FOREIGN DIRECT INVESTMENT, EXPORTS AND ECONOMIC GROWTH: EVIDENCE FROM EAST AFRICAN COMMUNITY COUNTRIES

BY

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A RESEARCH PAPER SUBMITTED TO THE SCHOOL OF ECONOMICS, UNIVERSITY OF NAIROBI IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF THE MASTERS OF ARTS IN ECONOMICS OF THE UNIVERSITY OF NAIROBI.

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DECLARATION

This research paper is my original work and has not been presented for a degree award in any other university.

Signature…….. Date ……...

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This research paper has been presented for examination with my approval as university supervisor.

Signature……. Date ……

DR. OWEN NYANG'ORO

DEDICATION

This research paper is dedicated to my loving parents, Mr. Simon Gatimu Kweri and Mrs. Beatrice Gatimu who have been a great support in my life.

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ABBREVIATIONS

CADF-Cross-sectional Augmented Dickey Fuller

DGP-Data Generating Process

EAC-East African Community

ECM-Error Correction Model

ELGH-Export Led Growth Hypothesis

FDI-Foreign Direct Investment

HC - Homogeneous Causality

HEC- Heterogeneous Causality

HENC -Heterogeneous Non Causality

HNC-Homogeneous Non Causality

MNC-Multi-National Corporations

OLS-Ordinary Least Squares

SSA-Sub Saharan Africa

VAR-Vector Autoregressive

VECM-Vector Error Correction Model

ABSTRACT

Most EAC countries have been experiencing a general rise in economic growth, FDI and exports. This raises a query on whether the three variables have a positive impact on each other. This study investigates the relationship among these variables in the EAC region. The study has been carried out using panel data from 5 EAC countries: Kenya, Uganda, Tanzania, Rwanda, and Burundi for the period 1988 to 2018**.** Panel co-integration test was used to test for long run relationships and Granger causality was applied to test for causal relationships. The estimation was modelled as a vector autoregressive (VAR) model as all the variables were found not to be cointegrated. Wald test under the null of homogenous non causality (HNC) was used in order to cater for heterogeneity among the countries. The results of the research indicated absence of any long term relationship among the three variables in the region. It was established that export did not have a positive effect on GDP in the short run in at least one country in the region. FDI was found to have a negative impact on both GDP and exports in at least one country in the region.

CHAPTER ONE: INTRODUCTION

1.1 Background of Study

A country keen on economic development through better policies must be concerned about macroeconomic variables likely to ensure or deter such development. Growing an economy remains one of the main aims for any government policy makers. Governments constantly engage to try and find ways to grow their economies by enacting and implementing policies believed to aid the process given that policy greatly determines a country's growth (Balassa, 1985). Normally, the policies outline measures and actions to affect certain macroeconomic variables believed to eventually bring about growth. In other words, they are guided by believed relationships the variables have with economic growth. Exports and FDI are such variables.

Intuitively, a country with an expanding exports market is expected to produce more to satisfy the market, secure better earnings, and grow economically (Ahmed et al., 2005; Yenteshwar, 2003). Also the level of FDI in a country affects the country's economic growth. To a country with limited capital, FDI provides the needed capital; it allows transfer of skills and managerial expertise for better production; it creates a competitive environment which leads to innovation and better ways of production, and allows transfer of technology (Ahmed et al., 2005). All these will augment the growth process. Viewed from another angle, economic growth may promote both exports and FDI. As an economy grows, it develops better skills and production techniques producing not only surplus for exports but also high-quality products which do well in the international markets (Krugman, 1984). An economy will also attract more investors looking for markets and better opportunities which are believed to exist in a growing economy (Alguacil et al., 2002). Foreign investors are also known to set base in certain economies mainly to produce for exports thus, FDI may influence exports. Sometimes, this is as a result of special incentives by the host country governments or an initiative to exploit the host country's resources (Bende-Nabende, 2002). As the country exports more, more investors settle in the country hence a reverse influence of export on FDI.

From the above, a complex interrelationship exists (at least intuitively) between economic growth, export and FDI. Numerous papers have been written on this topic, both theoretical and

empirical with each trying to provide certain answers. The common theoretical papers fall in any of the following groupings: export-led growth premise vs growth-led exports theory, FDI-led growth theory vs growth-led FDI theory export-led FDI growth premise vs FDI-led export growth premise. Empirical literatures have tested these various groupings too. This paper tested these hypotheses in the context of EAC.

1.1.1 East African Community: Economic Growth, FDI and Exports

The East African Community is an economic bloc and an intergovernmental organization made up of six member states which include: Rwanda, Burundi, Kenya, South Sudan, Tanzania and Uganda with a joint population of about 177 million people (EAC, 2020). The bloc came into existence in the year 2000, the second time after its abolishment in 1977. This time with an aim of ultimately progressing through laid down steps to a political federation (EAC, 2020). Having worked through a custom union to a common market, the bloc is currently working on modalities to have a monetary union; the protocol initiating this process was signed in November 2013 (EAC, 2020). Successful actualisation of a monetary union will pave way for a political federation which is the highest level attainable. This move to reunite after the 1977 collapse was inspired by the economic gains expected from an expanded economic bloc. Some of the benefits are; increased market for members' goods and services, free trade among members, and increased bargaining power when dealing with non-member countries or other blocs among others (Mwasha, 2015; De Melo & Tsikata, 2014).

Since its revival, the region has experienced an impressive growth run. GDP growth rate in the EAC countries from year 2003 to 2014 averaged 6.2% p.a. (Gigineishvili, Mauro, & Wang, 2014), placing the region at top 20% of the worldwide distribution of all-time decade-long growth episodes since the year 1950 (Ibid). This growth happened almost uniformly throughout the region as five of the countries in the bloc had their individual average growth rates above 4%. The sustained growth was attributed to the following factors among others: trade openness, increased foreign investments in the region, and better infrastructure and support services (ibid). Member countries have put in place plans to foster even higher growth targets and poverty eradication strategies. A good example is the Kenyan long term development blueprint 'Vision 2030'.

Foreign direct investment, being one of the factors believed to cause a rise in economic growth, has also been rising over the years among the EAC member countries. FDI can be defined broadly as an investment to own in excess of 10% of voting stock in a foreign country's business venture (OECD, 1996). Investment of less than 10% of the voting stock is referred to as portfolio investment. FDIs can be classified into three depending on investors' motive: market seeking, resource seeking, and efficiency seeking FDIs (Jaiblai & Shenai, 2019). Market seeking FDI is where an investor goes to a foreign country mainly to look for markets for their existing line of goods and services. For resource seeking FDIs, the aim is to exploit the resources of a foreign country. This is common in countries rich in minerals and oil deposits (Bende-Nabende, 2002). Efficiency seeking FDIs occur where a foreign firm takes advantage of common governance of geographically dispersed activities in order to gain from economies of scale. The main aim is to reduce cost of production by utilising special features of the foreign economy like; the quality of the country's infrastructure and its labour force (Jaiblai & Shenai, 2019).

In developing countries, most FDIs are to seek markets. The main enhancers to this kind of FDI include; political stability, good infrastructure, growing GDP and market size, and reduced levels of bureaucracy and corruption (Abala, 2014), all these aspects points to the nations' development stage. Voorpijl (2011) observes that a country's stage of development influences the investment motive hence the type of FDI a country attracts. The paper points out that the major cause of failure to attract the right kind of FDI into East African countries are bureaucracy and high corruption levels, especially Kenya, which has countered to some extent the positive effects of FDI promoting strategies e.g. the creation of export processing zones.

Regardless of the above, over the years, EAC has witnessed sustained rise in total FDI inflow. Performances within the 5 member states[1] have largely followed the trend. As shown in table 1 below, Uganda and Tanzania by comparison have done better in the last few decades; they have shown consistent growth since 1970s. On the other hand, Kenya, Rwanda and Burundi's FDI dropped in the 1990s. Kenya (considered the strongest economy in East Africa) has underperformed in attracting the right kind of FDI (Voorpijl, 2011). However, her attracted FDI value improved significantly from 209.98 in the 90s to 3,430 in the period 2000-2009. Table 1 tracks the decade-wise performance of the region in attracting FDI.

[1] Data on South Sudan (the 6th EAC Country) is largely unavailable. South Sudan attained its independence in 2011.

Table 1: Historical FDI flows to EAC Countries

EAC Countries	**1970-1979**	**1980-1989**	**1990-1999**	**2000-2009**	**2010-2018**
Burundi	1.91	26.00	4.63	17	68
Kenya	306.68	304.15	209.98	3,430	10,170
Rwanda	37.53	167.68	39.23	382	2,818
Uganda	6.92	4.96	801.20	4,401	8,301
Tanzania	42.65	50.06	1,207.13	6,032	12,813
Total	**395.69**	**552.85**	**2,262.17**	**14,263**	**34,170**
The figures are aggregate values in US $ at current prices and current exchange rates in millions					

Source: Author's computation on data sourced from UNCTAD (2020).

With regards to exports, as of year 2011, the major destinations of EAC exports were the EU (19%), other EAC countries (19%), Switzerland (9%), South Africa (7%), China (6%), Sudan (4%) and 41% to other countries in the world (George, 2015). Kenya and Tanzania dominate EAC exports to other nations in the world in terms of both imports and exports. EAC countries also trade greatly amongst themselves. Kenya remains the largest exporter to other EAC countries exporting mainly raw industrial materials and soft commodities. On the other hand, Rwanda leads in the export of coffee, tea and minerals. Kenya, Uganda and Tanzania have had their export values rise continuously overtime, different from what Burundi and Rwanda has experienced; there was a drop in export for Burundi and Rwanda in the 1990s. For example, Burundi figures dropped from $1,256.79m in the 80s to $887.44m in the 90s. However, the aggregate total for the bloc shows an upward trend. Table 2 illustrates the decade-wise performance of each country's and the aggregate exports beginning 1980.

Table 2: Exports from EAC Countries

EAC Countries	1980-1989	1990-1999	2000-2009	2010-2018
Burundi	1,256.79	887.44	795	1,678
Kenya	17,426.87	34,450.10	50,826	94,453
Rwanda	1,673.95	1,075.89	3,082	12,508
Uganda	3,393.40	4,965.97	15,863	53,197
United Republic of Tanzania	5,367.08	9,599.24	31,061	74,493
Total	**28,118.09**	**50,978.64**	**101,627**	**236,329**
The figures are aggregate values in US Dollars at current prices and current exchange rates in millions.				

Source: Author's computation on data sourced from UNCTAD (2020).

From table 1 and 2, both exports from and FDI into EAC have been rising. At the same time and as discussed earlier, the region has had one of the best decade long economic growth spell between 2003 and 2014. Observably therefore, the region has had its exports, FDI, and economies grow at the same time, implying a relationship among the three variables.

Theories contradict in their predictions of the flow between the variables making the connection an empirical problem. On one hand, we have exports-led and FDI-led growth hypotheses which credit economic growth to increase in exports and FDI respectively. On the other hand, we have growth-led export and growth-led FDI hypotheses crediting exports and FDI growths to economic growth. Expectedly, countering theories relate exports with FDI. Export-led FDI hypothesis imply FDI flow to be augmented by increase in exports while FDI-led exports hypothesis links increased exports to rising FDI inflows.

Empirical tests of the above hypotheses have not been conclusive either, extending the confusion and calling for further research. Taking economic growth for instant; on one hand it has been reported to influence export by some (Gokmenoglu et al., 2015) and to affect FDI by others (Seyoum et al., 2014) while at the same time economic growth has been influenced by exports (Medina-Smith, 2000; Muhoro & Otieno, 2014) and by FDI (Seyoum et al., 2014). Similarly, export-led FDI hypothesis has been supported empirically by studies reporting either

unidirectional flow from exports to FDI or a bidirectional flow (Keho, 2014) with some authors confirming the countering FDI-led export hypothesis (Sharma, 2000; Zhang, 2005; Zhang, 2006). Other authors failed to find any significant link between economic growth, exports, and FDI (Ngumi et al., 2013; Shirazi & Manap, 2005).

To expound on the above, studies on countries outside Africa include Sharma (2000), Zhang (2006), and Shirazi and Manap (2005) among others. A few of the African share are Seyoum et al. (2014) on 23 African countries, Keho (2014) based on 12 SSA countries, Ndoricimpa (2009) which focused on COMESA countries, and Ahmed et al. (2005) for a selected SSA Countries. Closer, we have Zekarias (2016) based on 14 Eastern African countries, Muhoro and Otieno (2014) in Kenya and Ngumi et al. (2013) also on Kenyan time series data. No paper, to the best of the current writer's knowledge exists on East African Community panel data which is the focus of this paper.

1.2. Statement of the Problem

Trade is among the reasons behind formation of EAC and any other economic bloc world over; members get into a bloc to promote trade among members and to have a voice to negotiate better terms with other blocs and/or non-member countries (De Melo & Tsikata, 2014; Mwasha, 2015). More trade leads to better life through economic growth hence an expected link between economic growth and exports (McNab & Moore, 1998; Balassa, 1985; Feder, 1983; Barro, 1991 all cited in Webb, Grace & Skipper, 2001). FDI has been encouraged especially within developing countries as a factor that boosts production (hence growth) and export (Muhoro & Otieno, 2014). The effect of FDI and exports to growth has however varied in various studies. In some cases, both exports and FDI have been reported to influence economic growth positively while in other circumstances either of the variable was reported to have zero or adverse effect on growth. This ambiguity in the relationship among these variables necessitates the study for specific regions and countries in order to properly advise policy implications for the given regions or countries. Therefore, given the formation of EAC as an economic bloc and the evident rise in FDI inflows and exports over the years, it's important to study how the three variables affect each other. Determining how FDI and exports are likely to affect economic growth is important as it will guide policy and hence facilitate achievement of the mission of EAC which is

to enhance economic, social, political and cultural integration so as to raise the living standards of the people of East Africa through value added production, increased competitiveness, trade and investments (EAC, 2020).

Some existing papers on the subject have only been on a few individual EAC countries and on African samples with 1 or 2 of EAC members without any focusing specifically on EAC. EAC has unique features likely to not have been considered in bigger studies that had all of its members or those that had only a few of its members. It is also difficult to aggregate the results from each individual study on EAC member into an informative conclusion. Therefore, this study stepped in to study the link among economic growth, export, and FDI in EAC bloc.

1.3. Research Questions

i. Is there a causal relationship among economic growth, FDI and exports in the five EAC countries?

ii. Is there long run relationship among FDI, exports and economic growth in the five East African countries?

1.4. Objectives of the Study

The main objective of the study was to establish the relationship among FDI, exports and economic growth in the East African Community.

The specific objectives are:

i. To determine the direction of causality among FDI, exports and economic growth in the five EAC countries

ii. To determine whether there is any long-run relationship among these variables in the five East African countries.

iii. To advise on policy implications based on the `results of the study.

1.5. Justification of the Study

FDI promotion and export policies have been cited as some of the crucial policies that promote economic growth in a region. Trade openness and increased FDI inflows were cited as some of the important factors that promoted growth in the Newly Industrialised Countries (NICs) such as Malaysia, Singapore, Hong Kong and Korea. Given that one of the aims of the formation of EAC bloc is to promote growth in the region, it is crucial to investigate how exports and FDI affect the output growth in the region.

The paper intends to provide aggregated information on the relationship among exports, GDP growth and FDI across EAC member countries. Such combined information will aid joint policies between the member countries as they move towards a political federation. This study will show how economic growth and trade are likely to move if EAC member countries were to act as a bloc with a single policy making unit. Also, EAC investment promotion policy makers stand to benefit from more information on how FDI relates with economic growth and exports.

The paper will also investigate the relationships of the variables in EAC which has so far been ignored despite progress in the bloc toward economic integration. The study will use panel data in the study of the three variables; most papers on relationship between exports, growth and FDI use country time series data. On the other hand, multi-country studies mostly study relationship between two variables e.g. exports and FDI. Also, the studies that have been undertaken on the three variables have either focussed on some of the countries in the EAC bloc or one of the countries but a study on the EAC bloc as a whole is almost inexistence. Lastly, the study will employ the Keynesian macroeconomic model as opposed to an expanded production function. Therefore, with the various aspects of the study put together, the study will make contribution to existing literature on FDI, exports and economic growth studies in EAC.

CHAPTER TWO: LITERATURE REVIEW

2.1. Introduction

There is expansive literature with regards to the subject of FDI, export and economic growth. The studies in these areas are in various forms. Some studies have focussed on the study of just two of the variables for example link between growth and FDI or relationship between exports and GDP growth or link between FDI and exports. Some of the research papers that have investigated the relationship among the three variables have also integrated other variables such as domestic investment. This chapter focusses on review of the various studies.

2.2. Theoretical Literature Review

Several theories exist that seek to explain FDI, export and economic growth relationships. This section aims at exploring and discussing the various theories in detail. The theories are in group of: FDI-led exports theory, exports-led FDI theory, FDI-led growth theory and export-led growth hypothesis.

2.2.1. The Relationship between Export and Economic Growth

Endogenous growth theories model growth as an endogenous process, that is, depending on variables also determined within the model. A common version of these theories models economic growth as a product of sufficient investment in human capital, technological innovation, and knowledge. All these factors have been shown well developed when an economy focuses on export promotion (Muhoro & Otieno, 2014). The argument is that export promotion offers local producers opportunities to learn both from foreign investors and their foreign competitors. Learning results in growth in human capital, knowledge and innovation thus exports growth ultimately results in economic growth.

ELGH is centred on trade as the engine for growth. Arguments for trade as a cause of economic growth dates back to Mercantilists and were later echoed by classical economists. The Mercantilists argued that a nation stand to prosper if its exports are more than its imports. David Ricardo presented the theory of comparative advantage demonstrating that a nation would export

products which it would manufacture with the least comparative costs. Hecksher-Ohlin theory expounded on this; they demonstrated comparative advantage to emanate from differences in factor endowments between two nations consequently resulting in trade between the countries. Kaldor's export led growth model further supports ELGH by asserting that the proportion of output growth is affected by the growth rate and level of export (Muhoro & Otieno, 2014). The model demonstrates this by use of a multiplier (Muhoro & Otieno, 2014).

The ELGH explains that outward-oriented policies, in particular exports promotion, promote productivity in an economy (Ahmed et al., 2005). Export oriented production encourages efficient utilization of capital, use of advanced foreign technologies and utilization of comparative advantage as well as economies of scale. In addition, it increases employment levels and labour productivity in an economy which in turn enhances macroeconomic stability. Export oriented production also enhances external earning power of an economy hence improves balance of payment (Ahmed et al., 2005). All are pointer to ways economic growth stand boosted when a country produces intentionally to export.

Yenteshwar (2003) summarises the arguments in favour of export-led growth hypothesis in four points as follows. Firstly, export expansion results into increase in total output. This is because export growth expands the external request for a nation's output. Secondly, growth in exports brings about specialty in production. Specialization encourages growth in general skills leading to increased productivity and in turn output growth. Thirdly, export growth directly raises foreign exchange earnings which facilitate importation of advanced capital and intermediate inputs hence improving production. Finally, export oriented growth policies have the advantage of improving adoption of better technologies, improved management practices and learning by doing.

Contrasting ELGH is the growth driven export hypothesis. Krugman (1984) argument is that, growth in an economy has a great potential of promoting exports. This is because economic growth promotes skills development, innovation, and knowledge generation which in turn lead to better product quality and productivity. The high quality products compete well internationally with other products. In short, under growth driven export hypothesis, the proposition is that

economic growth promotes trade flows through better quality products which compete well internationally hence higher exportation to fill the international demand gap.

2.2.2. The Relationship between FDI and Exports

In understanding the link between FDI and exports, it is important to first differentiate between inward and outward FDI. This is because one is mostly considered a complement while the other a substitute to exports (Falk & Hake, 2008). Inward FDI flows can be defined as the transactions that increase foreign investors' investments in the reporting economy's resident enterprises less transactions that reduce their investment in such enterprises (ibid). On the other hand, outward FDI flows represent transactions that local investors have in enterprises in a foreign economy. Mundell (1957) on the paper on international trade and factor mobility observed outward FDI and exports as perfect substitutes. The paper made this conclusion by assuming factor mobility internationally and zero transportation costs. By facilitating inward capital flow to a country, Mundell (1957) concluded inward FDI to complement the host country's exports and outward FDI to relate negatively with the investing country's exports as it leads to loss of capital. Few papers make such distinction between inward and outward FDI and so generally refer to the former as FDI.

2.2.3. The Relationship between FDI and Economic Growth

FDI-led growth theory supports FDI influence on growth on the following line. To begin, FDI augments capital in a country which is needed for industrialization to thrive. Arguably and specifically for developing countries, FDI flows complement the low saving rates in these economies (Dupasquier & Osakwe, 2005; Ahmed et al. 2005). This is because a majority of such flows entail a long tenure investment in the host country hence forming part of their gross fixed capital. FDIs have also been argued to have productivity spill-over effects in an economy (Ahmed et al. 2005). Foreign companies in most cases introduce more advanced technology and better management skills (ibid). This is transferred to local companies through human capital where, former employees of foreign companies introduce their learnt skills in the local firms. Foreign firms also introduce competition in an economy; this may push local firms to improve their production methods hence enhancing productivity and product quality within an economy

(Abala, 2014). In short, FDI stand to improve growth through: capital formation, technological transfer, and enhanced competition (Ahmed et al., 2005).

FDI led growth theory originates from the neoclassical and endogenous growth models. The Solow model in particular asserts that, long-run output growth is directly influenced by progress in technology and capital accumulation both of which are exogenous to the model. The new growth theory on the other hand treats both as partly endogenous. In this theory; capital creation comprises investment in human resource and skill and, research and development. FDI is therefore (indirectly) a source of economic growth in these models because; it not only adds onto existing physical capital but also aids technological transfer and human capital development (Ahmed et al. 2005).

Dependency theorists are however against the FDI led growth hypothesis. They argue that operations of Multi-National Corporations (MNCs) in an economy are generally likely to have detrimental effects (Ahmed et al. 2005). Their views are: MNCs may pose unhealthy competition to local firms thus threatening their growth; MNCs employ inappropriate technology likely to escalate unemployment levels and; finally, MNCs can cause uneven distribution of income in an economy.

Other scholars make room for both possibilities: FDI leading to growth or hindering it. Their take is that the influence FDI has on a country's economic growth depends on various factors. These include: the absorptive capacity of an economy, the kind of FDI a country attracts and, the motive of the foreign investors (Seyoum et al., 2014).

2.3. Empirical Studies

Various empirical studies have tested the export-led growth and the growth led export theory. Different methods and models have been applied in these studies and the findings are varied and inconclusive. This section discusses some of the studies and the results thereof.

Gokmenoglu et al. (2015) in the paper on export–led growth found a long-term connection to exist between growth and exports. The flow was unidirectional moving from economic growth to exports. The study applied Johansen co-integration in investigating the long-term link and Granger causality to establish the direction of the connection. The analysis was of time series

data for Costa Rica for the period 1980-2013. A similar study by Medina-Smith (2000) using data for Costa Rica for 1950-1997 data supported ELGH instead. In the long-term however, the study found export's influence on growth to be subdued. The long-run effects of exports on output growth were not significantly equal to zero but, were smaller than the effects of labour and investment. The study used an extended Cobb Douglas function with exports as the additional input. Co-integration of the variables was done using the Johansen Maximum likelihood approach.

A study by Shirazi and Manap (2005) investigating the export-led growth theory for 5 South Asian Countries, showed the presence of a strong long-term association among exports, imports and real production for all the countries except Sri-Lanka. Specifically, the study established a both direction causality between GDP and exports in Bangladesh and Nepal and, one-way causality from exports to output for Pakistan. There was no connection between GDP and exports for Sri Lanka and India, however in India, exports and GDP induced imports instead. This study applied Johansen (1988) and Johansen and Juselius (1992) tests to determine the long-term link and, Granger causality test based on Toda and Yamamoto (1995) to establish the direction of causality.

Muhoro and Otieno (2014) in their paper on export led growth in Kenya established a one way connection from exports to economic growth. The research analysed annual time series data running from 1976 to 2011 using applied autoregressive distributed lag and 2-stage least squares methods. A similar paper by Ngumi et al. (2013) on Kenya in contrast, failed to support export led growth theory.

Studies on FDI and exports have not been conclusive as well. For instance, after analysing Chinese industrial data, Zhang (2006) established that FDI positively influences China's exports. FDI was found to have a much greater influence on export than domestic capital. Zhang (2006) used the conventional framework treating economies of scale and factor endowments as the main determinants of a country's exports and FDI as an additional factor. Sharma (2000) reported different results. Sharma (2000) found FDI to have zero impact on exports in India. The study used annual time series running from 1970-1998 under a simultaneous equation framework. Instead, the research established that exports growth is influenced mainly by Indian exports

prices when compared to world prices, the real appreciation of Indian currency and domestic demand.

The following are some of FDI-growth studies. Seyoum et al. (2014) used annual balanced panel data from 23 African nations from 1970 to 2011 reported bidirectional Granger causality between output growth and FDI. The causal relationship was not homogenous within the countries. In particular, it pointed to causality from output to FDI in Kenya, Zambia, South Africa and Cote d'Ivore and from FDI to output in Gabon, Mauritania and Egypt. Different results are found in Zekarias (2016). Zekarias (2016) examined the effect of FDI on economic growth in 14 Eastern African nations employing panel data from 1980 to 2013. The study utilized Generalized Methods of Moments. FDI was found to have minimal positive impact on economic growth.

While the previous papers studied the variables pair-wise, there are other studies that have studied the three variables together. Good examples of these are Keho (2014) and Ahmed et al. (2005).

Keho (2014) did a research on the link among economic growth, exports and FDI using evidence from 12 SSA countries for the period 1970 to 2013. This was based on a multivariate co-integration approach of Johansen and Granger causality test proposed by Toda and Yamamoto (1995). The findings of the study were that the three variables are co-integrated in 10 countries and that FDI and export promoting policies do enhance economic growth. Specifically, exports influenced FDI positively in four countries whereas economic growth had long term impact on FDI in five countries. Granger causality tests showed variant results across the countries. In the short run bidirectional connection was observed between exports and FDI in Benin and amid FDI and GDP in Ghana. Also, there exists causality running from GDP to exports in Ghana and from GDP to exports in Congo Democratic, Gabon and, Benin while FDI causes exports in Cote d'Ivoire. In the long run, both exports and GDP cause FDI in Burkina Faso, Gabon, Benin and Senegal. Further connection in both directions was reported between FDI and GDP in South Africa, Cameroon and Cote d'Ivoire, between FDI and exports in Kenya and between GDP and exports in Ghana. The study used country case study regression based approach and the variables under study were GDP, FDI and exports.

Ahmed et al. (2005) also studied link among FDI, economic growth and exports. Basing the analysis on 5 SSA countries, the study found strong causality in both directions between exports and GDP growth in the 5 SSA countries. The study also reported exports influencing FDI in Zambia, FDI causing exports in South Africa and bidirectional causation between FDI and exports in Ghana and Kenya and Nigeria.

Ndoricimpa (2009) also did a research on the causal link among FDI, exports and economic growth for COMESA countries. The study found support for FDI-led exports hypothesis, export-led growth hypothesis and FDI-led growth hypothesis in these countries. The study was done under heterogeneous panel causality method.

2.4. Overview of Literature

Several papers exist on the connection among exports, FDI and output growth. The various papers have either investigated relationship between two of the three variables or studied the three variables together. Additionally, different methods and tools of analysis have been applied. Some studies have focused on individual countries with some based on a group of countries. Both panel data and time series analysis dominate. Results have been diverse and mixed. This is true even for studies on the same country for instance, Muhoro and Otieno (2014) and Ngumi et al. (2013) both on Kenya. Though the papers were based on almost similar timeframe, their results contradict.

More specific to our intentions were the studies that looked at the three variables and on different countries under one framework. The methods used in these included multivariate co-integration by Johansen and Juselius (1990) to test for long-term relationships and, Granger causality test proposed by Toda and Yamamoto (1995). Some studies applied heterogeneous panel data analysis. Further, other studies saw it fit to add other variables besides the three on their models.

Going forward and borrowing from existing papers, this study took a three variable approach testing the relationships on panel data for 5 countries. Unlike most studies on a group of countries, this study focussed on a combined relationship of the variables in the region as opposed to a country by country comparative analysis. It recognises the diversity of the countries and so will applied heterogeneous panel data analysis. Most of the studies have applied an

expanded production function; however, this paper employed the Keynesian macroeconomic model.

CHAPTER THREE: METHODOLOGY

3.1. Introduction

This section outlines the processes and procedures to be applied in achieving the objectives of this study. It begins by conceptualizing the problem theoretically, proceeding to the empirical model and the statistical tests, before ending with the description of the concerned variables.

3.2. Theoretical Framework

Most studies linking exports, GDP, and FDI either lack clear theoretical basis or are based on an expanded production function (Ahmadi & Ghanbarzadeh, 2011). This study takes a different approach; it shows the link among the variables through the Keynesian macroeconomic as in Ahmadi and Ghanbarzadeh (2011).

The following are assumed: that there is equilibrium in the money and commodity market, and that all transactions are in real values. For that matter, all that a country produces is eventually used thus aggregate supply (Q_s) equals aggregate demand (Q_d) which equals national output (Q).

$$Q_s = Q_d = Q \dots\dots\dots\dots\dots\dots (1)$$

On the demand side, a country's output goes to households as consumption (C), is partly acquired by private businesses as investment (I), some of it used by government (G), and the remainder exported abroad as exports (E) after paying for imports (M).

$$Q = C + I + G + E - M \dots\dots\dots\dots\dots (2)$$

Investment expenditure (I) consist of spending by both local firms which make domestic investment and those by foreign firms considered foreign investment. Denoting domestic investment as D and foreign investment as F, and keeping in mind that I=D+F, then output is shown as a function of FDI and exports among other variables is equation 3.

$$Q = C + D + F + G + E - M \dots\dots\dots\dots\dots (3)$$

Given that the variables on the right hand side can be expressed also as functions, equation 3 is one among a structure of others. By using (.) to show a variable as a function of other variables and replacing in equation 3, and assuming C, D, G, and M to be exogenous, the reduced form of the series becomes:

$$Q = \bar{C} + \bar{D} + F(.) + \bar{G} + E(.) - \bar{M} \dots\dots\dots\dots\dots (4)$$

3.3. Empirical Model

The empirical model is set by expanding equation (4) into its three equations where each endogenous variable (Q, F, and E) is expressed as a function of the other two variables e.g. Q expressed as a function of F and E. Taking natural logs of each variable and regressing every variable on their lagged values and lagged values of the other two gives us the basic vector auto regressive (VAR) model which forms the basis of the model to be estimated. This is shown by the following set of equations (5, 6, and 7) for a number of units i observed over time t and with p number of lags:

$$q_{it} = \beta_{iq0} + \beta_{iqq1} q_{it-1} + \dots + \beta_{iqqp} q_{it-p} + \beta_{iqf1} f_{it-1} \dots + \beta_{iqfp} f_{it-p} + \beta_{iqx1} e_{it-1} \dots + \beta_{iqxp} e_{it-p} + v_{iqt} \dots\dots\dots (5)$$

$$f_{it} = \beta_{if0} + \beta_{iff1} f_{it-1} + \dots + \beta_{iffp} f_{it-p} + \beta_{ifq1} q_{it-1} \dots + \beta_{ifqp} q_{it-p} + \beta_{ife1} e_{it-1} \dots + \beta_{ifxp} e_{it-p} + v_{ift} \dots\dots\dots (6)$$

$$e_{it} = \beta_{iy0} + \beta_{iee1} e_{it-1} + \dots + \beta_{ieep} e_{it-p} + \beta_{ief1} f_{it-1} \dots + \beta_{iefp} f_{it-p} + \beta_{ieq1} q_{it-1} \dots + \beta_{iexp} e_{it-p} + v_{iet} \dots\dots\dots (7)$$

Where the respective small letters (q, f, and e) represent natural logs of Q, F, and E; β represent the parameters, while v's are the error terms. We use a four subscript notation for paramaters with i representing the cross-section unit, second letter the affected equation, third letter standing for the attached variable, and the last being the number of lags. Going forward, we condense equation 5, 6, and 7 into equation 8 using common notations.

$$y_{it} = c_i + \sum_{p=1}^{p} \beta_{ip}\, y_{it-p} + u_{it} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (8)$$

Where, y_{it} is a set of endogenous variables (q, f and e) and y_{it-p} is a row vector of their lagged values, c_i is the intercept capturing the cross sectional idiosyncrasies, β_{ip} being the vector of slope coefficients and u_{it} is the error term.

3.4. Statistical Tests and Procedures

The data was subjected to the following three stages in order to test the objectives of the study. Initial step was to investigate the order of integration of the variables using panel unit root tests. Second, was to establish whether there was long run link between the variables using panel co-integration. Finally, we tested for panel data Granger causality under homogenous non-causality hypothesis. Akaike Information Criterion (AIC) and Schwarz Bayesian Information Criteria (SBIC) were used to establish the optimal lag.

3.4.1. Panel Unit Root Tests

This paper used Maddala–Wu (1999) and Pesaran (2003, 2007) methods of testing for panel unit roots. Maddala–Wu (1999) allows for heterogeneity between cross sectional units, assumes the presence of individual unit roots, and assumes that the first order autoregressive parameters change with the cross sections. Pesaran (2003, 2007) test was applied on the other hand, it is effective in cases where cross-sectional dependence occurs due to occurrence of a common factor among the cross sectional units. The use of the two tests allowed for comparison as varying tests may give different results (Maddala & Wu, 1999)

3.4.1.1. The Fisher Type Test

Fisher Type Test is attributed to Maddala and Wu (1999) and Choi (2001). This is a non-parametric test and is centred on combining p-values from individual cross-sectional units' augmented Dickey-Fuller (ADF) tests. Its advantage is that it makes use of different ADF tests and changing time series length which makes it more appropriate for unbalanced panels unlike Im-Pesaran-Shin (2003) which is used on balanced panels only.

The test is founded on a null of unit root for all series against alternative hypothesis of stationarity for at least one cross-sectional unit. If p_i represent individual ADF test's p-values for panel i then under the null hypothesis, p_i will be normally distributed hence easily rejected for small values of p. This is solved by combining the p_i into the following combined test statistic.

$$P = -2\sum_{i}^{N} \ln p_i \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (9)$$

Under null hypothesis of unit root and for finite N, P is distributed as

$$\chi^2\,(2N)\; as\; T_i \;\rightarrow\; \infty\; for\; all\; N$$

Thus, the null is rejected only under larger values of P. The Z statistics by Choi (2001) is formulated as follows

$$Z = \frac{1}{\sqrt[2]{N}}\sum_{i=1}^{N}(-2lnP_i - 2) \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (10)$$

3.4.1.2. Cross-sectional Augmented DF (CADF) Test

CADF test for panel unit root was proposed by Pesaran (2003, 2007). The method is founded on the approximation of the following P^{th} order cross-section / time series augmented regression;

$$\Delta y_{it} = a_i + b_i y_{i,t-1} + c_i \bar{y}_{t-1} + \sum_{j=0}^{p} d_{ij}\Delta\bar{y}_{t-j} + \sum_{j=1}^{p}\delta_{ij}\Delta y_{i,t-j} + \varepsilon_{it} \dots\dots\dots (11)$$

$\bar{y}_t$ is the cross-section mean of y_{it} and helps in asymptotically sieving the impact of the unobserved common factors. This test averages the individual CADF t-statistics for all cross-sectional units in a heterogeneous panel. The individual CADF t-statistics are given by the OLS t-ratio of b_i. The test has been seen to have better size properties when compared to other alternative methods.

3.4.2. Panel Cointegration Test

Westerlund (2007) cointegration test was used in the paper. This method is founded on ECM[2] and has four panel co-integration test statistics: Ga, Gt, Pa, and Pt. Its strength hence its justification is that it permits for heterogeneous specification of both short and long term segments of the ECM. Westerlund (2007) test works by determining the existence of error correction either for the whole panel, or for individual panel members and thus, tests for absence of cointegration. Expanding on VAR and introducing error correction component leads to a VECM as below.

$$\Delta y_{it} = C + \alpha_{i1}\Delta y_{it-1} + \cdots + \alpha_{ip}\Delta y_{it-p} + \beta_{i0}\Delta x_{it} + \beta_{i1}\Delta x_{it-1} \ldots \beta_{ip}\Delta x_{it-p} + \lambda_i (y_{it-1} - \varphi_i x_{it-1}) + \varepsilon_{it} \ldots\ldots\ldots\ldots\ldots\ldots (12)$$

Where x_{it} is a vector of exogenous variables; α_i, λ_i, and φ_i are parameters; and ε_{it} represent error terms. Of special note is λ_i which estimates the speediness of error-correction towards the long term equilibrium, the others represent short-run adjustments. Interpretation of λ_i tells if long-run link be existent or not. It is the basis of co-integration tests.

P_a and P_t test statistics test the null hypothesis $H_0: \lambda_i = 0$ for all i. These test statistics pool information over all cross sectional units. The alternative hypothesis is $H_a: \lambda_i < 0$ for all i. G_a and G_t test statistics on the other hand test the null hypothesis of $H_0: \lambda_i = 0$ for all i while the alternative hypothesis is $H_a: \lambda_i < 0$ for at least one i. It should be noted that rejecting H_o implies there is a long term link consequently; for a long term relationship to be established, the (λ_i) is projected to be negative and significant. Should the test confirm co-integration then, we estimate ECM otherwise we perform VAR, either of these only estimates the coefficients without testing their significance or establishing direction of causality. Granger came up with a mean to do this after estimating either VAR or ECM hence the term Granger causality test.

3.4.3. Panel Granger Causality Tests

[2] An Error correction model expands on basic VAR model by introducing an error correction component tested to investigate long-run relationship.

A variable X is said to Granger cause another variable Y, if the past values of X better explain the value of Y than the past values of Y (Ndoricimpa, 2009). While performing Granger causality test on panel data, heterogeneity must be considered carefully because the individuals in the panel are likely to have different characteristics that may lead to distorted causality results.

EAC countries' characteristics differ due to the following (EAC, 2016). The countries were under different colonial masters; Rwanda and Burundi were colonized by France while Uganda and Kenya were colonized by Britain, Tanzania being under Germany and later under British Empire. Secondly; Uganda, Rwanda and Burundi are landlocked while Kenya and Tanzania are not. These countries also adopted different economic systems; Tanzania adopted communism while the rest of the countries adopted capitalism. Furthermore, a majority of East African countries have experienced instability at least once in different time periods with differing effect on their economic growth.

To cater for this heterogeneity, Granger non-causality test (Hurlin & Dimistrescu, 2012; Hurlin, 2004) was used instead. This takes into consideration the heterogeneity across individuals in the explanation of the causal connection. This test permits both heterogeneity of the causal connection from X to Y and the heterogeneity of the data generating process (DGP). The test establishes 4 kinds of causal relationships in a linear VAR model which include: Heterogeneous causality (HEC), Heterogeneous non causality (HENC), Homogeneous causality (HC) and Homogeneous non causality (HNC). In HC, the assumption is that there is a causal link in each individual of the sample and that the DGP is homogeneous. HNC assumes absence of Granger causality from X to Y. HEC hypothesis assumes existence of a sub group of the individuals with causal relationship in the face of a heterogeneous DGP. This implies that heterogeneity has no effect on causality. For HENC, the assumption is the presence of a sub group of individuals where X does not Granger Cause Y. The authors propose testing the Homogeneous non causality (HNC) hypothesis for Granger causality in heterogeneous panels. This is what this study implemented.

The null hypothesis for this test is HNC meaning absence of connection for all the individual units in the panel. This is tested against HENC as the alternative and which implies existence of 2 subgroups. The first subgroup has causality from X to Y even though the DGP is not

homogenous while in the other group, X does not Granger cause Y. This can be shown as follows;

$H_o: \beta_i = 0 \quad \forall_i = 1, \dots, N$

$H_a: \beta_i = 0 \quad \forall_i = 1, \dots, N_1$

$$\beta_i \neq 0 \ \forall_i = N_1 + 1, N_1 + 2, \dots, N$$

In this case N_1 is unknown but should satisfy this condition $0 \leq \frac{N_1}{N} < 1$

The H_o is not rejected if N_1 =0 implying no link between X and Y for all units of the panel. In this case DGP must not be homogeneous. If $N_1 > 0$ then the heterogeneous causal relationship exists, meaning that causality relations and DGP are different with regards to the units of the panel. It is for this last possibility that the test under HNC uses an average Wald statistics of the individual Wald statistics. The HNC test is founded on a linear VAR model given as follows;

$$y_{i,t} = \alpha_i + \sum_{K=1}^{K} \gamma_i^{(k)} y_{i,t-k} + \sum_{K=1}^{K} \beta_i^K x_{i,t-k} + \varepsilon_{it} \dots\dots\dots\dots (13)$$

In this model, the assumption is that individual effects are fixed, the panel is balanced and the lag orders K are similar for all the individual units of the panel. The average of individual Wald statistic will be applied to test non causality for units $i = 1, \dots, N$. This statistic is shown as follows:

$$W_{N,T}^{Hnc} = \frac{I}{N} \sum_{i=1}^{N} W_{i,T} \dots\dots\dots (14)$$

Given the individual Wald statistics can be shown to be identically and independently distributed (iid) as T tend to infinite; then under the HNC H_o, the average $W_{N,T}^{Hnc}$ can be deduced to have a standardised normal distribution and a statistic given by equation 15 as T $\rightarrow \infty$ first then N$\rightarrow \infty$.;

$$Z_{N,T}^{Hnc} = \sqrt{\frac{N}{2K}}\left(W_{N,T}^{Hnc} - \mathrm{K}\right) \xrightarrow{d} \underset{T,N\to\infty}{\longrightarrow} N(0,1) \ldots\ldots\ldots(15)$$

The H_0 is rejected if $Z_{N,T}^{Hnc}$ is larger than its matching critical value. But since the actual values are not known, respective estimates $\hat{Z}_{N,T}^{Hnc}$ and $\widehat{W}_{N,T}^{Hnc}$ are used.

3.5. Data Type, Sources and Analysis

The paper used secondary data on a panel of 5 EAC countries (Burundi, Kenya, Rwanda, Tanzania, and Uganda) for the period 1988 to 2019. Though now a member of the bloc, South Sudan was not considered due to lack of sufficient data. The data was extracted from UNCTAD dataset, all of which were accessed through its website. These data include: annual nominal GDP as a measure of output growth, annual value of exports, and annual foreign direct investment (FDI) attracted by each country. Their transformation and expected relationships are shown in Table 3.

Table 3: Variable Measurements and Expected Coefficient Signs

Variables	**Measurement**	**Expected Sign**
Economic growth (q)	Log of annual GDP	β_{fq} + Keho (2014, Seyoum et al. (2014) β_{eq} + Gokmenoglu et al. (2015), Ahmed et al. (2005)
Exports (e)	Log of annual exports values	β_{fe} + Ndoricimpa (2009), Ahmed et al. (2005), Keho (2014) β_{qe} + Medina-Smith (2000), Ahmed et al. (2005), Muhoro & Otieno (2014), Shirazi & Manap (2005), Ndoricimpa (2009)
FDI (f)	Log of annual FDI values	β_{qf} + Ndoricimpa (2009), Seyoum et al. (2014), Zekarias (2016) β_{ef} + Ahmed et al. (2005), Keho (2014), Zhang (2006)
Note: The first subscript on the βs represent the equation while the second shows the variable the coefficient is attached to e.g. β_{qf} standing for f coefficient on q equation (measures effect of FDI on growth)		

CHAPTER FOUR: RESEARCH FINDINGS

4.1. Introduction

Chapter four presents the study's results. The chapter starts off with the descriptive statistics, presentation of pre-analysis tests and statistical procedures, before ending with a discussion of the main outcomes.

4.2. Descriptive Statistics

Table 4 shows descriptive statistics for the three variables as transformed under logarithm. There was no much variation observed on the log of GDP, it had maximum value of 25.299, a minimum of 20.440 and standard deviation of 1.278 around the mean calculated as 22.658. This trend is seen for the log of exports whose standard deviation figure was 1.641 with a minimum of 17.467 and max of 17.467. GDP and exports were thus relatively stable within the period. This was not the case of FDI. FDI showed much volatility; its lowest log value was 4.605 against a maximum of 23.131. Its standard deviation of 3.430 is more than double that of GDP and exports pointing at its variability within the study period.

Table 4: Descriptive Statistics

Variable	Mean	Standard. Deviation	Min	Max
Log GDP	22.658	1.278	20.440	25.299
Log FDI	17.270	3.430	4.605	21.459
Log Exports	20.563	1.641	17.467	23.131

4.3. Pre-estimation Tests

These were performed in attempt to select the right model to use. The general steps normally include; test for non-stationarity and proceed to co-integration test if non-stationarity is confirmed in at least one variable. Co-integration test then helps to determine presence of a long run link and helps to pick the final estimation model. Error correction model is used when co-integration is confirmed.

4.3.1. Panel Unit Root Test

Unit root test is normally the initial procedure among a series. It assists identify non-stationarity which is likely to pause a number of estimation problems when one is working with the basic econometric models. The study employed Maddala-Wu (1999) and Pesaran (2007) tests for this purpose. Both tests were conducted under the null hypothesis of a unit root. Table 5 and table 6 gives the respective results.

Table 5: Maddala-Wu (1999) Unit Root Test Results

Variable	Chi-square value	P-value
Log GDP (q)	0.550	1.000
Log FDI (f)	29.197	0.001
Log Exports (e)	6.209	0.797
Differenced Log GDP (D.q)	41.264	0.000
Differenced Log FDI (D.f)	184.216	0.000
Differenced Log Exports (D.e)	55.136	0.000
Used 1 lag		

Table 6: Peseran (2007) Unit Root Test Results

Variable	t-bar	Z(t-bar)	P-value
Log GDP (q)	-2.333	-1.316	0.094
Log FDI (f)	-3.053	-3.028	0.001
Log Exports (e)	-2.167	-0.922	0.178
Differenced Log GDP (D.q)	-4.275	-5.935	0.000
Differenced Log FDI (D.f)	-5.423	-8.666	0.000
Differenced Log Exports (D.e)	-4.213	-4.213	0.000
Used 1 lag			

Both tests found GDP and exports nonstationary, the null hypothesis could not be rejected in both cases. However, their differenced values were stationary thus GDP and exports were found to be integrated of order 1. In contrast, FDI was found stationary.

4.3.2. Co-integration Test

After confirming presence of unit root for GDP and exports, cointegration test followed. Cointegration test assisted in accomplishing two objectives. First, it formed the basis of selecting the final estimated model. Secondly, it helped achieve the study's second specific objective which was to investigate presence of any long term connection amongst the variables. Panel cointegration test was performed on GDP and exports leaving out FDI which was found stationary. Performing cointegration test is conditioned on a variable having at least a unit root, a condition FDI failed to meet. This was based on Westerlund (2007) which tests under the null of no co-integration. Its efficiency is not affected by the size of the sample. Table 7 gives the results for a single lag assumed given the desire to retain as much observation as possible.

Table 7: Westerlund (2007) Cointegration Test Results

Statistic	Value	Z-value	P-value
Gt	-1.424	-0.962	0.168
Ga	-2.269	0.754	0.775
Pt	-2.890	-1.498	0.067
Pa	-2.393	-1.056	0.146

Westerlund (2007) allows for heterogeneity by performing four tests differentiated by their alternative hypotheses. The first two (P_t and P_a) test the whole panel while the last two (G_t and G_a) test existence of cointegration in at least one panel. In the case here, evidence of cointegration existed neither in the entire panel nor in any of the five countries. Consequently, no long run connection was found among GDP, FDI and exports. For this reason, the study estimated a panel VAR model instead of a VEC model. This was on the differenced values of the three variables.

4.4. Relationship among Growth, Exports and FDI

The study ran a single lagged VAR model. This was guided by the need to retain as much observations for the analysis given the study's relatively small sample of 155 observations. Lag selection tests were not helpful either, no number could be selected by any of the common lag selection procedures including AIC and BIC (see table 8). Furthermore, there was no reason to justify the use of more than 1 lag. Table 9 gives the results of the panel VAR model.

Table 8: Optimal Lag Selection Criteria

Lag	CD	J	J pvalue	MBIC	MAIC	MQIC
1	0.260	.	.	.	.	.
2	0.365	.	.	.	.	.
3	0.386	.	.	.	.	.
4	0.435	.	.	.	.	.

Table 9: VAR Model Results

D.q		Coefficient	Std. Error	Z	P>Z	[95% Conf. Interval]	
	D.q						
	L1.	0.075	0.153	0.49	0.622	-0.224	0.375
	D.f						
	L1.	-0.014	0.005	-2.95	0.003	-0.023	-0.005
	D.e						
	L1.	0.080	0.038	2.09	0.037	0.005	0.156
D.f							
	D.q						
	L1.	1.036	1.886	0.55	0.583	-2.661	4.732
	D.f						
	L1.	-0.443	0.119	-3.73	0.000	-0.676	-0.210
	D.e						
	L1.	0.905	0.853	1.06	0.289	-0.767	2.577
D.e							
	D.q						
	L1.	0.381	0.200	1.90	0.057	-0.011	0.773
	D.f						
	L1.	-0.017	0.011	-1.48	0.140	-0.039	0.006
	D.e						
	L1.	-0.077	0.082	-0.94	0.346	-0.237	0.083

A stability test of the model was performed by generating the respective Eigen values. All Eigen values were within a unit circle (see appendix 1) satisfying model stability condition confirming VAR's suitability. Table 10 reports the results.

Table 10: VAR Model Stability Test

Eigenvalue		
Real	Imaginary	Modulus
-0.395	0	0.395
-0.185	0	0.185
0.137	0	0.137

From table 9, only three coefficients are found statistically significant at 5% significant level: FDI's coefficient in the output equation, that of exports in GDP function and, the coefficient of lagged FDI in its own function. Further, the coefficient of FDI in the output equation and in its own equation are negative implying an adverse connection between FDI and growth at the same time a negative link between FDI and its past values. Export's coefficient in the output function is positive hence a positive relationship between exports and output. It should be noted that the above are short run coefficients on the respective variables and do not imply causality.

To determine the direction of causality, Granger causality test (as in Hurlin & Dumitrescu, 2012) was executed, being preferred because of its ability to take into account heterogeneity within the panel. As already expounded in chapter 3, it tests the null of no causality in the whole panel (HNC) against an alternative of presence of causality in at least one of the panels (HENC). In this sense, rejecting the null hypothesis means causality is present in at least one nation and not the entire region. Not rejecting the null however means absence of causality in the entire panel (the five EAC countries). Granger causality results are reported in table 11.

Table 11: Granger Causality Results

Test		Value	P-value
GDP caused by FDI*	W-bar	2.714	
	Z-bar	2.710	0.007
	Z-bar tilde	2.250	0.025
GDP caused by Exports**	W-bar	3.543	
	Z-bar	4.021	0.001
	Z-bar tilde	3.392	0.001
FDI caused by GDP	W-bar	2.336	
	Z-bar	2.112	1.729
	Z-bar tilde	1.729	0.084
FDI caused by Exports	W-bar	1.062	
	Z-bar	0.098	0.922
	Z-bar tilde	-0.020	0.980
Exports caused by GDP	W-bar	0.369	
	Z-bar	-0.998	0.318
	Z-bar tilde	-0.979	0.327
Exports caused by FDI**	W-bar	5.835	
	Z-bar	7.644	0.000
	Z-bar tilde	6.547	0.000
*Statistically significant at 5% significance level ** Statistically significant at 1% significance level			

A unidirectional causality from FDI to GDP was found in at least one country within the region, another from exports to GDP, and one running from FDI to exports in at least one EAC country. It should be noted that given the setting of the alternative hypothesis, the above Granger results may apply to all the 5 countries under study, a few of them or one without being specific.

As the coefficient of exports on growth function was positive as seen on table 11, the above causality results meant a positive unidirectional causality from exports to growth. This result is in support of export-led growth theory and in line with Ndoricimpa (2009) for COMESA

countries and Muhoro and Otieno (2014) for Kenya. It follows that the negative FDI coefficient on growth equation means FDI has a negative causal effect on GDP in contrast to FDI-led growth hypothesis. The same apply to the negative FDI coefficient on exports equation interpreted as a unidirectional negative effect of FDI on exports refuting FDI-led export hypothesis. Notably, FDI effect in the bloc is at best not statistically significant. Growth had no statistically significant causal influence on either FDI or exports for the entire bloc same as exports not affecting FDI in all the five countries.

CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1. Introduction

This chapter summarises the results of the study. The chapter starts off by giving a brief description of the findings, then conclusions and finally recommendation both for policy and for further studies.

5.2 Summary of Findings

The study's key objective was to establish whether there was any relationship among output, FDI and exports in EAC countries. The specific objectives were to establish the direction of causality among FDI, exports and output growth in EAC countries and to determine presence of any long run link among the variables in EAC countries. Panel data was used for five EAC Countries; Burundi, Kenya, Rwanda, Tanzania and Uganda for the period 1988- 2019. To test for long run relationship Westerlund (2007) cointegration test was performed on GDP and exports. This was after the two variables were found nonstationary upon running Maddala-Wu (1999) and Pesaran (2007) panel unit root tests on the three variables. No cointegration was found hence absence of any long run link among the variables. Specifically, the study found no long run connection between GDP and exports, FDI and GDP and, exports and FDI.

A VAR model was run after finding no cointegration. From the results, only the short run coefficients of FDI on output equation, exports on output equation and, FDI on its own equation were found to be significant. The rest of the coefficients were not statistically significant. This implied that changes in quantities of FDI and exports have significant impact on output while prevailing FDI quantities are highly connected to their previous quantities in the short run.

To answer the first objective, the study performed Hurlin & Dimistrescu (2012) heterogeneous Granger causality test. FDI was found to granger cause GDP and exports in at least one country in the region. Both effects were negative, as per the short-run FDI coefficients on output and exports equations respectively.

Export was however found to have a positive effect on GDP in at least one country in the region. This supported exports-led growth hypothesis which is in line with outward oriented policies

thus such policies can only benefit EAC. GDP did not have any causal effect on FDI and exports for the entire region. The same was found for exports on FDI.

5.3. Study Conclusions

The findings of the study dismiss FDI promotion efforts in the region to be of no impact at best. This concurred with dependency theorists' arguments who view such investments (in the developing world) as dependency propagating mostly through promotion of inappropriate technology (Ahmed et al., 2005). The result also raised question on the dominant FDI in the bloc. While FDI promotion strategies like creation of export processing zones always target raising exports, this seems not to work. It could imply that the region instead, attract to a large extent, market seeking foreign investors with no intention of producing for exports. Such is not unexpected. Market seeking FDI is the commonest FDI in developing countries (Jaiblai & Shenai, 2019). Foreign companies are also likely to bring unhealthy competition which is harmful even to firms which produce for exports.

The findings of the study also support exports-led growth hypothesis which is in line with outward oriented policies thus such policies should be promoted as they would benefit EAC.

5.4. Policy Implications

Following the above results and conclusions; the following are the proposed policy implications:

- Given that it was established that export had a positive effect on growth, export oriented policies are economically beneficial in the region and they should be promoted within EAC countries. Nonetheless, this should only be used as a short run strategy. Some of the existing exports promotion strategies that already exist in some of the EAC countries include the export processing zones established in Kenya. Rwanda also has a very elaborate national export strategy.
- Policy makers should rethink about the effectiveness of FDI promotion policies within EAC countries. These promotion policies might be of more harm than good in the short run while having no long run beneficial effects.

5.5. Areas for Further Research

A study of deeper understanding of the type of FDI attracted and the sectors which attract the bulk of these FDI is important. This could be made clear by investigating how important these sectors are to the economies in EAC. Such studies would give support to the conclusion made here that the region is most likely a hub for market seeking investors. The above could be complemented by investigating the effect of FDI on local firms' performance e.g. through quantity output or profit and/or an investigation of FDI impact on job creation.

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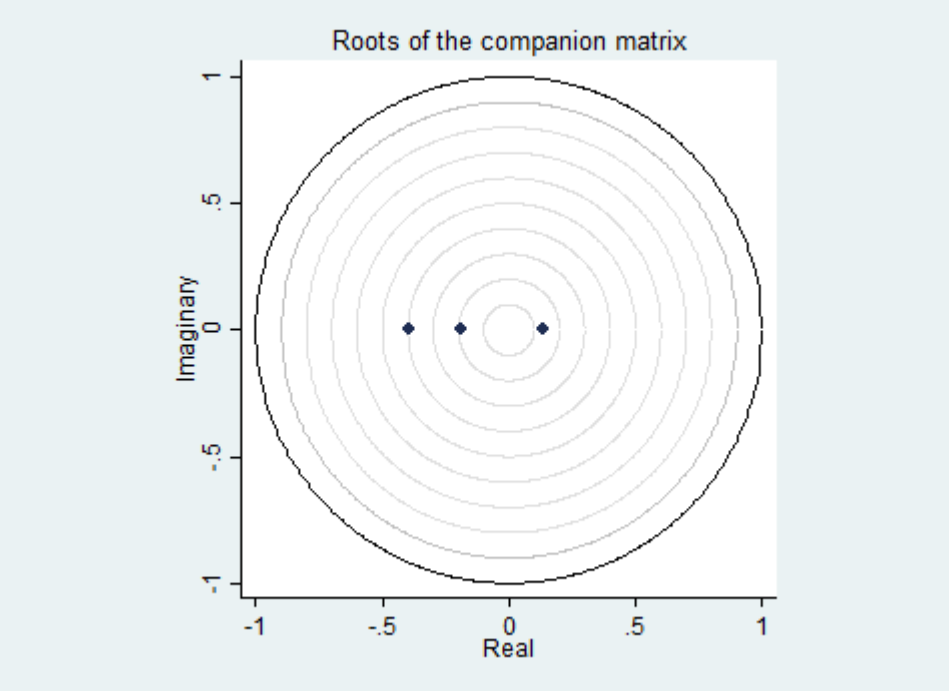
APPENDICES

Appendix 1: Eigen Value VAR Stability Test



All the values fall within the unit circle satisfying the stability condition