia, Kenya, Libya, Madagascar, Malawi, Mauritius, Rwanda, Seychelles, South Sudan, Sudan, Swaziland, Uganda, Zambia, and Zimbabwe.

Among the countries that experienced the highest growth, Rwanda (151%), Zimbabwe (133%), Ethiopia (117%), and Kenya (79%) are members of this trading bloc. The average FDI flows to all COMESA was \$537 million. This FDI flow came not only from other developed and developing countries like China but also a significant amount of FDI came from within the member countries of COMESA.

Furthermore, FDI oriented to the African consumer is becoming more prevalent. Investors in Africa are becoming more and more aware of the positive economic outlook for the continent. Some of the most attractive sectors have been consumer-related manufacturing and service industries, e.g. financial services; food, beverages and tobacco; and motor vehicles. There were some successful consumer-related industries in the past, for example; the automotive sector in South Africa, the leather industry in Ethiopia, the garment business in Lesotho and pharmaceuticals across East Africa are examples. These flows of FDI can be very important to the economy of these countries (UNCTAD, 2013).

On the other hand, 13 out of the 20 COMESA member countries are considered among the world's poorest countries in the world. However, recently these countries showed their potentials for economic growth, some joining a list of the world's fastest growing countries. For example, between the year 2000-2012, Ethiopia achieved 10.6% growth per annum; Sudan (8.0%) and Rwanda (8.1%) also experienced the respectable growth rates. Could the impact of FDI on exports between each other and with other non-COMESA countries explain some of this economic growth? To answer this question, a starting point could be exploring the impact of FDI on exports, in particular, the differential impact on sub-sectors. This paper

will be able to explore how the recent inflow of FDI has been contributing to the economies of COMESA countries, specifically on their exports.

The remainder of this paper is as follows. Section three will provide stylized facts of FDI in Africa, especially COMESA countries; section four will provide an in-depth literature review of FDI and the relationship between FDI, exports and economic growth. The fifth section will present the methodology and data used to highlight the effect of FDI on exports of various commodities. The sixth section discusses the result of the empirical analysis of FDI and exports. The paper will conclude with suggestions for future studies.

3. Stylized facts on FDI in Africa: COMESA Countries

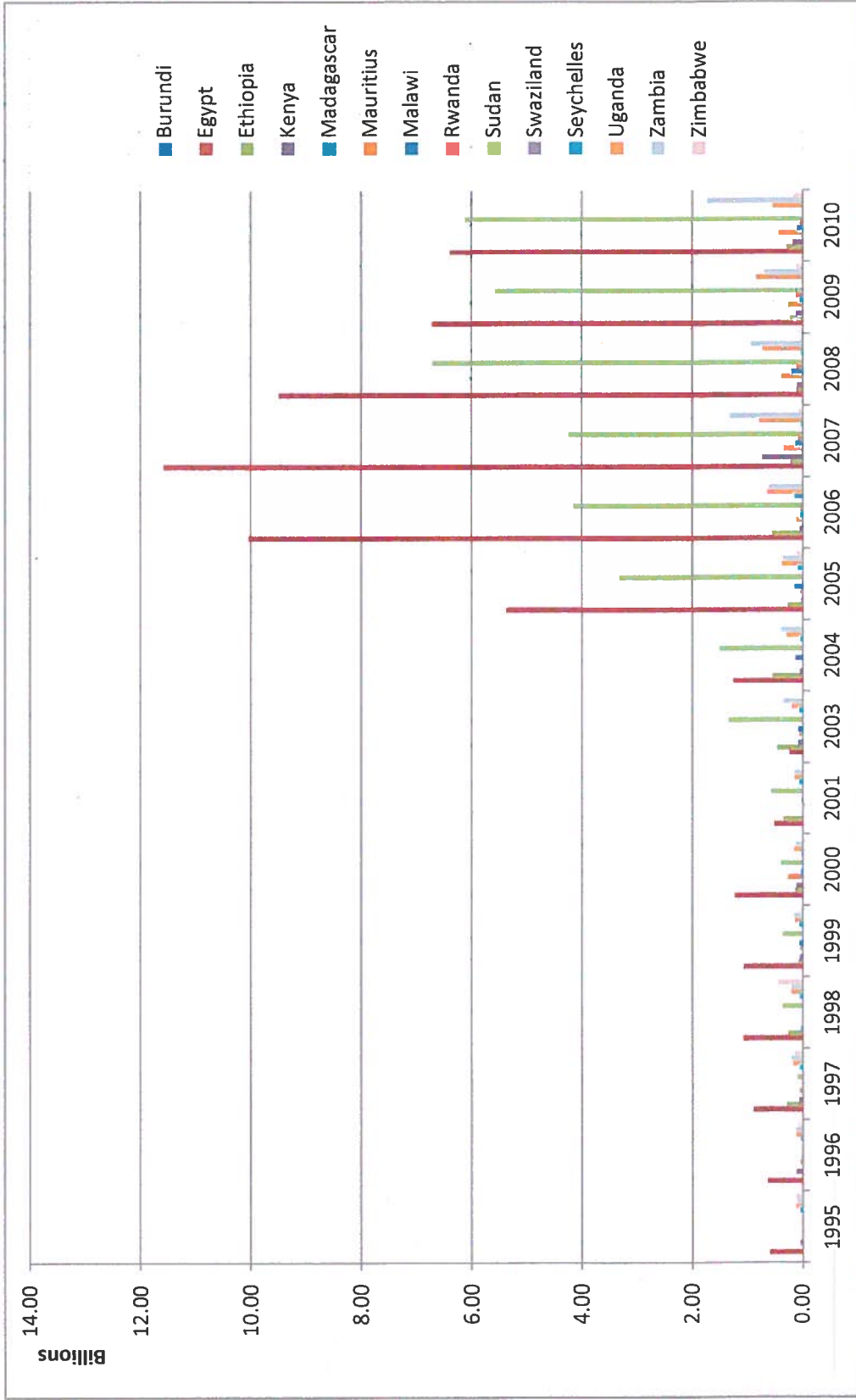
FDI in Africa has been driven by resource-seeking intentions and is largely aimed at the primary sector, especially in oil and minerals (UNCTAD, 2008). UNCTAD believes about 50% to 80% of FDI in Africa is focused on the natural resources sector. In the last decade, however, there has been a shift from resource-induced FDI to service and manufacturing-based FDI (Ezeoha and Cattaneo, 2012). Reports show that 54.6 per cent went into the primary sector, 20.6 percent into the secondary sector and 24.8 percent into the services sector (UNCTAD, 2010).

Ostensibly, recent statistics suggests that there has been a rise in FDI flows into agriculture due to an increase in commodity prices, which has resulted in investment in different crops like rice, wheat, barley, corn, sugar (UNCTAD, 2010). In addition, large investment in oil extraction has been happening in countries like Sudan, Angola and Nigeria by investors from countries such as China, Korea, and Brazil (Kratzsch, 2011).

In the last couple of decades Chinese multinationals have been one of the major investors in Africa. Chinese investment has been in the form of mergers and acquisitions mainly targeting the natural resources sector, and infrastructure investments combined with trade and aid (Corkin, 2007). There have been fast growing small private Chinese entrepreneurs that invest in different service and manufacturing sectors aiming to serve mainly local markets, despite that these private companies are mainly run by Chinese migrants and are less integrated with locals (Wang, 2007).

On the other hand, India also has been investing in African countries for many years. Indian investments have been very integrated with locals and mainly focused on the chemical, wholesale, food and beverages sectors. However recently, many Indian multinationals have been following Chinese style FDI which targeted natural resources coupled by trade and aid (Henley et al, 2010). South Africa also has been one of the biggest sources of FDI in African countries. The cumulated FDI inflows from South African companies into Africa were 16.6 billion USD between 2003-2007 (Rumney & Pingo, 2004). Many South African private firms have invested into the services sector like banking, telecommunication, retail, and tourism (Rumney and Pingo, 2004). Graph 1 Shows FDI flows into COMESA Countries from 1995-2010.

Graph 1: FDI Flows into COMESA Countries



Source: World Bank (2013) World Development Indicators Database.

The primary aim of this paper is to explore the effect of FDI on exports in African countries that are members of the COMESA trade bloc. Since the year 2000, FDI in COMESA countries have increased six times. This growth in FDI compares favorably with the 3.6 times growth exhibited for Africa as a whole (COMESA, 2012). Rwanda (151%), Zimbabwe (133%), Ethiopia (117%), and Kenya (79%) experienced the highest growth in FDI flows (COMESA, 2012).

The highest FDI shares as a percentage of GDP came from Sudan (29%), Zambia (21%) and DR Congo (18%) during this surge period (COMESA, 2012). Malaysia (USD 19 billion), South Africa (USD 18 billion), China (USD 16 billion) and India (USD 14 billion) were the largest sources of FDI to these African nations in 2011 (COMESA, 2012). Egypt had the highest volume of FDI inflow compared to other COMESA countries. FDI in Egypt averaged USD 2,189.03 Million from 2002 until 2013 (COMESA, 2012).

The major contributors of FDI were the European Union, US, the Arab world, China, India and COMESA countries. Significant portion of FDI to COMESA came from COMESA countries and South Africa. For instance, in Egypt FDI from COMESA countries was USD 51.77 million between 2007 and 2011. The major FDI contributor was Libya while a substantial percentage of Egypt's FDI came from other African countries as well. In Kenya, South Africa is one of the largest investors followed by Tanzania, Mauritius and Uganda. Zambia's FDI inflow from COMESA members, which mostly came from Libya and Mauritius was USD 68.52 million between 2007 and 2010 (COMESA, 2012). In Madagascar, COMESA-based FDI was USD 49.86 million between 2007 and 2010, and it came mainly from Mauritius. Substantial amounts of FDI inflows came into Malawi from COMESA (USD

19.7 million), South Africa (USD 20 million) and Tanzania (USD 10 million) in 2010. Also in Rwanda USD 76.43 million FDI inflows came from COMESA in 2010 (COMESA, 2012).

4. Literature Review

4.1. Background

Foreign direct investment is a type of international capital flow created by a long-term relationship between an interested direct investor and an economy (Protsenko, 2003). FDI can be classified into three types: horizontal FDI, vertical FDI and export-platform FDI.

One way of investing in a foreign country is by creating similar goods and services in different countries; and this is called Horizontal FDI. It occurs when it is more costly to serve the foreign market by exports because of transportation costs or trade barriers (Protsenko, 2003). On the other hand, Vertical FDI refers to when firms separate the production process in different countries. Firms choose this type of FDI when the production process has numerous processes and various input requirements. If a country has cheaper inputs like human capital and raw materials, it is profitable for a firm to separate its production process and send the goods back to the home country (Protsenko, 2003).

Similarly, export-Platform FDI is a type of Vertical FDI where exports are sent to a third country. The rise of trade blocs made firms establish production facilities in a certain bloc and export to the members of the trade bloc. There is a trend where multinationals consider not just home markets but also neighboring countries' markets when thinking about choosing the type of FDI they are applying (Protsenko, 2003).

There are many theories that try to explain which type of FDI multinational firms prefer. According to Brainard (1993), firms choose horizontal FDI instead of exports-based FDI if the transport cost is higher than the cost of establishing a new plant or, if firm level returns are greater than plant level returns. Another model by Markusen & Venables (1998) predicts that Horizontal FDI happens in large foreign markets, which provides greater return from large volume production after covering the costs that come from establishing new plants. On the other hand, a model by Helpman (1987) shows that multinationals choose vertical FDI if the countries differ significantly in relative factor endowments. Furthermore, Markusen & Venables (2000) indicate that vertical FDI creates international trade flows between countries.

4.2. The effect of FDI flows on host country

FDI is believed to have many benefits to a country. It is a source of new capital that supplements domestic investment, it creates new jobs opportunities, it is a pathway for technology transfer, and expedites access to foreign markets, thus fostering economic growth (Ajayi, 2006). Existing literature indicates three ways that enable FDI to foster economic growth: first, by supporting domestic saving, thus increasing investment; second, by fostering transfer of technology that leads to an increase in factor productivity and efficiency in the utilization of resources; lastly, by leading to an increase in volume and competitiveness in domestic production that results in an increase in exports (Ajayi, 2006).

To support these views, classical theorists cite examples of East Asian countries like Hong Kong, Taiwan, Singapore and South Korea and China (Greenaway et al, 2000; Girma et al, 2007). According to classical theorists multinational companies (MNCs) are significant

conduits of these benefits. FDI does not only bring capital but technology, knowledge and information spillovers that occur in various ways.

First, the host firm will be able to duplicate advanced technologies and skills from MNCs as a result improving productivity (Girma et al, 2007). Also training will be given to local staff by the parent company's highly skilled staff because the new technologies require such training to local employees, enabling them to learn better managerial, administrative, organizational and technical skills. Overall, employee capacity building may lead to better human capital formation in recipient countries. In addition, other local firms will be forced to catch up with MNCs and their subsidiaries in order to stay competitive. This encourages domestic firms to become more efficient and productive (Lensink & Morrissey, 2006).

Even though classical theorists are very optimistic about FDI, empirical results have showed mixed results. Some studies showed positive spillovers, and others showed no effect or negative spillovers of FDI on the host country (Gorg & Strobl, 2002). For example, MNCs can worsen existing unemployment problems. They could drive up wages which makes it hard for local firms to employ skilled labor (Gorg & Greenaway 2001). Incidentally, in Mexico, between 1975 and 1988 wages and demand for skilled labor increased but unemployment of unskilled labor decreased (Feestra & Hanson, 1997). Similarly, in Nigeria MNCs imported capital intensive technologies which exacerbated the problem of unemployment because machineries replaced human labor (Ohiorhenuam, 1983).

On the other hand, Makki & Somwaru (2004) showed that FDI had a positive impact on economic growth using data on sixty-six countries from all over the world. In addition, Abdullahi, et al (2012) used Hausman test with data from 30 countries; 15 from Asia and 15

from Africa for the period 1990 to 2009. They examined the aggregate data and later disaggregated the data into Africa and Asia in order to measure the regional impact of FDI on economic growth. Their results showed FDI has a positive and significant effect on GDP growth for both Africa and Asia and also that FDI and exports have a positive and significant impact on GDP when examining both aggregated and disaggregated data.

Unlike classical theory, proponents of Dependency Theory do not favor FDI and view FDI as exploitative (Tandon, 2002; Wilhelms & Witter, 1998). They believe that instead of promoting economic development, FDI retards development by keeping developing countries in constant reliance on the economies of the developed countries. According to this view, FDI fosters dependence through promotion of specialized exports, increased reliance in foreign products and technology, increase in inequality of income distribution, crowding out of entrepreneurs due to unfair competition and contributes to rising unemployment (Lall 1996). FDI thus slows down development and more importantly, limits local investment. The latter yet again leads to more dependence on developed countries because LDCs will be forced to seek foreign aid in the form of loans or aid for their development and investment requirement (Markusen & Venable, 1999; Biersteker, 1987). Accordingly, dependency theorists call for establishment of policies that deliberately discourage FDI but promote self-reliance. However this theory has been discredited over time and many governments today view FDI as a catalyst for economic growth (Kebonang, 2006).

After the decline of the dependency theory, a middle path theory was created that incorporated both classical and dependency theory views. This theory states that FDI can be regulated in a way that benefits both host country and MNCs (Sornarajah, 1994). The advice

to countries, therefore, is to have a mixture of both regulation and openness when dealing with FDI. Sometimes countries should let markets decide but when necessary government should intervene (Seid, 2002). For instance, the East Asian countries such as Singapore, China, and South Korea were successful in their government-led activism to foster growth and even try to develop certain sectors (Rodrik, 1997).

In addition, scholars have shown that the positive spillover derived from FDI depends on the presence of a number of elements. Such factors include the sectors in which investment is made, economic policies of the host country, the political risks of the country, the existence of advanced financial markets, and human capital availability (Nunnenkamp, 2004). A study done by Adams (2009) on Sub-Saharan African countries indicated that FDI was not significant and negatively correlated with economic growth. He claimed that Africa will be able to take advantage of FDI only if it meets some basic conditions. African countries were not benefiting from FDI since the impact of FDI on economic growth was constrained by shortage of trained human capital, inadequacy of basic infrastructure network, and lack of a proper financial system (Adams, 2009).

For example, lack of human capital hinders the benefit that comes from FDI because a sufficient level of human capital is needed for proper use of advanced technology (Borensztein et al, 1998). At the same time, having an unstable government or uncertainty in policy making may adversely impact the flow of FDI. But if there are effective institutions and investment-friendly policies FDI can contribute to growth of a country (Hermes & Lensink, 2003). For Instance, (Balasubramanyam et al, 1996; Gorg & Greenway, 2001; Miller & Upadhyay, 2000) argued that countries with a policy that promotes openness of trade,

benefit from FDI on their economies. This policy creates an ideal environment for exports which accelerates the growth of the country.

On a similar note, Hoque & Yusop (2010) examined the impact of trade liberalization on export performance in Bangladesh and proved that trade liberalization does improve export performance. In addition, studies done in Turkey by Ozturk & Acaravci (2010) proved that increases in exports are beneficial to economic growth. Parida & Sahoo (2007) also demonstrated using data from South Asian countries that exports have a highly significant relationship with economic growth.

Furthermore, having an effective financial system is essential for having positive effect of FDI because it increases efficient allocation of capital and attracts more FDI inflow (Hermes & Lensink, 2003). Other scholars have also shown that the benefits gained from FDI depend on the type of sectors to which FDI is targeted. For example, technological and skills transfer is more evident in the manufacturing sector than in primary sector (Alfaro, 2003).

4.3. Determinants of FDI into African countries: COMESA

The question therefore arises as to what determines the flow of FDI to African countries? One of the determinants of FDI to Africa is the amount of natural resources endowment on the continent. In addition, there have been economic reforms of financial systems in most African countries since the 1990s which attracted more FDI flows to Africa (Ezeoha & Cattaneo, 2012). These new fiscal and monetary policies led to a decrease in the macroeconomic imbalances and established an environment that favors FDI such as, elimination of domestic price controls, creation of market-determined interest rates, and

liberalization of exchange rates (Abdulai, 2007). Also the recent growth of African countries' economies is creating large markets, good infrastructure and a competent legal framework, thus attracting FDI flows (Ajayi, 2006).

Since foreign direct investment is seen as a way of accelerating growth many developing countries, especially African countries, seek FDI to accelerate their development goals and reach their Millennium Development Goal targets (Greenaway et al, 2004). Thus, African countries developed and established numerous policies to promote and attract FDI. This is especially so because Africa has limited ability to create funds domestically due to low level of domestic saving and low income. Therefore, in order to accelerate growth and lower poverty, the majority of its finance for future investments will have to come from abroad, mostly in the form of FDI (Ajayi, 2006). Empirical studies tend to corroborate the above.

Morisset (2000) investigated African countries that have been able to attract FDI by establishing policies that attracted FDI. Using evidence from the period 1990-1997, he proved that policies that attract FDI like openness to trade, trained human capital, and better infrastructure are significantly correlated with FDI in Africa. He claims that by employing policy reforms, African countries can also attract FDI not only in the oil and natural resources sector but also in other sectors.

4.4. Relationship between FDI, exports and economic growth

Even though there may be many effects of FDI on a country, this paper is aimed at finding the effect of FDI on exports. There has been a large amount of empirical work done on the relationship between FDI and exports. The studies by Sharma (2000), Goh et al (2013),

Zhang & Song (2000), Pfaffermayr (1994), and AbuAl-Foul & Soliman (2006) examined FDI effect on exports growth on India, Malaysia, China, Austria, and MENA (Middle east and North Africa) region respectively. However they used different models to investigate the relationship. Sharma (2000) and Zhang & Song (2000) developed a simultaneous equation model that featured FDI and foreign exports demand and domestic supply to explain India's export performance. They used the two-stage least squares (2SLS) procedure with the lagged value of export demand as instrumental variable to eliminate the endogeneity problem. They used lagged value of export demand as there was no reason to believe that current year's FDI had effects on last year exports.

On the other hand, Goh et al (2013) and AbuAl-Foul & Soliman (2006) used a gravity model to examine the relationship between trade (exports and imports) and inward and outward FDI. The gravity model proposes that bilateral trade between two countries is directly proportional to the product of the countries' income and negatively related to the distance between them. This model is used to estimate International trade and is a common way to study the relationship between Bilateral Trade and FDI (AbuAl-Foul & Soliman, 2006). In addition, Pfaffermayr (1994) used Granger-causality tests to find out the relationship between foreign direct investment and exports using aggregate data from the Austrian economy.

There was no cohesiveness in the results obtained through these empirical analyses. The results from Sharma (2000) show that FDI has a positive, but not statistically significant, impact on exports. However, Zhang (2000), Goh (2013) and AbuAl-Foul & Soliman (2006) showed the coefficient of FDI was positive and statistically significant. FDI inflows have a

positive and statistically significant effect on exports. The result from Pfaffermayr (1994) was very different: a negative and significant relationship between exports and FDI. The author, however, advised that the results should be cautiously interpreted. Because firstly, the dependent variable groups together the exports of mineral and manufactured products, which in turn assumes that exports demand and supply functions are the same in all categories. Secondly, the model used short time-series data which disregarded considerations of the longer lag effects.

Furthermore, the studies by Abdullahi et al (2012), Nicet-Chenaf & Rougier (2011), Olayiwola & Okodua (2009), Tekin (2012), and Nair-Reichert & Weinhold (2001) analyzed the interaction between FDI, exports, and economic growth. They based their empirical analysis on endogenous growth theory, which states that FDI contributes to economic growth through new technologies, improving human capital, infrastructure, and institutions, and increases in exports. Nicet-Chenaf & Rougier (2011) examined the relationship using countries from MENA region, and Nair-Reichert & Weinhold (2001) used 24 developing countries from 1971 to 1995. Likewise, Olayiwola & Okodua (2009) and Tekin (2012) used data from Nigeria and LDCs to analyze the ELG (exports led growth) hypothesis which states that FDI leads to increases in exports and has positive impact on economic growth. They also investigated the role of FDI in ELG, i.e., examining whether there is any causality between FDI, exports and economic growth. Consistently with the previous studies, all attempts used lagged values of FDI and exports to eliminate the endogenous variable problem.

The results they obtained were as well similar. Olayiwola & Okodua (2009) and Tekin (2012) also found FDI inflows in Nigeria and LDCs are highly significant and positively

correlated with exports. Moreover, they showed that FDI is positively correlated with growth but has less impressive correlation than exports. In addition the relationship becomes stronger for countries with oil or other natural resources and manufacturing or services exporting countries. Results from Nicet-Chenaf & Rougier (2011) and Weinhold (1999) demonstrated that FDI, exports and economic growth also have a positive and significant relationship. In addition, the results point out the difference among countries due to the heterogeneity of countries. Similarly, using data from South Asia and Turkey, Parida & Sahoo (2007) and Ozturk & Acaravci (2010) demonstrated that increases in exports have a positive impact on growth.

5. Data and Methodology

5.1. Data

This study analyzes panel data from 1993 to 2012 on a subset of COMESA countries. It focuses on 13 COMESA countries out of 19². The remaining six countries were not included due to the lack of data covering the full period indicated above. This time period was chosen firstly because, FDI flows to these countries were larger and growing during this time period due to privatization of companies and secondly, as a result, fuller data was available during this time period. Data on GDP, FDI and openness of the economy (OPEN) were extracted from the World Bank World Development Indicators database. The disaggregated data of exports and real exchange rates were extracted from the UNCTAD and COMTRADE databases.

² Burundi, Egypt, Ethiopia, Kenya, Madagascar, Mauritius, Malawi, Rwanda, Sudan, Seychelles, Uganda, Zambia, and Zimbabwe.

These databases contain merchandise trade exports and imports by detailed commodity and trade partner country. For the purpose of the research exported commodities were categorized into three groups. Commodities like food, fish, and live animals were grouped as agricultural exports. Commodities like oil (petroleum), gold, and zinc were grouped as natural resources exports. Commodities like textiles, tobacco, and machineries were grouped as manufacturing exports. The real effective exchange rate was used as measured by the real value of a country's currency against the basket of the trading partners of the countries and taking into account explicitly the inflation rate. The real exchange rate is calculated by taking each country's nominal exchange rate against other major currencies deflated by the CPI (Consumer Price Index) of the country and its trading partners (for more on the calculation of this variable see below).

5.2. Methodology

This paper focuses on the magnitude of FDI effects on disaggregated exports using an empirical model that is very similar to the models in Zhang & Song (2000), Adams (2009), which are mentioned below. Simple OLS regression with and without fixed effects will be used. The first regression investigates FDI impacts on total exports. The next three regressions analyze the effects of FDI on the different sectors of exports. Simple OLS regression with fixed effects is used for these four regressions. The last four will analyze the effect of FDI on total and sectoral exports without fixed effects. The objective here is to analyze whether the effects of FDI on exports are similar across countries. The model has eight specifications and is as follows:

Model 1: FDI Effect on total exports with fixed effect

$$X_{it} = \beta_0 + \beta_1 FDI_{i(t-1)} + \beta_4 Y_{i(t-1)} + \beta_5 R_t + \beta_6 O_{i(t-1)} + \mu_i + \varepsilon_{it}$$

Model 2: FDI Effect on agricultural exports with fixed effect

$$A_{it} = \beta_0 + \beta_1 FDI_{i(t-1)} + \beta_4 YA_{i(t-1)} + \beta_5 R_t + \beta_6 O_{i(t-1)} + \mu_i + \varepsilon_{it}$$

Model 3: FDI Effect on manufacturing products exports with fixed effect

$$M_{it} = \beta_0 + \beta_1 FDI_{i(t-1)} + \beta_4 YM_{i(t-1)} + \beta_5 R_t + \beta_6 O_{i(t-1)} + \mu_i + \varepsilon_{it}$$

Model 4: FDI Effect on natural resources exports with fixed effect

$$N_{it} = \beta_0 + \beta_1 FDI_{i(t-1)} + \beta_4 YN_{i(t-1)} + \beta_5 R_t + \beta_6 O_{i(t-1)} + \mu_i + \varepsilon_{it}$$

Model 5: FDI effect on total exports without fixed effect

$$X_{it} = \beta_0 + \beta_1 FDI_{i(t-1)} + \beta_4 Y_{i(t-1)} + \beta_5 R_t + \beta_6 O_{i(t-1)} + \varepsilon_{it}$$

Model 6: FDI effect on agricultural exports without fixed effect

$$A_{it} = \beta_0 + \beta_1 FDI_{i(t-1)} + \beta_4 YA_{i(t-1)} + \beta_5 R_t + \beta_6 O_{i(t-1)} + \varepsilon_{it}$$

Model 7: FDI effect on manufacturing products exports without fixed effect

$$M_{it} = \beta_0 + \beta_1 FDI_{i(t-1)} + \beta_4 YM_{i(t-1)} + \beta_5 R_t + \beta_6 O_{i(t-1)} + \varepsilon_{it}$$

Model 8: FDI effect on natural resources exports without fixed effect

$$N_{it} = \beta_0 + \beta_1 FDI_{i(t-1)} + \beta_4 YN_{i(t-1)} + \beta_5 R_t + \beta_6 O_{i(t-1)} + \varepsilon_{it}$$

where X_{it} is total exports of country i in year t , M_{it} represents manufacturing products exports of country i in year t , A_{it} is agricultural product exports of country i in year t , and NR_{it} symbolizes natural resources exports of country i in year t . Foreign direct investment is denoted as $FDI_{i(t-1)}$ and the lagged value of FDI flows is used. Moreover, $Y_{i(t-1)}$ represents gross domestic product. When analyzing sectoral exports, sectoral GDP is used. Thus, $YA_{i(t-1)}$ denotes GDP from the agricultural sector, $YM_{i(t-1)}$ represents GDP from the manufacturing sector, and $YN_{i(t-1)}$ symbolizes GDP from the natural resources sector. R_t stands for the real exchange rate and O is a proxy for the degree of openness to trade, which is measured as trade as a percentage of GDP, while ε_{it} is the classical disturbance error component and μ_i represents the country-specific fixed effects.

5.2.1. Dependent variable: Exports

The dependent variable, exports, is grouped into three sectors: manufacturing products (M), agricultural products (A) and natural resources products (N). These three sectors are the biggest portion of exports in COMESA countries. Agricultural exports and manufacturing exports are the highest in volume and value in COMESA countries. There is also a considerable portion of exports that comes from natural resources (UNCTAD, 2008).

5.2.2. Explanatory Variables

5.2.2.1. Foreign direct investment

FDI is the main explanatory variable. This paper's main objective is to find the relationship between FDI and exports. In the regression, lagged FDI is used to cure the reverse causality problem. Not only may FDI affect exports but also exports may affect FDI

(Zhang & Song, 2000). Current exports can have effects on current year FDI, because the level of exports, which is correlated with openness to trade, is one of the determinants of FDI flows to a country. Thus, countries that export more attract FDI (Singh & Jun, 1999). At the same time, current year FDI also have an effect on current year exports. One of FDI's spillovers on a country is to open doors to foreign country markets and increase exports.

5.2.2.2. Gross domestic product

The gross domestic product (Y) is included since studies have shown GDP is positively and significantly related to exports, since when calculating GDP, exports is one of the variables needed. Consistent with the methodology employed here, the lagged value of GDP is used, to avoid correlation with other explanatory variables and a reverse causality between exports and GDP. There could be correlations with the other explanatory variable trade Openness (O), because trade Openness is a ratio between GDP and trade. At the same time, there could be a reverse causality between exports and GDP, since GDP is a function of net exports and other variables like investment, consumption, and government spending.

There have been various empirical studies that supported ELG theory. ELG theory states that exports have a positive impact on GDP growth (Olayiwola & Okodua, 2009; Tekin 2012). Thus, countries with higher GDP produce more goods and services, exporting more in return. On the other hand, an increase in exports leads to higher GDP (Xing & Pradhananga, 2013). In addition, higher GDP could be correlated with FDI since studies show countries with higher GDP attract FDI (Zhao & Du, 2007; Choe (2003). This paper will be using sectoral GDP and the relationship with sectoral exports will be analyzed. This will increase the accuracy of the effects of FDI on disaggregated exports.

5.2.2.3. Real exchange rate

The real exchange rate (R) is included in the model to control for the impact of exchange rate fluctuations on exports. For instance, the weakening of a given country's currency could trigger an increase in exports since it will be cheaper to buy products from the country. Also, it could promote an increase in FDI, since it will be cheaper for foreign countries to buy assets in these countries (Arize et al, 2000).

In addition, real exchange rate was preferred instead of nominal exchange rate to take into account differences in inflation rate between the country and its partners. Inflation raises the cost of inputs such as labor and raw materials. This could have significant impacts on the competitiveness of exports (Lovasy, 1962).

Real exchange rate, as mentioned above, is calculated by taking each country's nominal exchange rate against its trading partners' currencies deflated by the CPI (Consumer Price Index) of the country and its trading partners. Nominal exchange rate here is defined by a nominal bilateral exchange rate between the country under study and its trading partners and it measures one unit of foreign currency per some amount of domestic currency. The calculated rate is weighted by using the annual value of a country's trade with the relevant trading countries as its weights. This becomes an index for effective real exchange rate. A decrease in the exchange rate implies an appreciation of the exchange rate, since domestic currency goes down.

The formula is given as follows: $R = NR_t * CPI_t / CPI^{(foreign)}$, where NR_t symbolizes nominal exchange rate of a country against its trading partners, CPI_t denotes Consumer price

index of the country under study, and $CPI^{(foreign)}$ represents the geometrically weighted average of consumer price indices of trading partners (Darvas 2012; UNCTAD, 2013b).

5.2.2.4. Trade openness

A variable to control for trade policies was included. This is because trade policy is one of the determinants of exports and FDI (Kutan and Vuksic, 2007). Country trade policies that restrict exports or imports could lead to a decrease or increase in trade. Such policies include having high imports tariffs and exports taxes or other non-tariff protectionist measures. This implies that a high level of openness will increase imports since the price of imports will decrease (Agosin, 1991; Clarke & Kirkpatrick, 1992; Greenaway and Sapsford, 1994), but will have mixed effects on exports (McCulloch et al, 2001). One possible consequence would be the increase in imports will decrease exports. Since imports become cheaper with more openness, it will be better to import similar products. On the other hand, the increase in imports restrictions can lead to an increase in exports. When imports restrictions are liberalized a country will shift its production from producing imports substitutes to export-oriented products (McCulloch et al, 2001).

As a result, to control for trade policy, trade openness (O) is used as a proxy, which is the ratio of trade (exports plus imports) to GDP. This is a good proxy because it measures the degree of domestic companies' dependence on foreign markets and the degree of dependence of consumers on foreign products. Low degrees of openness could mean the country does not have high trade due to high tariffs or non-tariff obstacles. Also this index takes into account the size of the economy, it's structure (especially how much weight non-tradable services

have on the economy), inaccessibility of potential trading partners and being part of global production chains (what portion of trade is re-exports and intra-firm trade) (OECD, 2011).

Openness already considers the magnitude of the economy. For instance, having a high trade to GDP ratio could imply having a small economy. If the denominator (GDP) is small, the trade ratios tend to be larger than for a country with a high GDP. Thus this index takes into account the size of the economy. Furthermore, the lagged value of this variable is used in order to avoid correlation with GDP and reverse causality with exports, since trade openness has exports and GDP as part of its measurement.

Before running the regression, correlation between all explanatory variables was checked, to see how correlated they are to each other. This is to make sure there is no significant collinear relationship in the data. However, there seems to be low correlation between the variables (see table 9). The only variables that have slightly higher correlation are Y and FDI, which is expected. However, this collinear relationship does not have any effect on the results.

6. Results and interpretations

6.1. The impact of FDI on total exports with fixed effects

6.1.1. Impact of FDI on total exports

Using simple OLS with fixed effects, the effect of FDI on different types of exports was estimated. The first regression shows the FDI effects on total exports. As shown in Table 1, FDI and exports are positively and significantly related. The magnitude of the effect is relatively high. Exports will increase by \$1.3 when FDI increases by \$1 with a standard error of 0.117. According to the literature FDI is one of the determinants of exports; thus, the

expected sign is positive (Greenaway et al, 2000; Girma et al, 2007). These theoretical studies give examples of the success stories of East and South East Asian countries, which suggests FDI is a great instrument to promote exports. However, according to empirical studies the sign remains ambiguous. Pfaffermayr (1994) found a negative and significant relationship between exports and FDI. Zhang (2000), Goh (2013) and AbuAl-Foul & Soliman (2008), on the other hand, found a positive and significant relationship between FDI and exports.

This study shows support to the literature that argued about a positive and significant relationship between FDI and exports. The implications of this finding are interesting. If the FDI is horizontal, then the motive behind FDI flows is to capture domestic markets, which have a negative effect on exports. On the other hand, if the FDI is vertical or exports-platform, then the purpose of FDI is to use the country's comparative advantage. This increases the competitiveness of domestic companies, which increases exports. However, on further scrutiny, according to a report by UNCTAD (2008), 50-80% of FDI flowing into COMESA countries is aimed at exploitation of natural-resources and manufacturing-based FDI. Minerals are always exploited for exports. These types of FDI are mainly vertical or exports-platform FDI, thus explaining the results in the above correlation.

The magnitude of FDI effect is relatively similar when comparing to past studies done on some Asian countries. For example, in Taiwan a \$1 increase in FDI will increase exports by \$1.75, in Korea (\$0.82), Malaysia (\$0.97), and India (\$0.88). In addition, other studies show a relatively lower or higher magnitude such as Indonesia (\$0.101), China (\$0.2), Morocco (\$0.17), and Singapore (\$3.63) (Haddad & Harrison, 1991, Johnson, 2006; Sharma, 2000).

6.1.2. Relationship between total exports and other explanatory variables

It is noted that other explanatory variables are also significantly and positively related to exports and insignificantly and positively related to the real exchange rate. GDP has a positive and significant effect on total exports. This is consistent with past theoretical and empirical studies on the relationship between GDP and exports that report a positive and significant correlation. Xu (1996), Nicet-Chenaf & Rougier (2011), and Weinhold (1999) have found a positive relationship between GDP and exports. Chakravarty & Sarkar (2000) also confirmed the positive effect of exports on GDP, noting further that it is more exhibited in countries that have high economic growth. The present study shows that total exports will increase by \$0.19 when GDP increases by \$1.

On the other hand, real exchange rate has a positive but insignificant effect on total exports. Many theoretical models study the relationship between real exchange rate and exports. However, the results are mixed; some found a positive relationship (Asseery, 1991; Hwang & Lee, 2005), while others reported a negative relationship (Arize et al, 2000; Corbo & Caballero, 1989; Gagnon, 1993). But most empirical studies have found the sign of real exchange rate as negative. Intuitively, an appreciation of the real exchange rate will decrease exports, which is similar to the results reported here. This index is related to the number of domestic currency per unit of foreign currency. This implies that an increase in real exchange rate is equivalent to a weakening of the domestic currency which is depreciation. Therefore, a positive relationship implies that if the exchange rate increases (depreciates), exports will increase.

Moreover, trade openness (OPEN) is significant and has a negative relationship with total exports. This result indicates that a high level of trade openness reduces exports. Past studies done on the relationship between trade openness and exports have shown mixed results. There have been mixed empirical results on the expected sign on trade openness. Many studies have found a positive relationship between openness and trade (Greenway & Sapsford, 1994; Chadha, 1997; Ahmed, 2000). On the other hand, Sharma et al (2000) and Santos-Paulino (2002) have found a negative relationship. This study is consistent with the studies with a negative relationship. To clear up the ambiguity of these results, another regression with a different measurement for trade openness (such as weighted tariffs) would strengthen the analysis. However, due to the lack of data on tariffs, this analysis could not be performed.

6.2. The Impact of FDI on sectoral exports with fixed effects

6.2.1. Agricultural exports

6.2.1.1. Impact of FDI on agricultural exports

FDI and agricultural exports are also positively and significantly related. The magnitude of its effect, as expected, is lower as compared with total exports. A \$1 increase in FDI will cause agricultural exports to increase by \$0.195. These results are consistent with past studies done on FDI flows in Africa. There are very small FDI flows to the agricultural sector in most of these countries. Consequently, this explains the very small FDI effect on agricultural exports.

The expected sign of FDI on the agricultural sector is positive. Studies done on the relationship between FDI and agricultural exports showed a highly positive impact on agricultural exports. FDI flows into this sector promote productivity and efficiency through

technological advancement in the sector, which generates more exports. Foreign companies bring new technologies to local farmers that increase production of crops (Msuya, 2007; FAO, 2001).

6.2.1.2. Relationship between agricultural exports and other explanatory variables

Similarly, sectoral GDP is also positively and significantly related to agricultural exports. Another important suggestion of this study is that the real exchange rate is significant and is positively related to agricultural exports. This is broadly in line with a study done by Klein (1990) that has found the effect of real exchange rate is different in different sectors of exports. The difference could be due to differences in the exchange rate regime. For instance, Ethiopia's currency is managed by the government, Eritrea and Djibouti peg their currency to USD and Kenya floats its currency (IMF, 2012a). Different exchange rate regimes may have different effects on exports which makes it harder to analyze.

Different results were observed when analyzing different sectors of exports and trade openness. Some theoretical studies argue trade openness has a mixed effect on agricultural exports. According to these studies, when there is more openness to trade, imports demand increases. This results in a significant decrease in domestic prices of substitutes to agricultural imports, which increases the relative prices of agricultural products, and thus a reallocation of resources towards the export goods (Minot et al, 2007). Still, these effects happen when there is multilateral liberalization (Minot et al, 2007). On the contrary, unilateral liberalization has the effect of increasing domestic agricultural prices. It leads to a decrease in supply inside the country but has no effect on demand of imports, since prices of other country products remain

the same. Therefore, the exact relationship between openness and trade will depend on whether it is a unilateral openness or multilateral openness (Minot et al, 2007).

6.2.2. Manufacturing exports

6.2.2.1. The impact of FDI on manufacturing exports

Similarly, FDI has a positive and significant impact on manufacturing exports and is consistent with past empirical studies. However, the magnitude of this effect on manufacturing exports is higher than those on the agricultural and natural resources exports. A \$1 increase in FDI will increase manufacturing exports by \$0.28 with a standard error of 0.034. Similar to the agricultural sector, FDI flows into this sector promote productivity and efficiency through technological advancement which generates more exports. Foreign companies introduce new technologies to local companies that increase production of manufactured products (Blomstrom & Kokko, 2003; Borenzstein et al, 1998).

6.2.2.2. Relationship between manufacturing exports and other explanatory variables

Sectoral GDP is also positively and significantly related to manufacturing exports. The magnitude is relatively higher for manufacturing exports than for other types of exports. Contrary to other sectors of exports, the real exchange rate has a negative and significant relationship with manufacturing exports. This result is inconsistent with past studies and theories. COMESA countries manufacturing exports' are smaller in size as compared to the other two sectors; the latter variable may not have a sizable impact on manufacturing exports. This could be an explanation for the negative relationship with manufacturing exports.

Trade openness does no longer have a significant relationship with manufacturing and is negatively related with manufacturing exports, similar to agricultural exports. Even though in theory these results seem counter-intuitive, theoretical and empirical studies also have shown a mixed relationship between manufacturing exports and trade openness (Chandran 2009; Edwards, 1992; Ben Ayed Mouelhi, 2007). Studies by Minot et al (2007), Edwards (1992), Ben Ayed Mouelhi (2007), and Chandran (2009) showed trade openness has a negative relationship with manufactured exports. These studies argue that higher openness speeds up adaptation of technologies from developed countries by eliminating import barriers, which increases imports of R&D, machineries, and intermediate manufacturing products (Chandran, 2009; Edwards, 1992). These technical changes promote investment and reduce costs which increase exports; however, these effects of trade openness on exports depend on the degree to which technology transfers are absorbed and used (Edwards, 1992; Ben Ayed Mouelhi, 2007).

6.2.3. Natural resources exports

6.2.3.1. The impact of FDI on natural resources exports

FDI has a positive and significant impact on natural resources exports. The magnitude of this effect is slightly lower than for manufacturing exports but higher than for agricultural exports. A \$1 increase in FDI will increase natural resources exports by \$0.27, with a standard error of 0.06.

In the past, FDI in COMESA countries has been toward the natural resources sector (UNCTAD, 2008). Nonetheless, its effect on exports is less than for manufacturing sector. This is also in agreement with studies in the past that have proved FDI flows to natural

resources have less effect on mineral exports and growth of a county compared with the manufacturing sector (Alfaro, 2003).

Similar to past studies, the expected sign is positive. FDI flows to the natural resources sector are usually exports oriented. MNCs are very interested in raw materials and bring access to foreign markets in the developed world, thus providing reliable channels of exports and income to these natural resources exporter countries (Gerlach & Liu, 2010).

6.2.3.2. Relationship between natural resources exports and other explanatory variables

Sectoral GDP is also positively and significantly related to natural resources exports. The real exchange rate is significantly and positively related to natural resources exports. The effects of the real exchange rate on the natural resources sector are consistent with past studies and theories. The results show that, as the exchange rate depreciates, natural resources exports and agricultural exports increase.

Trade openness does no longer have a significant relationship with natural resources exports. The expected sign is positive which is consistent with studies done in the past. There are few studies done on the relationship between natural resources exports and trade openness but these studies have shown a positive relationship between natural resources exports and trade openness. Trade openness on natural resources eliminates exports restriction on this sector. The removal of exports restriction increases domestic prices, encouraging investment in extracting and producing raw materials, thus increasing the supply of natural resources (Korinek, 2013). The positive relationship of natural exports with trade openness could also

be because of the importance of natural resources exports to many developed countries. In addition, the COMESA region is especially known for its vast variety of natural resources. Consequently, more openness increases external demand for these natural resources exports. However, other exports of agricultural and manufacturing products can be found easily in a lot of other countries.

6.3. The impact of FDI on exports without fixed effects

6.3.1. Total exports

The same four equations were analyzed without fixed effects, to see the difference in results when there is no control for differences between countries. The results showed total exports still have a significant positive relationship with all explanatory variables: FDI, GDP, real exchange rate and openness to trade. However, the magnitude of the effects has changed for all the variables, as expected. It is expected to have a change in magnitude since the regression does not account for the difference in exports across countries. For instance, the effect of FDI on total exports is lower (\$0.84) compared with the fixed effects regression (\$1.3). This is expected as even though COMESA countries are comparable with each other, they still have differences in size of economy, trade policies, and FDI policies.

6.3.2. Manufacturing exports

For the manufacturing sector, the effects are also similar to the previous regression with fixed effects on all variables except for changes in the magnitudes of the coefficients. The effect of FDI on manufacturing exports is (\$0.282) compared to (\$.166) for the fixed effects

regression. This implies even though these countries are different in many things, the FDI effect on their manufacturing sector is very similar.

6.3.3. Agricultural exports and natural resources exports

However, not having fixed effects has significantly altered the results for the other two sectors. The effect of FDI on agricultural and natural resources exports is still positive and significant. Nonetheless, the coefficients have a large variation. An increase in FDI by \$1 will increase agricultural exports by \$0.095 as compared with \$0.195 with fixed effects; and \$0.17 without fixed effects as compared with 0.27 with fixed effects for natural resources exports. That is a relatively large change in magnitude. This implies that the magnitude of FDI effect on agricultural and natural resources exports is different across countries. This is due to the differences in the agriculture and natural resources sectors in these countries. For example, countries like Kenya, Ethiopia, Uganda, and Rwanda have large fertile land; hence, the agricultural sector is the main engine of their economy. Even though most of COMESA countries have natural resources, countries like Zambia, Zimbabwe, and Burundi have vast amounts of natural resources when compared with the rest of the COMESA countries. Egypt's and Seychelles' economies also have relatively high service sector and manufacturing sector compared to the rest of the COMESA countries. Consequently, these differences between countries cause the magnitudes of the coefficients to be different.

Similarly, the exchange rate effect on manufacturing exports was similar to the regression analysis using fixed effects. However, the relationships between the real exchange rate and agricultural exports and natural exports are different with and without fixed effects. Agricultural exports, natural resources exports, and the real exchange rate no longer have a

significant and positive relationship. This result magnifies the differences in exchange rate regimes across countries and their effects on the results. As mentioned above, COMESA countries have different exchange rate regimes. Since the regression without fixed effects does not control for differences across countries, the results are the complete opposite of fixed effects results. In addition, this difference was more detected on agricultural and natural resources exports, since the differences in these sectors are big as mentioned above.

Nevertheless, the relationship between openness to trade and agricultural exports and natural resources exports is also very different compared with previous results. Again, the sign and the significance level have changed. Trade openness no longer has a significant relationship with both types of exports. In addition, the positive sign has changed to negative for natural resources exports and vice versa for agricultural exports. This could be because of the difference in supply and demand of these products and the size of the sectoral GDP across these countries. In some countries supply and demand of natural resources exports or agricultural exports is higher than in other countries. Thus trade openness is more effective in the countries that have high supply of these exports. Since the differences in supply and demand of these exports across countries are not accounted for when doing regression without fixed effects, it led to differences in the results.

Table 1: FDI impact on sectoral exports with fixed effect

Dependent Variables: Total Exports, Agricultural Exports, Manufactured Exports, Natural Resources Exports

Variables	Total Exports	Agricultural exports	Manufactured exports	Natural Resources exports
Constant	4.26E+08 (1.02E+09)	-4.15E+08 (2.38E+08)	1.54E+08 (3.07E+08)	-2.10E+09*** (5.89E+08)
Y(GDP)	0.192*** (0.008)	0.001*** (0.0001)	0.0048*** (0.0001)	0.0021**** (0.0001)
F(FDI)	1.338*** (0.116807)	0.195*** (0.024)	0.282*** (0.034937)	0.271**** (0.066258)
R(Exchange Rate)	9678705 (7281810)	4287658*** (1604957)	-3655381* (2203457)	17076065*** (4154535)
O(Openness)	-22065994** (10460032)	-4287658 (2426672)	-3672249 (3269722)	5625064 (5675861)
Fixed Effect				
BUR-C	-9.35E+08	-62191894	3.67E+08	-1.13E+08
EGY-C	1.48E+09	-1.17E+09	-3.93E+09	-3.83E+08
ETH-C	-1.48E+09	-41567524	79744781	-43911849
KEN-C	1.65E+09	9.92E+08	-4.60E+08	3.19E+08
MDG-C	4.07E+08	1.97E+08	4.82E+08	1.13E+08
MUS-C	3.05E+09	5.03E+08	1.27E+09	-5.67E+08
MWI-C	-93701634	31359544	7.93E+08	-4.93E+08
RWA-C	-9.62E+08	-66140918	2.70E+08	
SYC-C	-1.97E+09	-2.31E+08	81227269	-1.20E+09
SDN-C	-1.02E+09	-5.49E+08	-4.40E+08	3.75E+09
UGA-C	-1.08E+09	1.47E+08	2.73E+08	-2.47E+08
ZMB-C	1.05E+09	-3211899.	1.30E+09	-2.98E+08
ZWE-C	1.77E+09	3.96E+08	3.96E+08	8.09E+08
R-squared	0.944373	0.683843	0.931908	0.763533
Adjusted R-squared	0.940449	0.661159	0.926851	0.746413
S.E. of regression	1.95E+09	4.17E+08	5.53E+08	1.07E+09
Sum squared residual	9.13E+20	3.87E+19	6.18E+19	2.52E+20
Log likelihood	-5897.996	-5095.205	-4689.608	-5276.489
F-statistic	240.6706	30.14658	184.3045	44.59942
Prob (F-statistic)	0.000000	0.000000	0.000000	0.000000
Durbin-Watson stat	0.612816	0.378617	0.607671	0.561410

Note: *** Significant at 99% confidence level, ** Significant at 95% confidence level,

* Significant at 90% confidence level, () Standard errors

Table 2: FDI impact on sectoral exports without fixed effect

Dependent Variables: Total Exports, Agricultural Exports, Manufactured Exports, Natural Resources Exports

Variables	Total Exports	Agricultural exports	Manufactured exports	Natural Resource exports
Constant	2.79E+08 (6.89E+08)	48064689 (1.84E+08)	92748005 (2.80E+08)	1.33E+09*** (4.34E+08)
Y (GDP)	0.222*** (0.005319)	0.001*** (0.000107)	0.003*** (0.000129)	0.002*** (0.000174)
F(FDI)	0.843*** (0.107372)	0.095*** (0.026413)	0.166*** (0.045313)	0.180*** (0.070134)
R(Exchange Rate)	-8869292 (5864568)	-905179 (1495946)	-5745631*** (2441426)	-5882021 (3784002)
O(Openess)	9454923** (5230647)	3001303** (1369513)	8701863*** (2012844)	-8387007*** (3277396)
R-squared	0.923656	0.451587	0.832544	0.591929
Adjusted R-squared	0.922454	0.442252	0.829399	0.584923
S.E. of regression	2.22E+09	5.35E+08	8.45E+08	1.37E+09
Sum squared residual	1.25E+21	6.72E+19	1.52E+20	4.34E+20
Log likelihood	-5938.992	-5161.300	-4787.693	-5341.420
F-statistic	768.2657	48.37729	264.7431	84.49466
Prob (F-statistic)	0.000000	0.000000	0.000000	0.000000
Durbin-Watson stat	0.467465	0.191348	0.225599	0.321520

Note: *** Significant at 99% confidence level, ** Significant at 95% confidence level,

* Significant at 90% confidence level, () Standard errors

7. Conclusion

In conclusion, FDI effects on total exports and different sectors of exports were positive and significant. The results also showed FDI promotes exports in all sectors but it has more effects on manufacturing exports. Also, all exports and GDP have a positive and significant relationship. However, the relationships between exports and the real exchange rate and trade openness were very different for each sector. Natural resources exports and agricultural exports have a positive and significant relationship with the real exchange rate but manufacturing exports have a negative and significant relationship. Trade openness has a negative but not significant relationship with manufacturing exports, and agricultural exports but a positive relationship with natural resources exports. The analysis also showed there is a difference in results across countries especially with the natural resources sector and agricultural sector but not in the manufacturing sector. The results were mostly consistent with past studies.

This analysis would have been more precise if it had used sectoral FDI; however, due to lack of data, it was limited to the use aggregated FDI. Nevertheless, this analysis gives new and more accurate evidence on the effects of FDI on exports, especially on sectoral exports. Also, a better specification with different trade policy measures like tariffs would have strengthened the results. Furthermore, taking into account the differences in exchange rate regimes would also make this analysis stronger.

FDI in COMESA countries have been growing in the past couple of decades. These FDI flows go mainly to the natural resources sector but have been spreading to the manufacturing

and agricultural sectors. Due to the vast amount of raw materials and cheap labors, most of FDI flows have been vertical or exports oriented.

According to past studies done on various countries, the flows of FDI have differing impact on different aspects of an economy. They promote exports and transfer advanced technologies, R&D, human capital, and physical capital to the host country. This paper aimed at investigating FDI impact on sectoral exports of COMESA countries.

According to my results, FDI is an engine for producing more exports of all sectors, more so in manufacturing exports. The other variables like GDP and exchange rate have significant impact on all sectors of exports. These results suggest that countries should try to develop policies that attract FDI more especially in the manufacturing sector. They should also implement policies that magnify FDI effect on exports like improving infrastructure, human capital and the like.

In addition, increases in exports could lead to an increase in economic growth. There is a large amount of evidence from past studies that suggest that exports do lead to economic growth. Therefore, policies that promote FDI are recommended to COMESA countries, especially policies that promote FDI to manufacturing sector. Studies show implementing policies that eliminate domestic price controls, create market-determined interest rates, liberalize exchange rates, improve infrastructure, create an efficient legal framework, and increase trained human capital, attract FDI flows. These types of policies attract FDI flows to all sectors of FDI especially to the manufacturing sector (Abdulai, 2007; Ajayi, 2006).

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8. Appendix

BUR- Burundi

EGY-Egypt

ETH-Ethiopia

KEN- Kenta

MDG-Madagascar

MUS-Mauritius

MWI- Malawi

RWA-Rwanda

SYC-Seychelles

SDN-Sudan

UGA-Uganda

ZMB- Zambia

ZWE-Zimbabwe