Causality between Agricultural Exports and GDP and its Implications for Tanzanian Economy

Fakhre Alam[1], Godwin Myovella[2]

[1]*Department of Economics & Finance, University of Hail, Hail, 2440, KSA. Email: fakhreamu@gmailmail.com*
[2]*Department of Economics & Statistics, University of Dodoma, Dodoma, 259, Tanzania.*

Abstract*: This study examined the causality between agricultural exports and GDP in Tanzania. It employed secondary time series data from 1980 to 2010. The study found evidence in support of a long-run relationship between agricultural exports. Moreover, there is an evidence that agricultural exports Granger-cause GDP growth but not the other way round. Considering the relationship between the two macro-economic variables, the promotion of agricultural exports can be used as a tool to promote economic growth and development in Tanzania. Currently, agriculture sector is constrained by factors, such as poor mechanization, non-tariff barriers, poor infrastructure, poor productive capacity and lack of proper policies to promote agricultural exports. Tanzania can further improve its agricultural exports by improving them, and addressing the problems related to supply side factors, including productive capacities in order to foster robust economic growth and development in the country.*
Keywords:*Agricultural Exports, GDP, Economic Growth, Granger-causality, Tanzania.*

I. Introduction

Economic Growth is the leading goal of policy makers worldwide (Hernandez, 2011) [1]. It is a conventional wisdom among policy makers and academics that export is a key factor in promoting economic growth in developing countries (Dreger, 2011) [2]. One concern is that many developing countries are heavily dependent on primary commodity exports to developed countries (UNCTAD, 2005) [3]. Such exports can cause economies to shift from competitive manufacturing sectors in which many externalities required for sustainable growth are generated. On one hand, the primary goods export sector, due to its nature, does not have many linkages and spill over into the economy (Herzer, 2007) [4]. On the other hand, exports of primary goods tend to be subject to large price and volume fluctuations.

In achieving the goal of economic growth, approaches of attaining it do vary across countries and over time. Export promotion is one of the approaches commonly used to achieve this goal due to its observed success in Asian economic tigers-South Korea, Taiwan, Hong Kong, and Singapore (Krueger, 1985) [5]. By early 1980's export-led orientation and export promotion had already secured a wide consensus among researchers and policy makers to the extent that they had become "conventional wisdom" among most of the economists in the developing world (Balassa, 1978) [6]. This was the case even to the multilateral organizations such as the World Bank and International Monetary Fund (IMF). Therefore, many developing countries were forced to stimulate their export-led orientation even more because most of them had to rely on multilateral organizations to implement adjustment and stabilization program (Emilio, 2001) [7].

However, there are streams of literatures which show conflicting and mixed results on exports and economic growth relationships (Keesing, 1967 [8]; and Krueger, 1985) [9].One stream of literatures stipulates that export is the engine of growth (Balassa, 1978 [10]; Feder, 1982)[11]. These empirical studies provide support for the export-led growth paradigm. The other stream of literature indicates economic growth to be the engine of export growth (Al-Yousif, 1999 [12]; Henriques and Sadorsky, 1996 [13]). The third stream indicates a bidirectional relationship between the two (Shombe, 2005 [14]; Sinoha-Lopete, 2004 [15]).

Most of the studies on the export-led growth hypothesis were done in developed countries, and a few in LDC's including Africa. Shombe, (2005) [16] investigated causal relationships among agriculture GDP, manufacturing GDP and exports in Tanzania by using time series data for the period 1970-2005. This study also supported the export-led growth paradigm.

Tanzania, like other countries, acknowledges the role of exports. The National Trade Policy of 2003 asserts that export-led growth is a prerequisite for the attainment of poverty eradication (URT, 2009) [17]. Nevertheless, Tanzania is among the least developed countries which have been experiencing a buoyant economic growth over the last decade (URT, 2009) [18]. According to the World Bank, Tanzania Gross Domestic Product (GDP) growth rate has recently been declining. The data available indicate that the GDP has

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been growing at an average rate of 6% to 7% after the year 2002 based on 2001 prices (NBS, 2011) [19]. It has further shown a declining trend from 7.4% in 2008 to 7.1% in 2011 (NBS, 2011) [20].

Since agriculture is the leading sector of Tanzania's economy, the economy can be termed as agrarian (ESRF, 2009) [21]. It contributes substantially to the real GDP and foreign exchange earnings. Between the year 1987 and 2000, agricultural contribution to the GDP was between 48.2 percent and 50 percent, and foreign exchange earnings were 54 and 56 percent respectively (URT, 2000) [22]. The trend of Agricultural contribution inthe last decade has been between 26 and 31 percent respectively (NBS, 2011) [23]. However, in recent years the share of export crops from foreign exchange earnings has been substantially declining from 34% in 2000 to slightly below 20% in 2007 contrary to previous years where it accounted significantly (ESRF, 2009) [24].

Since 1985, the country's overall agricultural GDP has grown at an average annual rate of 3.3% while the country's main food crops have been growing at 3.5% annually and its export crops at 5.4% annually (URT, 2011) [25]. Unfortunately, this performance falls short of the needed growth considering that the overall GDP growth target for halving abject poverty by 2011. The Agricultural sector grew up by 3.2% in 2009 compared to 4.6% in the previous year, further shrinking the sector's contribution to GDP from 25.7% to 24.6%. The crops sub-sector grew by 2.86% compared to 5.1% in 2008.

To maintain economic growth Tanzania like other developing countries uses export promotion as one of the approaches (Shombe, 2005) [26]. Export promotion has been implemented using various strategies in the country such as establishment of export processing zones so as to speed up industrialization for export market. Also on following the path of export led growth the government of Tanzania established the national export strategy which aimed at critically assessing the recent export performance and trends, and highlighting the obstacles to increased exports competitiveness (URT, 2009) [27].

With regard to trade the national export strategy has drawn upon a number of recent initiatives including: Tanzania Trade and Integration Strategy, Integrated Framework process, Draft Private Sector Development Strategy, 1996 Export Development Strategy, and the "Quick Wins" Export Strategy. However, with all government's efforts in building a competitive economy through setting the export-led growth the country's export contribution has recently indicated a declining trend. The data available indicates a decline from 2.5% in 2010 to 2.4 in 2012. The export growth rate of agriculture sector and its contribution to the GDP is also not much exceptional. The data available indicates an increase in a decreasing rate of 2% in the year 2008 and 2009 (URT, 2010) [28].

Tanzanian economy depends heavily on agriculture which accounts for more than one quarter of the GDP and provides 85 percent of exports (ESRF, 2009) [29]. About 80 percent of the Tanzanian households depend on agriculture as their primary economic activity (URT, 2011) [30]. The dependency of this sector renders the economy particularly vulnerable to adverse weather conditions and unfavourable prices in the international primary markets.

As Tanzania takes measures to reduce poverty, one likely alternative has been to make Tanzanian agriculture more competitive and expanding agricultural exports by encouraging broader commitments to the agribusiness development and ramping up agricultural productions. While many studies in the background information have shed some light and brought the relationship of export and growth to the fore of academic discussion, the literature is still very much limited in Tanzanian context and the empirical results remain inconclusive. Although agricultural exports are important sources of foreign exchange, there is no recent empirical evidence assessing the short and long term effects of agricultural exports expansion on economic growth. Thus, this study attempts to fill this research gap by investigating the role of agricultural exports to economic growth in Tanzania and to improve the quality of the results by using more current data and focusing only on agriculture sector on which there is no critical study that has been done recently.

The main objective of this study is to examine the causal relationship between agricultural exports and economic growth in Tanzania.

The study aims at examining the role of agricultural exports to Tanzanian economic growth. The study is important because it contributes to the literature in the following ways: firstly, the results of this study have the policy implications for the Tanzania economy; secondly, it adds knowledge and understanding on the relationship between agricultural exports and economic growth. This is important because researchers have paid little attention to relationship between agricultural exports and economic growth. It is also important to know the agricultural products which are mostly exported by Tanzania so that, more efforts can be made to improve their exports competitiveness and hence realize economic growth. Finally, by knowing the existing relationship between agricultural exports and economic growth, together with impediments faced by agricultural exports, the study provides the various ways to improve these exports by increasing agricultural exports capacity of local producers.

II. Literature Review

2.1. Theoretical Literature Review

The purpose of this section is to explore the theoretical underpinnings and empirical studies that explain the relationship between exports and economic growth of the nations. Specifically, the study first presents the theories, such as the theory of comparative advantage and Heckscher - Ohlin theory with their assumptions and limitations.

2.1.1.Exports and Economic Growth

Economic development is one of the main objectives of every society in the world and economic growth is fundamental to economic development (Anwer,1997) [31]. There are many contributing factors to economic growth. Firstly, Export is considered as one of the very important factors among them. Exports have been considered as growth-enhancing within the traditional development literature, based on the suggested positive productivity spill over from the tradable to the non-tradable sector (Madsen 2009 [32]; Edwards, 1993[33]). There are also some concerns about the trade, especially between the primary and industrial goods exporting countries where the terms of trade are deteriorated against the poorer countries.

Krugman (1985) [34] argues that export growth leads to income growth via the foreign trade multiplier. Secondly, foreign exchange from exports can be used to finance imported manufactured and capital goods and technology, which contribute to growth (Grossman, 1991) [35]. Thirdly, Krugman (1985) [36] also argues that the export sector in a country is by nature competitive for its existence in the global arena. This competition leads to scale economies, technological progress, and eventually growth. He further argues that, combining the international market with the domestic market facilitates larger-scale operations than does the domestic market alone. Fourth, the export sector creates positive externalities, such as more efficient management and production techniques, which lead to further growth. In the long run, exports may affect growth by availing of economies of scale, introducing incentives for improving the quality of the products, reducing inefficiencies, and finally, innovating new technology due to competition in the world market (Balassa, 1978) [37]. However, several arguments suggest, that the positive productivity effects predicted by the export-led growth hypothesis do not necessarily occur in developing countries (Herzer, 2007) [38]. One concern is that many developing countries are heavily dependent on primary commodity exports which are usually subject to price and volume fluctuation.

2.1.2. Agricultural Exports and Trade Policy

For achieving the development vision 2025 and poverty eradication, Tanzania has set trade expansion and rapid economic growth as some of the goals towards this objective. The Trade Policy in Tanzania aims at identifying ways and means of ensuring a viable and steady path towards competitive export-led growth which will fulfilthe goal of poverty eradication (MIT, 2003) [39]. The Trade Policy provides space for the government to intervene in directing trade related matters. Trade liberalization enhances domestic productivity, efficiency and improves the quality of products, lowers prices and ultimately leads to improved consumer welfare. So far, Tanzania has not been able to derive significant benefits from trade liberalization as well as globalization as a whole, due to inadequate supply and delivery capacity with low technology levels, insufficient physical and human capital and underdeveloped infrastructure (ESRF, 2009) [40].

In achieving that goal, agriculture plays an important role in contributing to socio-economic development in many countries (Vijay, 2009) [41]. It is the primary source for employment, livelihood, and food security for the majority of rural people. The future success of agricultural contributions depends largely on national economy as well as stimulants of agricultural sector.

Understanding the role of agriculture and its linkages to rest of the economy is important. Tanzania recognizes the agriculture sector as one of the priority poverty reduction sectors due to its dominant role in its economy (URT, 2001) [42]. It has been exporting traditional exports for decades, amongst them cotton is the major export crop accounting for 33.4 percent in 2005/06, followed by tobacco (22.3%), cashew nuts (17.5%), coffee (17.0%), tea (5.3%), cloves (2.7%) and sisal (1.8%) (URT, 2009) [43].The share of traditional agricultural exports to total goods exports has been significant; it occupied 57.6 percent in 1995/96. The exports of the traditional export crops had virtually stagnated since the later part of 1990s; slow recovery in export values was seen in 2005.

The gains in crop export earnings were mainly due to the recovery in international prices of coffee, cashew and cotton (URT, 2009) [44]. In terms of volume, all traditional export crops, except cotton, have remained more or less at the same level for the last five years. The trend above tends to fit the "export instability argument" given by Constantine (1973) [45]. It has been claimed that the economic growth of Least Developed Countries (LDC's) suffers from deleterious effects of the export instability they experience. The detrimental effect of the export instability is attributed to either the price instability of primary products per se or the resulting fluctuations of exports proceeds. The dependence on primary-product exports are frequently mentioned as one of the main features of developing nations. As stated by Todaro and Smith (2006) [46], less developed

countries (LDCs) tend to specialize in the production of primary products, instead of secondary and tertiary activities.

2.1.3. Exports and Economic Growth from the Perspective of International Trade Theories

The relation between trade and economic growth has been thoroughly and extensively analyzed. The initial wave of favourable arguments in relation to trade can be traced from Adam smith's classical economic thought. As pointed out by Van den Berg and Lewer, since Adam Smith's explanation of the concept of absolute advantage in the late eighteenth century, over the past two centuries the economic literature has built strong arguments to justify free trade policies. Smith stated that a country that has an absolute advantage produces greater output of goods or services than other countries using the same amount of resources. Smith stated that tariffs and quotas should not restrict international trade; it should be allowed to flow according to market forces. Contrary to mercantilism, Smith argued that a country should concentrate on production of goods in which it holds an absolute advantage. No country would then need to produce all the goods it consumed. The theory of absolute advantage destroys the mercantilist idea that international trade is a zero-sum game. According to the absolute advantage theory, international trade is a positive-sum game, because there are gains for both countries from an exchange. He further argued that increasing specialization and the division of labour, coupled with international exchange, would contribute to welfare and growth of a nation. He, therefore, saw international trade as a welfare enhancing mechanism.

2.1.4. Theory of Comparative Advantage

The theory of comparative advantage propounded by the British economist David Ricardo in 1817 is the core theory for free trade. According to Ian (1990) [47], all the myriad things we are told about why free trade is good for us are boiled down to hard economics and weighed against the costs by this theory and its modern ramifications. If this theory is true, no matter how high the costs of free trade, then we can rely upon the fact that in any economy there are reaping benefits that exceed the costs.David Ricardo stated his theory that a country has a comparative advantage in producing goods if the opportunity cost of producing those goods, in terms of other goods, is lower in that country than it is in other countries. Ricardo's theory of comparative advantage creates hope for technologically backward countries by implying that they can be a part of world trading system even though their labour productivity in every good may be lower than that in the developed countries. In the Ricardian model, trade is a win-win situation, as workers in all trading countries are able to consume more of all goods.

The theory of comparative advantage thus sees international trade as a vast interlocking system of tradeoffs, in which nations use the ability to import and export to shed opportunity costs and reshuffle their factors of production to their most valuable uses. And this all happens automatically because if the owners of some factors of production find one more valuable use for it they will find it profitable to move to that use. Robert (2005) [48], argues that primary economic objective of a nation is to generate a high and increasing standard of living for its people. The achievement of attaining this goal depends on high productivity of its employed resources. No nation can be competitive and a net exporter of, everything. Because the nation's stock of resources is limited, the ideal is for these resources to be used in their most productive manner. Even nations that are desperately bad at making everything can expect to gain from international competition. By specializing according to their comparative advantage, nations can prosper through trade regardless of how inefficient, in absolute terms; they may be in their chosen specialty. By applying the concept of this theory, Tanzania could produce and export agricultural products which are not in primary form but which are processed and added value.

2.1.5. Factor Endowments and the Heckscher – Ohlin (H-O) Theory

Ricardo thought that comparative advantage depended solely on relative differences in the productivity of labour. He did not explain the basis for these differences (Robert, 2005) [49]. In the 1920s and 1930s, the Swedish economists Eli Heckscher and Bertil Ohlin formulated a theory addressing two questions left largely unexplained by Ricardo. First question was; what determines comparative advantage? And second question: what effect does international trade have on the earnings of various factors of production (distribution of income) in trading nations? The modern treatment, and a foundation for much empirical work, begins with the Heckscher Ohlin model that explains the international division of labour in terms of different endowments of different countries with two factors of production - labour and capital. The two fundamental hypotheses of the standard Heckscher-Ohlin model are the factors of production that are immobile between countries and that these factors are used in different combinations to produce different goods. A country will produce and export goods whose production makes intensive use of the relatively abundant factors of production before trade. Such a country should limit the production and increase the imports of the good whose production makes intensive use of the expensive factor of production before trade (Ian, 1990) [50]. In particular, the theory highlights the

role of nations' resource endowmentsas the key determinant of comparative advantage. In other words it is the differences in the supply conditions of the nations which explain the comparative advantage of a particular country.

Robert (2005) [51], in his book gives several examples based on the factor endowment theory. He states that Brazil exports coffee because it has an abundant of the soil and favourable climatic conditions required for coffee's production. The United States and Canada export wheat because they are endowed with abundant temperate-zone land, which is well suited for wheat production, and India together with China are huge exporters of shoes and garments because they are heavily endowed with labour.

The argument of the neo-classical economists is that promoting exports and achieving exports expansion is valuable for both developed and developing countries because among many reasons; (i) they generate a greater capacity utilization; (ii) they take advantage of economies of scale; (iii) they bring about technological progress; (iv) they create employment and increase labour productivity; (v) they improve allocation of scarce resources throughout the economy; (vi) they relax the current account pressures for foreign capital goods by increasing the country's external earnings and attracting foreign investment; and (vii) they increase the Total Factor Productivity and consequently the well-being of the people in the country (World Bank, 1993) [52].

Moreover, studies by the World Bank indicated that developing countries depending on agriculture can benefit through trade (World Bank, 2007) [53]. Therefore, the key to accelerate economic growth is through agriculture export development, nonetheless the country should have comparative advantage in agricultural production.

Despite the criticisms of the international trade theories particularly theory of comparative advantage and the factor-endowment theory, these theories are considered relevant in underpinning the theoretical foundation of this study. In other words, this study takes them as guiding theories, without completely disregarding the external factors by integrating important points into the research model. Given that Tanzania's comparative advantage is in agriculture, the initial growth needed to further develop other sectors of the economy such as service and industry is believed to depend on agricultural export development. For this reason, this study proposes to have an increased focus on agricultural exports as an approach to Tanzanian economic growth. With improvement in the agricultural exports, through improved factors of production such as technology then it will lead to increase in economic growth.

2.2. Empirical Literature Review
2.2.1. Previous Researches on the ELG-hypothesis
The Export-led growth hypothesis generally deals with the relationship between exports and economic growth. The proponents of such hypothesis argue that export promotion through policies such as export subsidies or exchange rate depreciation will increase economic growth (Mishra, 2009) [54].

The relationship of overall exports to economic growth or simply the Export -Led Growth (ELG) hypothesis has been analyzed in many empirical studies in trade and economic development (Njikam, 2003 [55] ;Supo, 1993 [56] ; Sprout, and Weaver, 1993 [57] ; Syron and Walsh, 1968 [58] ; etc.). While some studies report causal linkage betweenexports and economic growth, others fail to provide evidence to support this relationship.

Empirical studies (Castro-Zuniga, 2004 [59]; Sinoha – Lopete, 2006 [60] andShombe, 2005 [61]. have investigated the vast amount of literature covering the issue of ELG in both developed and LDCs using either cross-sectional or time series approaches. Conversely, studying the two approaches it shows that the debate on the export – led hypothesis is far from settled.

2.2.2. Cross-Sectional Approach

A stream of literature in cross sectional studies show that, the export led growth hypothesis is tested using either rank correlation and/or estimating a regression equation where exports are included as an explanatory variable together with classical factors of production, capital and labour.

With rank correlation, the ELG hypothesis is supported when the correlation coefficient between exports and output is positive and statistically significant. Limitations associated with this procedure include the presence of spurious correlation resulting in a need for minimum development before any association exists; meanwhile, any observed correlation can reflect an underlying relationship through other economic variables (GDP to exports).

Krueger (1985) [62] is among the scholars who conducted a study basing on rank correlation method in Asian economic tigers using annual data for the period 1960 – 1982 and concluded that export promotion for the four tigers drove the economic growth. However, simple correlation is considered not be appropriate to test for causality as high correlation among variables can also result in GDP growth resulting from exports. So this was the methodological deficiency because in the causal relationship between exports and economic growth simple correlation is not an appropriate methodology. It is obvious that the two variables would have a relationship because export is a component of GDP. However, the strength of his study was that, despite that it was a cross-sectional; the countries were all similar in terms of the policies they used and the levels of development. So, the expected results would be assumed to be relevant to make generalizations for the group.

Another stream of literature in cross sectional studies shows that the export led growth hypothesis is tested using a linear regression model. This is through regressing a growth variable (usually real GDP) against a set of independent variables of which exports is inclusive. The hypothesis is supported when the coefficient of exports is positive and statistically significant. This approach created a debate in developing countries where some scholars agreed that high rate of economic growth is visible to countries with favorable exports while to other scholars this was not the case based on the way countries are grouped and based on time (Giles and Williams, 2000) [63]. Other limitations associated with regression application studies include failure to distinguish between statistical association and statistical causation.

2.2.3. Time Series Approach

Mishra (2009) [64] reinvestigated the dynamics of the relationship between exports and economic growth for India over the period 1970 to 2009. Applying popular time series econometric techniques of co-integration and vector errorcorrection estimation, the study provides the evidence of stationarity of time series variables, existence of long-run equilibrium relation between them, and finally, the rejection of export led growth hypothesis for India by the Granger causality test based on vector error correction model estimation.

Shirazi (2004) [65] reinvestigated export growth hypothesis for Pakistani. He studied the short-run and long-run relationship among real exports, real imports, and economic growth on the basis of co-integration and multivariate Granger Causality test as developed by Toda and Yamamoto (1995) [66] for the period 1960 to 2003. His study shows a long-run relationship among imports, exports, and economic growth and found unidirectional causality from exports to output. Nevertheless, the study did not find any significant causality between imports and exports. This study has the strength by investigating the relationship between exports and economic growth both in the short-run and in the long-run. Many literatures have investigated the export-led growth hypothesis in the short run only where by failing to give the dynamic relationship in the long term. This study will also study the dynamics in both short-run and long-run as the study by Shirazi.

Merza (2007) [67] investigated the relationship of two components of exports (oil exports and non-oil exports) with economic growth by examining the ELG hypothesis using annual time series data for the Kuwaiti economy over the period 1970-2004. In the study, he applies a number of econometric techniques: unit root test, co-integration test, error correction model (ECM), impulse responds function (IRF), and Granger Causality test. The results of his study show that all the variables are stationary in the first difference. Moreover, the co-integration test confirms the existence of the long run relationship among the three variables. The Granger test shows bidirectional causality between oil exports and economic growth, and a unidirectional causality from non-oil exports to economic growth.

Fajana (1979) [68] examines the effect of exports and foreign capital on economic growth in Nigeria using time series data. The study covers the period from 1957-1974. He indicates that exports affect economic growth positively. Furthermore, the results show that the relationship between exports and economic growth in the later period is significantly stronger when oil was the primary export. However, the oil exports have a greater impact on economic growth than agricultural exports in Nigeria.

Furthermore, Shombe (2005) [69] investigated causal relationships among agricultural GDP, manufacturing GDP and total exports in Tanzania using the time series data for the period between 1970 and 2005. The empirical results found the evidence of Granger causality where agriculture granger causes both exports and manufacturing. His study employed a variety of analytical tools, including unit root test, co-

integration analysis and granger causality test coupled with vector autoregressive (VAR) and vector error collection (VEC).

The strength of his study is the methodology used for it involved the modern time series techniques to study the relationship. However, the choice of the time period starting from the 1970's I find it irrelevant in testing the export-led growth in Tanzania because many literatures states that most of the LDC's adopted this policy in 1980's. This study finds this to be a weakness in testing ELG hypothesis in Tanzania hence I will use the data from 1980 to 2010. The reason is that in early 1980's most of the reforms took place including the structural adjustment programs.
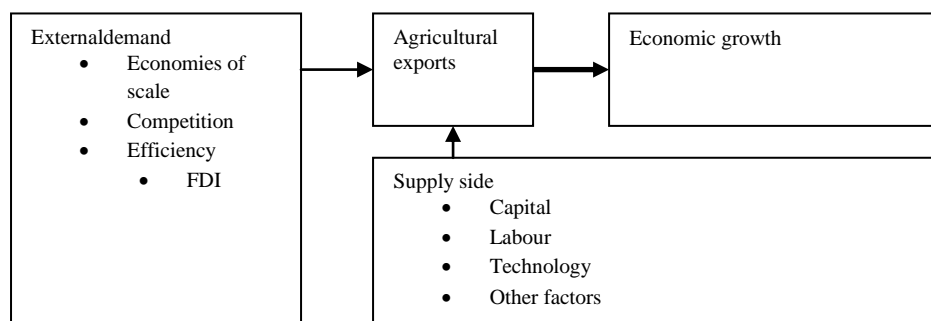
Furthermore, this study intends to investigate the relationship between agricultural exports and economic growth which is different from the study by Shombe and no study has currently explained the same. It will further investigate if there is any relationship between agricultural exports and GDP both in the short-run and in the long-run. Secondly if there is causality between the two variables. The major reasons of selecting agricultural exports and economic growth in Tanzania, is that firstly since her independence it has been depending on agricultural exports as a source of foreign currency. Secondly, it has been politically stable after adopting export promotion strategy so it has always been exporting, meaning that the availability of the macro economic data is not a problem. Finally, the country has been successful to some extent because of the growth of GDP. The question is this economic growth was due to agricultural exports; therefore the study intends to answer this.

Manzoor (2009) [70] investigates the causal relationships among agriculture gross domestic product (GDP) and exports in Pakistan by using time series data for the period between 1971 and 2007. He employed the Pesaran approach to investigate the existence of a long-run relationship in the form of unrestricted error correction model for each variable; the findings of his study have shown strong long-run relationship. There was also a bi-directional Granger-causality between the total exports and agricultural GDP. However, for short-run, both variables do not cause each other in either direction.

III. Conceptual Framework

The conceptual framework in figure 1 shows the relationship between agricultural exports and economic growth in Tanzania. Many literature shows that causality from exports to economic growth in terms of real output is recognized as Export Led Growth hypothesis. Export expansion directly accelerates output growth as a component of aggregate output in a country (through the Keynesian multiplier). This indirectly stimulates economic growth through the use of advanced technology, which results in efficient allocation of resources and higher productivity (Balassa 1978, [71]; Grossman and Helpman 1991 [72], and World bank, 1993) [73]), greater capacity utilization and exploitation of economies of scale due to foreign market competition and large markets. In addition, the generation of foreign exchange from exports allows not only for increasing levels of imports but the import of high quality inputs including capital and intermediate goods, which in turn raise domestic production and thus stimulate output growth (Balassa, 1978) [74].

Figure 1: Conceptual Framework

IV. Data and Methodology

It explains why the study has chosen the specific research approach to achieve the research objectives. The study also describes the quantitative methods adopted as the main approach, method of data collection and the sources of data. Finally, a brief description of the relevant statistical techniques used in the study is also provided.

The study used mainly quantitative methods as it provides information and explanations that are adequate to realise the objectives of the study. The quantitative approach was used in this study as it involved some statistical measurement in analyzing the relationship between agricultural exports and economic growth. It

is important since quantitative research is based on the measurement of quantity or amount. It involves studies that use statistical analyses to obtain information.

The study mainly focused on secondary sources of data. The advantage of using secondary data is time and cost saving. Various national and international databases, such as, National Bureau of Statistics (NBS), Tanzania Revenue Authority (TRA), International Trade Centre (ITC), Food and Agricultural Statistic (FAOSTAT), and United Nations Conference on Trade and Development (UNCTAD), were used to get data on agricultural exports and the real Gross Domestic Product (GDP). The data obtained were the annual time series data covering the period from1980 to 2010. The reason of using these various sources was that, it was difficult to collect all the data from one source, and to see if these data match from one source to another in order to give accurate results.

The study used econometric techniques, to estimate a dynamic time series econometric model for Tanzania, capturing the relationship between agricultural exports and economic growth. In accomplishing the objective of the study, the Vector Autoregressive Model was used: the method is simple whereby the usual OLS method is applied to estimate the models.

In order to analyze the relationship between agricultural exports and economic growth in Tanzania, the use of time series approach is important in studying the dynamics as well as causality between the two variables. This study applies the following four tests: Unit Root test, Co-integration test, Error Correction Model, and Causality test. In brief, the importance of these tests is described below:

The unit root test is important to ensure that all the variables included in the model are stationary, that is, to ensure that each variable has a time invariant mean and variance. If variables are non-stationary, as expected for most macroeconomic variables such as real GDP and Exports, the normal way to investigate the relationship among variables, by using the OLS technique, makes no sense (Gujarati, 2003) [75]. When variables are non-stationary, the relationship among them can still be investigated using the co-integration test. The idea is to test if there exists a long run relationship among variables that are non- stationary. The error correction model (ECM) reconciles the short run and the long run relationships of the variables in an equation. It confirms the existence of the long-run relationship among the variables. Finally, the causality test helps to know if a causal relationship exists between two variables. If one variable is causing the other variable, then the first variable contains some useful information about the latter that enables us to efficiently predict its future values.

V.   Results and Discussion

In this study, interviews were conducted to different respondents. The first interviewee was the director of TCCIA, who has worked with the government agency for many years in different positions. He was a development officer in charge of trade issues; he had worked as a business and economic reporter for one year, and he had been a research assistant to a number of projects for three years. The second interviewee was the Senior Chamber Development Officer who is also working with TCCIA. She is a university degree holder together with long experience within the field of Agriculture. She worked with the parastatal organization, National Agricultural and Food Corporation (NAFCO), from 1979 to 2002. TCCIA has experienced many reforms within the country which have affected agricultural exports.

The third interviewee was the Assistant Director from the ministry of Industry and Trade. He is a master degree holder on international trade. He has worked in the ministry for about seven years in trade integration unit in the department of marketing and policy. The fourth interviewee was from the Ministry of Agriculture and food security and cooperatives. He is an economist who also has a university degree and has worked within the ministry in directorate of policy and planning division of external coordination for about six years.
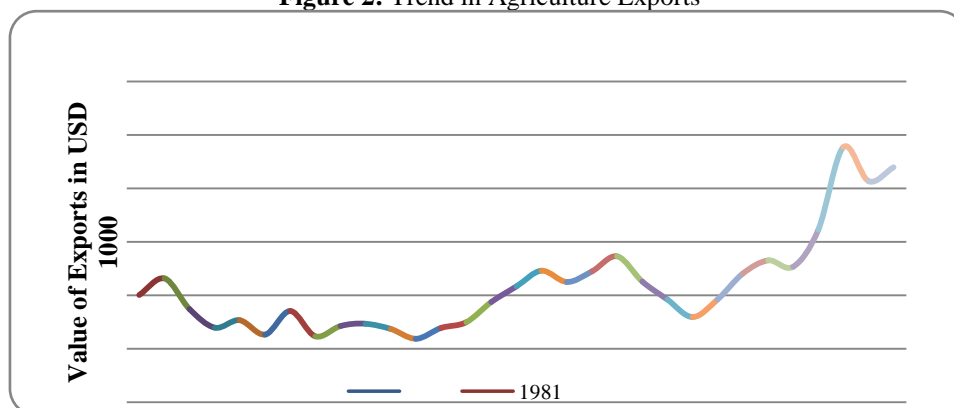
The last interviewee was also from the ministry of agriculture, a trade expert and a researcher who holds Master degree and has worked with the ministry for four years. These have been the resourceful persons who provided their views on the contribution of agricultural export performance to the Tanzanian economic growth.

5.1. Tanzanian Agricultural Exports Performance

Figure 2 shows the trend of agricultural exports from 1980 to 2010 in thousands USD. Generally, the trend has not been smooth it has been fluctuating overtime, from 1980 to 1990 the agricultural exports performance was poor, it was declining until the mid 80s there was an increase thereafter the exports dropped again. The poor performance during the 1980's was explained by one of the interviewee that, the villagization program which started in 1974 disturbed most of the farmers and hence the concentration to the farming activities was poor as a result there was fall in productivity. Furthermore, the kagera war in 1978 affected most of the perennial crops like cotton, in parts of Shinyanga and Mwanza regions and coffee in Kagera region. As a result in 1980's Tanzania experienced poor export performance. This is an indication that the economy of Tanzania was not performing well since its economy depended on Agriculture. The poor export performance

during this period was explained by another interviewee from the ministry of industry and trade. He said that the falling commodity prices in the world market, which meant that large increases in export volume by commodity producers, were not translated into greater export revenues. Also the poor performance of agricultural exports during that period was due to the failure of the co-operative unions.

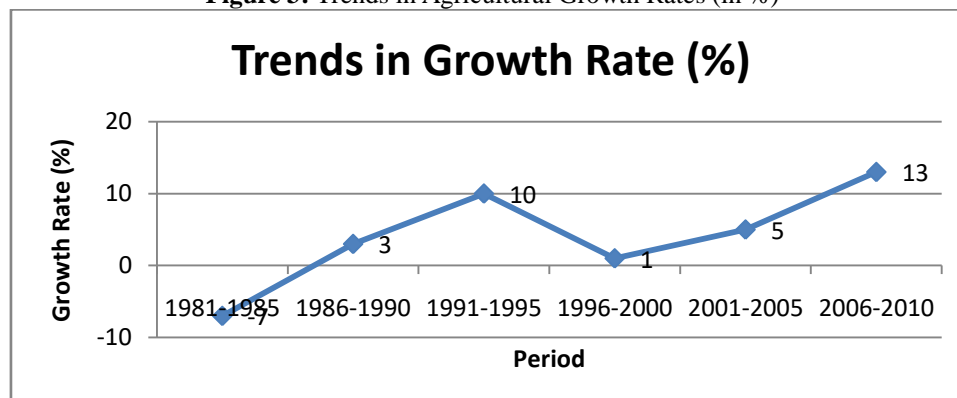**Figure 2:** Trend in Agriculture Exports

Sources: FAOSTAT and NBS, 2010.

Agricultural exports started to rise from early 1990s up to 2000 when the performance started to decline. The reason for the good performance was explained by a respondent from the ministry of industry and trade that the changes in marketing institutions for major export crops (coffee, cashew, cotton tea and tobacco) resulted to increasing higher share of the export prices. Moreover, the good prices in the world market during that period were mentioned to contribute to the improved export performance of the mentioned products. From 2005, agricultural export performance has shown a significant increase until 2008/2009 when there was a sharp drop again. The sharp drop was attributed to the world economic and financial crisis which led to fall in consumer demand in the importing countries.

5.2. Average Agricultural Exports Growth Rates
The average agricultural export growth rate for the whole period of study is 4 percent. The export growth in value terms in figure 3 shows the development of agricultural exports from 1981 to 2010 grouped in the 5 years' period. A positive growth rate suggests that the country had improved its competitiveness to the world markets during that particular time. The value of the exports growth is the result of the ratio of exports in the last year of the period under analysis to the exports of the first year considered, normalised for a given factor, and multiplied by 100 to alter the expression in percentage terms. On average, there was an improvement in Tanzanian exports growth from 2006 to 2010 where it recorded the highest growth rate of 13 percent, and the worst performance under study was from 1981 to 1985 where it had a negative growth rate of about 7 percent. The trend has not been consistent over the whole period of study since the growth rates have been varying. The implication is that the economy was also unstable due to much dependency on the agricultural exports.

Figure 3: Trends in Agricultural Growth Rates (in %)

Source: FAO and NBS, 2010 and own Computations.

5. 3. Obstacles to Agricultural Exports Development

The findings on the obstacles to agricultural export were mainly collected from respondents. The results show that agriculture exports from Tanzania have been facing barriers despite the fact that they have contributed to the economic growth of the country for a number of years. Four respondents who were interviewed said that agricultural exports have been contributing to the economic growth of the country. One respondent said that the contribution of agricultural exports to Tanzanian economic growth has been very low and he gave the reason that being an increase of exports on non-agricultural and non-traditional exports like fish, horticulture, and spices.

Furthermore, they mentioned many problems which are hindering the development of the agricultural exports. Some of the barriers mentioned by respondents are internally originated and others are external factors; that is they cannot be controlled by Tanzania. The respondents mentioned poor mechanization, pests and diseases, changes in weather conditions have been leading to low production. The policy issue of banning the exportation of cereals for food security purposes was mentioned by all respondents to be a major impediment in agricultural export development. The banning of the exportation of food crops was considered to be unfriendly and unfair to the food producers who are the majority Tanzanians. One respondent said, "banning export of food crops doesn't attract investors both local and foreign to venture into agriculture hence resulting into low production but not food security as has always been said". Some other barriers explained were; poor infrastructures like roads and railways for they are few and yet deteriorated, the situation that makes the movement of products from one part of the country to another for exportation becomes difficult.

Furthermore, Non-tariff barriers like sanitary and phytosanitary measure (SPs), supply side constraints, low investment in the sector and supply capacity were mentioned by the respondents to be constraining the development of the agricultural export subsector. The explanation was that even if there is market access duty free quota free, like the Everything but Arms (EBA) initiative by the European Union, still Tanzania farmers are not able to supply to these markets. The reason is that, farmers are many but are producing in a very small scale and low quality and mainly for subsistent living. The inability of the agricultural farmers to export competitively was also linked to the problem of obtaining capital from financial institutions. Also inadequate extension services to farmers limit productivity.

5.4. Relationship between Agricultural Exports and Economic Growth
5.4.1. Unit Root Test

This study used time series data from 1980 to 2010 to study the relationship between Tanzanian economic growth and agricultural exports. The first step in this analysis was to explore the univariate properties and to test the order of integration of each series. The Augmented Dickey Fuller (ADF) test was used to perform unit root tests. Both the series were first transformed into logarithmic form and then tested. The analysis in table 1 shows that in level form, both real GDP and agricultural exports had unit root, so the study did not reject the null hypothesis that there is a unit root in the series. The results in table 1 suggested for differencing the data series once and then testing for unit root using the following model.

$$\Delta RGDP_t = b_1 + b_2 t + \delta_1 RGDP_{t-1} + \alpha_1 \Delta RGDP_{t-1} + \varepsilon_t \quad (1)$$

$$\Delta \hat{RGDP}_t = 23.972 + 1.122t - 0.048 \, RGDP_{t-1} + 0.355 \Delta \, RGDP_{t-1} \quad (2)$$

t   (2.363) (2.142) (-2.115)   (3.443)

R^2=0.162, d=2.045, n=30

The absolute t (τ) value of the $RGDP_{t-1}$ coefficient, δ_1 is less than even the 5 percent critical τ value of -2.986 suggesting that the RGDP series is non-stationary.

$$\Delta RAGEX_t = a_1 + a_2 t + \delta_2 RAGEX_{t-1} + \alpha_2 \Delta RAGEX_{t-1} + \phi_t \quad (3)$$

$$\Delta \hat{RAGEX}_t = 13.972 + 0.622t - 0.068 \, RAGEX_{t-1} + 0.335 \Delta \, RAGEX_{t-1} \quad (4)$$

t   (3.363) (2.542) (-0.527)   (3.323)

R^2=0.172, d=2.545, n=30

The absolute t (τ) value of the $RAGEX_{t-1}$ coefficient, δ_2 is less than even the 5 percent critical τ value of -2.986 suggesting that the RGDP series is non-stationary.

Table 1: ADF Test Results on the Level Form of the Series

Variable	t-statistic of δ	Critical value at 5% significance level	Results
Real GDP (RGDP)	-2.115	-2.986	There is unit root
Real Agriculture Exports (RAGEX)	-0.527	-2.986	There is unit root

Similarly, ADF model was used to test stationarity on real GDP and real agriculture exports after first differencing. Table 2 shows that both agriculture exports and real GDP become stationary after first differencing as shown in table 2. That is both the series are integrated of order 1 (I (1)).

Table 2: ADF Test Results on the First Difference of the Original Series

Variable	t-statistic of δ	Critical value at 5% significance level	Results
ΔRGDP	-3.694	-2.989	There is no unit root
ΔRAGEX	-5.740	-2.989	There is no unit root

5.4.2. Co-integration Test

This test was performed to see if there is a long-run relationship between real GDP and agricultural exports. The variables should be non-stationary in their level form but they should be integrated of the same order i.e. I (1). If both series are integrated of different orders it is possible to conclude that there is no co-integration. In this study the two variables were found to be stationary at first differencing, that is both real GDP and agricultural exports are I (1) series.

The Engle-Granger co-integration technique was used (a two-step procedure); RGDP was regressed on RAGEX and obtained the following results:

$$\hat{RGDP}_t = 762.33 + 1.14\, RAGEX_t \quad (5)$$

t = (0.682)   (5.161)

n =30, $R^2 = 0.592$ $\hat{e}_t = RGDP_t - \hat{RGDP}_t = RGDP_t - 762.33 - 1.04\, RAGEX_t$

(6)

Where RGDP is real GDP, RAGEX real agricultural exports, and $\hat{e}$ residuals obtained. Then the DF test was

applied on the residuals obtained and the results were as $(\Delta \hat{e}_t) = -0.2753\, \hat{e}_{t-1}$ (7)

t   (-2.441)

R^2=0.138   d = 2.177

The Engle-Granger 5 percent critical t value is -2.896 and the computed t value is -3.441, the null hypothesis that the estimated residual series is not stationary was rejected and hence, the residuals are stationary. The analysis reveals that the two variables are co-integrated hence there is long-run relationship between real GDP and real agricultural exports and therefore the estimated relationship shown in equation (5) is valid. It is also clear from equation (5) that in the long-run for a 1 unit increase in real agriculture export, real GDP increases by 1.14 units (114 percent).

5.4.3. Granger Causality

The final part of this study is to examine the relationship between agricultural exports and economic growth by checking for the direction of causality between the two variables. First the Vector Autoregressive model was estimated and the lag length 1 was chosen based on the Akaike Information Criteria (AIC). The VAR results are presented in table 3 below.

Table 3: Estimates of Vector Auto Regressive Model

Dependent	Independent	t-statistic	P-value
$\Delta RGDP_t$	$\Delta RGDP_t$		
	Cons 0.007	3.17	0.002
	L$_1$ -0.594	-3.97	0.000
	L$_2$ -0.533	-3.76	0.000
	$\Delta RAGEX_t$		
	L$_1$ -0.016	-1.30	0.193
	L$_2$ -0.038	-3.17	0.002
$\Delta RAGEX_t$	$\Delta RAGEX_t$		
	Cons 0.047	1.34	0.180
	L$_1$ -0.159	-0.86	0.392
	L$_2$ -0.092	0.52	0.602
	$\Delta RGDP_t$		
	L$_1$ -1.522	-0.74	0.458
	L$_2$ 0.490	0.23	0.816

L$_1$ and L$_2$ are coefficients at lag order one and lag order two respectively.

After estimating the VAR model then Granger causality technique was used to investigate the direction of causality for the variables RGDP and RAGEX. The results are summarized in table 4.

Table 4: Granger Causality Wald Tests Results

Null hypothesis	Probability	Decision
ΔRGDP does not Granger cause ΔRAGEX	0.637	Did not reject
ΔRAGEX does not Granger cause ΔRGDP	0.004	Rejected

The results in table 4 suggest that the direction of causality is from agricultural exports to the real GDP at 5 percent level of significance. Based on the above results it can be said that there is a long-run causal relationship between real agricultural exports and real GDP in Tanzania, meaning that growth in exports of agricultural products stimulates growth in real GDP in the long-run but not the other way round. This is true because for a number of years, agricultural exports have been the major component of Tanzanian exports. However, in recent years, for example in 2010, data from ITC show that Tanzania exported more minerals such as pearls, precious stones, metals, coins etc. Currently, the economy also depends on other sectors significantly such as industrial sector and service sector, especially tourism services.

5.4.4. Findings and Discussion
The findings of this study reveal that traditional exports like coffee, cotton, tea, cashew and tobacco have played an important role in the economic growth of Tanzania. This view is also supported by the study done by the URT (2001) [76]. This study also reveals that agricultural exports and real GDP have long-run relationship and the direction of causality is from real agricultural exports to real GDP and not the other way round. Furthermore, there was found to be a fairly strong correlation (0.79). These results imply that agricultural exports have been boosting economic growth in Tanzania. Given considerable comparative advantage in agricultural products due to largely cheap labour, Tanzania can further reduce costs by agricultural mechanization and increasing productivity to promote economic growth and make it sustainable.

These results are different from the study by Njikam (2003) [77] on exports and economic growth in sub-Saharan African countries. The result for Tanzania was that there was a unidirectional causation from real GDP to Agricultural exports which was also the case in Mali, Senegal, Nigeria and Kenya. His study concluded that the economic growth of this group of countries was sufficient to generate growth of agricultural exports. These results may have been different because of the time factor. This study has used most recent data and for many years and obtained different results from that of Njikam. This study was also different from the study done by Shombe (2005) [78] who investigated the causal link between agricultural GDP and total exports of Tanzania. He found that total exports were causing agriculture GDP and there was found a long run relationship between them. It is also different from Manzoor (2009) [79] who did a similar study like Shombe in Pakistani. The findings of his study revealed a strong long run relationship between the agricultural GDP and total exports. However there was not found a short-run relationship in his study.

Krueger (1985) [80] supported the relationship of exports with the economic growth. He conducted a cross sectional study of the Asian economic tigers, and results were similar to the findings of this study. However, he used only correlation to test the relationship between the two which would provide obvious results because exports are a component of GDP. Moreover, direction of causality can't be established based on merely high value of correlation. This study went one step further by using advanced econometric techniques of testing the relationship.

VI. Conclusion

The study set out to examine the role of agricultural exports performance to Tanzanian economic growth. The Agricultural products which are mostly exported to the international markets were identified and agricultural exports growth rates were estimated for the period from 1980 to 2010. Furthermore, the relationship between agricultural exports and economic growth was examined. Finally, impediments which are hindering the development of agricultural exports were identified and the way forward.

Empirical results presented and subsequent analysis reveals that Tanzania has been exporting much coffee, tea, tobacco and cotton which are mainly exported as primary products, very little is exported as intermediate or consumer goods. Meaning that the stage of processing these agricultural exported products is very minimal, implying the lower returns to the country. The growth rate of agricultural exports which is currently 4 percent has not been satisfactory given its potential. The growth rate has also not been consistent over the years, it has been fluctuating over the years and sometimes been negative. Given the fact that Tanzania mainly depends on agriculture, its economy has been affected adversely with the low performance of the agricultural exports growth rates.

Concerning the relationship between agricultural exports and economic growth, the analysis shows the two variables have the long-run relationship. The direction of causality was found from agricultural exports to the real GDP. Therefore, Tanzania's   agricultural exports driven activities are important to the economy as a whole and there should be more emphasis on them in order to promote growth and development in the country. Agricultural exports contribute to the real GDP but due to its volatility, its contribution has fluctuated widely. There are a number of impediments which cause low exports performance of agricultural exports in the country. The issue of banning the exportation of food crops, especially cereals, which is among the most produced crops, is one of the main constraint to the export development. Little cereals are exported to the neighbouring countries within the EAC (East African Countries) region, meaning that the revenues earned from them may not be significant compared if they could have been exported to the developed nations like the European Union. Despite the fact that the food security is important to the people, surplus output should be allowed to be sold in the global markets at competitive prices. The poor infrastructure especially the railways and road networks are major barriers to agricultural exports to the exit points.

6.1. Policy Implications

This study reveals that agricultural exports are important for fostering the economic growth in Tanzania. Based on the findings of the study the overall policy implication is that there is considerable scope to improve efficiency in agricultural exports development in Tanzania. Policies oriented to primarily reduce the constraints to international market access, are required in the country. There is also a need to increase productive capacity and productivity of agriculture sector of Tanzania to achieve high rate of economic growth and reduce poverty. More efforts should be made to diversify agricultural exports by adding more agricultural products to the country's basket of agricultural exports.

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