CONTRIBUTION OF AGRICULTURE TO THE ECONOMIC GROWTH OF ZANZIBAR

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By

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CERTIFICATION

We, the undersigned, certify that we have read and hereby recommended for acceptance by the Mzumbe University, a dissertation titled **"Contribution of agriculture to the economic growth of Zanzibar"** in partial fulfillment of the requirements for the award of Master of Science in Accounting and Finance of Mzumbe University.

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I, Issa Hassan Shoka, Do declare that this dissertation is my own original work, and that it has not been presented and will not be presented to any other university for a similar or other degree award.

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ACKNOWLEDGEMENT

LIST OF ABBREVIATIONS

OCGS   Office of Chief Government Statistician

MKUZA   MkakatiwaKukuza Uchumi na Kupunguza Umasikini Zanzibar

GDP   Gross Domestic Product

FAO   Food and Agriculture Organization

MALE   Ministry of Agriculture, Livestock and Environment

ZGS   Zanzibar Growth Strategy

MOFEA   Ministry of Finance and Economic Affairs

WDR   World Development Report

ZSGRP   Zanzibar Strategy for Growth and Reduction of Poverty

UNO   United Nation Organization

RGZ   Revolutionary Government of Zanzibar

ABSTRACT

Zanzibar's economy is characterized by presence of high level of agriculture and tourism. Agriculture is the main economic activity for most people in Zanzibar. About 60% of the active labor force derives their livelihood from agriculture – related activities and the majority of farmers are women who mostly used traditional methods of farming. This research base on the contribution of agriculture in the economic growth of Zanzibar which was focused on three specific objectives which are Trends of agriculture, the areas of agriculture that contribute significantly to the economic growth and the relationship between agriculture and economic growth.

The methodology used was Quantitative approach as a design whereby a sample taken from a population from the year 2005 to 2013. Time series data used and has been collected from office of chief government statistician (OCGS), the period of study was 2014 and the variables used was Crops, Forest and Fishing as independent and Gross domestic product(GDP) as dependent variable. The tools of analysis applied in this study include descriptive statistics followed by tsline(y), multiple regression, co-integration followed by Granger causality test for the first, second and third objective respectively.

The findings revealed that the agriculture appear to have a random walk trends (stochastic trends) due to prolonged increase followed by prolonged decrease. With regard to the subsector of agriculture, the study identified that only crops products contribute significantly to the economic growth. With regard to the third objective the results suggested that agriculture and GDP are not co-integrated and only crop products among the subsector of agriculture is co-integrated with GDP but in only one direction where by crop products contain information that can predict the GDP. The study took only three elements of agriculture for analyzing trends, subsector of agriculture contribute significantly and the relationship between GDP and agriculture. The study put forward some recommendation including broadening.

Keywords: Economic growth, Crops products, Fishing products, Forest products and Gross Domestic Product (GDP).

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CHAPTER ONE

1.1   Introduction

This chapter introduced the study by giving the background of the study, explaining the statement of the research problem, research objective, significant of the study, the scope and limitation of the study.

1.2   Background information to the problem

Zanzibar consists of two major islands, namely Unguja and Pemba. Unguja Island lies 40 km and Pemba lies 60 km off the eastern coast of Tanzania mainland. Unguja Island has a total area of 1,658 sq.km, and Pemba has an area of 984 sq.km, making a total area of 2,642 sq. km. The total arable land is about 131,570 hectares. The population of Zanzibar in the 2002 census was about 984,625 inhabitants. The annual population growth is estimated at 3.1%. In 1964 the popular revolution took place that gave way to the new government. In the same year Zanzibar merged with Tanganyika to form the United Republic of Tanzania. Under the setup of union, Zanzibar maintains its autonomy in various issues including agriculture and local governance. The Zanzibar government had established a ministry responsible for agricultural development. The ministry has got various departments including those dealing with training and extension activities (MALE 2010).

In Zanzibar, subsistence agriculture has been and still is the most important sector of the economy. Apart from its contribution of about 30.8% of the GDP (OCGS 2008), it also provides employment to 70% (42% directly) of the population found in rural areas (ZGS, 2007). The average rate of growth of the GDP for agricultural sector is smaller (2.4%) compared to the population growth rate of (3.1%). Agriculture Sector stands second in terms of its contribution to Zanzibar GDP (Ministry of Finance and Economic Affairs (MOFEA) Growth Strategy Report (2006). Based on MOFEA (2006), any serious strategy for reduction of rural poverty and improvement of food security requires considerable improvement on the income of smallholder producers

in agriculture related activities and thus must promote improvements in their production activities.

The significance of agriculture resource in bringing about economic growth and sustainable development of a nation cannot be underestimated. Agriculture contributes to the growth of the economy, provides employment opportunities for the teaming population, export revenue earnings and eradicates poverty in the economy. Abayomi (1997) stated that stagnation in agriculture is the principal explanation for poor economic performance, while rising agricultural productivity has been the most important concomitant of successful industrialization. A strong and efficient agricultural sector would enable a country to feed its growing population, generate employment, earn foreign exchange and provide raw materials for industries. The agricultural sector has a multiplier effect on any nation's socio-economic and industrial fabric because of the multifunctional nature of agriculture (Ogen, 2007). Agriculture has been defined as the production of food and livestock and the purposeful tendering of plants and animals, (Ahmed, 1993). He stated further that agriculture is the mainstay of many economies and it is fundamental to the socio-economic development of a nation because it is a major element and factor in national development.

Agriculture is still the backbone of Zanzibar's economy but its share has recently been declining. Clove industry, which used to be the biggest foreign exchange earner, has been hit with low prices on the world market and a number of agronomic factors that has resulted into low annual production. Currently, trade and tourism are the two emerging industries earmarked to replace the decaying clove industry. Zanzibar enjoys a cool tropical climate favorable for the production of many warm-climate crops but clove trees have largely filled its landscape, particularly on the island of Pemba. For many years, it was the leading producer of cloves in the world but the age of clove trees, diseases, agronomic- and a number of human-related factors have caused a steep decline in the annual production levels. Clove trees thrives best in

deep soils on western sides of both islands. Other major cash crops are coconuts, chillies, and recently seaweed (Zanzinet 2004).

Cloves and seaweeds are main cash crops cultivated in Zanzibar. These crops exported to the different markets worldwide. According to the (OCGS 2013) about 4,468 tons of cloves, valued at Tanzanian shillings 42,965 million were exported in the year 2012, showing an increase in tonnage of 75 percent from the previous year, 2011. In the case of seaweeds, about 9,635 tons valued at Tanzanian shillings 5,151 million were exported in the year 2012, showing decrease in tonnage of 33 percent from the year 2011. Compared to other years, 2008 - 2011, the trend shows that the quantity of clove and seaweed exported were fluctuating.

According to the world development report (WDR 2008) in the agriculture-based countries (mostly Africa) agriculture contributes significant more than 20% share of overall growth, agriculture is essential to growth, which is in turn necessary to reduce poverty and food insecurity, new markets have dramatically changed the world of agriculture in the 21st century and created new opportunities for faster growth. In low-income countries at an early stage of transformation, the large share of agriculture in GDP suggests that strong growth in agriculture is necessary for overall economic growth. Indeed, agriculture accounted for about one-third of growth in Sub-Saharan Africa over the past 15 years.

As GDP per capita rises, agriculture's share in GDP declines, and so does its contribution to growth, but it can still remain important in some regions of more advanced economies. In the 1980s, developing countries taxed agriculture relative to other sectors at a level of about 30 percent on average and 45 percent in Sub-Saharan Africa, with overvalued exchange rates, high tariff protection in industry, and taxes on agricultural exports all contributing to the bias. It has been estimated that a 10 percentage point reduction in total taxation to the sector would increase overall annual growth by 0.4 percentage points (WDR 2008).

1.3   Statement of the problem

The study focused on the contribution of agriculture to the economic growth of Zanzibar, the agricultural sector playing a significant role in Zanzibar economic and it is one of the key sectors of the country's economy. In 2012 the performance of agriculture industry was not good at all, the total contribution to GDP is about 30.2 percent. This presents the decrease of 6 percent when compared to 2011. The decrease mainly attributed by the decrease of food crops from 20 percent in 2011 to 18.9 in 2012 (OCGS, 2013).

The study was challenged with the problem of how to ascertain the agriculture contribution in the Zanzibar economy, considering the positive and negative contribution. According to OCGS (2013) the purchase of cloves decreased from 3,743 tons in 2011 to 1,755.4 tons in 2012, giving a difference of 1987.6 tons representing a decrease of 53 percent equivalents to 165.6 tons per month.. Although the contribution of agriculture increased from 30.2 percent to 31.1 percent from 2012 to 2013 respectively but still the exact agricultural movement is a problem. The purchase of clove stem also showed a negative growth from 468 tons in 2011 to 328.4 tons in 2012. This presents a decrease of 29.8 percent, equivalent to a decrease of 11.6 tons per month. Performance of growth of rubber production followed a similar decrease trend where the total production decline from 457 tons in 2011 to 385 tons in 2012, equivalent to 16 percent representing a decrease of 6 tons per month.

1.4   Objectives of the study

The objective of this study will be divided in two parts which are general and specific

1.4.1   General objective

The general objective of this study will be to determine the contribution of agriculture to the economic growth of Zanzibar.

1.4.2 Specific objectives

i. To study the trends of agriculture growth in Zanzibar,

ii. To identify the subsector of agriculture which contribute significantly to the economic growth,

iii. To determine the relation between agriculture subsector and economic growth.

1.5 Research questions

i. What are the trends in agriculture growth in Zanzibar?

ii. Which of the areas of agriculture contributing significantly to the economic growth?

iii. What kind of relationship exists between agriculture and economic growth in Zanzibar?

1.6 Significance of the study

Understanding the pattern of agricultural growth can be important for policy makers in the design of policy that aim at investing in capacity of people to cope with pattern of agricultural growth and to participate in its benefits through better education and health. As noted by Timmer and Akkus (2008), a country might experience an extremely rapid transformation with a falling share of agriculture in GDP and employment but not experience much economic growth, so the pattern fails to hold.

Not only that but also empirically it has provided the econometric assessment by how much independent variables contribute to the dependent variable and evidence to the econometricians about the most predictor of the dependent, also the study was identifying the factors that influence economic growth through agriculture but not significantly if any, lastly it has provided policy recommendations to policy makers how to adjust the factors appropriate to attract more foreign portfolio investment on ways to breathe new life into the economic growth in Zanzibar and also it will identifies areas that need further research.

1.7 Limitation of the study

1.7.1 Lack of funds

The researcher is private sponsored student so faced the challenges of getting adequate finance of some research materials and bought some document like pamphlets, journals and others. They make the study completed in a difficult situation.

1.7.2 Reliability of the data

Since the data that I was collect are in software it might be unreliable because the virus can interrupt the data or change and make the result to be vary from the reality after analyses through STATA program, not only that but also some time I can find the good ideas in the website and I want to put it on my work but it is difficult to find it source which will give me a permission to leave as it is.

1.8 Scope of the study

This work was dealing on the contribution of agriculture to the economic growth of Zanzibar which was focus on the analyses of the trends of economic growth of Zanzibar in term of agriculture, the relationship between agriculture and economic growth in Zanzibar and the relative significant of factors contributing in explaining the variance in the dependent variable through agriculture. This study was carrying out in Zanzibar where by the secondary data were collected in the office of chief government statistician (OCGS) with the data spanning from 2000 to 2012.

CHAPTER TWO: REVIEW OF LITERATURE

2.1 Introduction

This chapter presents theoretical background guiding this study. The chapter starts by explaining the meaning of key concepts, followed by the main theories used in this study to explain the contribution of agriculture to the economic growth of Zanzibar. It also contains theoretical analysis which concentrates on problems studied from different perspectives and approaches, the empirical analysis of relevant studies, analytical framework, summary of the authors and their results and model of specification.

2.2 Theoretical review

The purpose of this form was to examine the concept, theory, issue and phenomena concerning the study topic. It help to establish what theories already exists, the relationship between them, to what degree the existing theories have been investigated and to develop new hypothesis to be tested.

2.2.1 Meaning of the agriculture

Various people have defined agriculture in different ways but common among these definitions is the fact that it is the production of food, feed, fiber and other goods by the systematic growing harvesting of plants and animals. Akinboyo (2008) defines Agriculture as the science of making use of the land to raise plants and animals, Ikala (2010) has describe that agriculture as the profession of majority of humans and Ahmed, 1993 define agriculture as the production of food and livestock and the purposeful tendering of plants and animals, Agriculture involves the cultivation of land, raising and rearing of animals, for the purpose of production of food for man, feed for animals and raw materials for industries. It involves forestry, fishing, processing and marketing of these agricultural products. Essentially, it is composed of crop production, livestock, forestry, and fishing. The role of agriculture in reforming both the social and economic framework of an economy cannot be over-emphasized. It is a source of food and raw materials for the industrial sector. It is also

essential for the expansion of employment opportunity, for reduction of poverty and improvement of income contribution, for speeding up industrialization and easing the pressure on balance of payment (Nwankwu, 1981).

2.2.2 Importance of agriculture in the economy

Development economists have focused on how agriculture can best contribute to overall economic growth and modernization. The physiocrats laid more emphasis on agriculture in the development of an economy. In their views, the development of an economy depends on the growth of the agricultural sector, UNO (2008) estimated that the world as a whole, over 50% of the world population is engaged in agriculture or dependent of it for a living, this is a general description of the sector. Tombofa (2004) reported that the state of agriculture is of paramount importance to the development process. He pointed out that agriculture provides the basis for the world's great civilization in the past and the increase in agricultural productivity in England laid the basis for, and sustained the first industrial revolution.

The agricultural sector is known to employ over 75 percent of the labour force in developing countries and provide the purchasing power over industrial goods. The of Western countries experiences on economic development was seen as requiring a rapid structural transformation of the economy focused on agricultural activities to a more complex modern industrial and services society. As a result, agriculture's primary role is to provide food and manpower to the expanding industrial economy. Also the Work by Gollin et al. (2002) showed the importance of agriculture in the early stages of development. Analyzing data for 62 developing countries for the period 1960-1990, the authors found that growth in agricultural productivity was quantitatively important in understanding growth in GDP per worker. Both cross-section and panel data analyses showed that countries experiencing increases in agricultural productivity were able to release labor from agriculture into other sectors of the economy.

In the other side Todaro and Smith (2003), while looking at Lewis theory of development, assume that the underdeveloped economies consist of two sectors. These sectors are the traditional agricultural sector characterized by zero marginal labour productivity and the modern industrial sector. The primary focus of the model is the labour transfer and the growth of output and employment in the modern sector. Todaro and Smith (2003) argued further that, if development is to take place and become self-sustaining, it will have to include the rural area in general and the agricultural sector in particular. Also Rostow (1960) as cited in Oji-okoro (2011) argued that in the process of economic development, nations pass through several stages namely: traditional stage, the precondition for take-off, the take off stage, drive to maturity and the high mass consumption stage. Agriculture played crucial roles in the first three stages (Traditional society, pre-conditions for take-off and take-off stages). The agricultural sector has the potential to be the industrial and economic springboard from which a country's development can take off.

In the conclusion which derives by Dercon (2009) from a two-sector model elaborated byEswaran and Kotwal (1993). He explains that, in an open economy, in which both agricultural and modern-sector goods can be traded, linkages between the two sectors become less important for overall growth. As a result, there is less of a necessity to increase agricultural productivity to induce overall growth and reduce poverty. Both sectors can contribute to growth. But if agriculture is less productive than other sectors, importing food and focusing efforts on other sectors might be more beneficial to a country's development. Both Dercon and Gollin admit that, under certain circumstances, the agricultural sector can be crucial for economic growth. If countries are landlocked and closed to international trade, agriculture can be a main driver behind overall growth and should be supported actively.

Although various theoretical models suggest quite opposing roles for agriculture in development, they do not necessarily contradict each other. The models are derived under different economic assumptions (e.g., openness to trade). Therefore, it is not surprising that they derive different policy implications. Because developing

countries differ with respect to their economic environments, the role of agriculture for development might be re-evaluated in each specific case.

This is in line with the 2008 World Development Report's message (World Bank 2007), which suggests that in agriculture-based economies, agriculture can be the main engine of growth, whereas in transforming countries, agriculture is already less important as an economic activity but is still a major instrument to reduce rural poverty. In urban countries, by contrast, agriculture plays the same role as other tradable sectors and subsectors with a comparative advantage can help to generate economic growth.

2.2.3 Issues and Challenges of agriculture

In an effort to improve the agricultural sector, the Revolutionary Government of Zanzibar (RGZ) initiated and carried out a range of agricultural programmes and projects to address key challenges that impede the progressive development of the sector including: crop development and plant protection, capacity building and farmer empowerment, irrigation and water management, livestock development and services, agro-forestry, marine and coastal areas conservation. In spite of all these efforts, Zanzibar's agriculture has not performed well to reach the target set to contribute sufficiently and sustainably in promoting economic growth and reduction of poverty. According to Ministry of Agriculture, Livestock and Environment and FAO 2009 the main issues and challenges that limit the sector performance are classified into the following categories;

2.2.4 Issues related to public sector investment

The agricultural related infrastructure is constrained by inadequate and poor state of crop, fisheries, and livestock related infrastructure. The other constraint that limit private sector participation in the provision of agriculture support services is the continued Government generous provision of services at subsidized price, a situation that limit private sector operations at market costs. Failure of government to provide attractive incentives so that the most trained and qualified staff could remain in the country has negatively impacted on research and technology transfer as well as

effective implementation of existing policy and strategies. As a result, agriculture sector institutions have remained understaffed both in term of quality and quantity, therefore their effective fulfillment of core functions remains unsatisfactory.

2.2.5   Issues related to market linkage and trade

Far-reaching changes in domestic and global markets are creating big opportunities for farmers and agribusiness entrepreneurs. The demand for high-value primary and processed products is rapidly increasing, driven by rising incomes, faster urbanization and market segmentation, liberalized trade, foreign investment, and tourism. These developments are expanding both internal and external market opportunities, which are important for fostering agricultural and non-farm growth and for greater employment and rural incomes. But these new market opportunities categorically demand stability of supply, quality, timely deliveries, and economies of scale. These are the very challenges facing Zanzibar agriculture.

2.2.6   Issues related to agro-processing and value addition

The low domestic production of food in Zanzibar is compounded by higher level of post-harvest losses due to poor handling, inadequate processing and poor storage technology and facilities. The average waste for rice, cassava, vegetable (tomatoes) and fish is 13, 26, 42 and 25 percent per year respectively. This rampant scenario applies to other agricultural products with export significances and potentials. In addition there is limited value addition for primary export commodities as well as for other potential export crops such as fruits, spices and perishable commodities (vegetables, livestock products and fish). Seasonality of production and lack of storage facilities render these commodities more vulnerable to large scale losses. The sub sectoris also constrained by inadequate infrastructure, poor management, lack of experience in value addition and branding, inadequate creativity and weak entrepreneurial skills. Poor post- harvest and handling technology lead to poor quality of local agricultural product that makes it difficult for smallholder producers in Zanzibar to capitalize on the opportunities provided by the growing local and export markets.

Issues related to market linkage and trade

Far-reaching changes in domestic and global markets are creating big opportunities for farmers and agribusiness entrepreneurs. The demand for high-value primary and processed products is rapidly increasing, driven by rising incomes, faster urbanization and market segmentation, liberalized trade, foreign investment, and tourism. These developments are expanding both internal and external market opportunities, which are important for fostering agricultural and non-farm growth and for greater employment and rural incomes. But these new market opportunities categorically demand stability of supply, quality, timely deliveries, and economies of scale. These are the very challenges facing Zanzibar agriculture.

In Zanzibar, there is generally low level of knowledge of farmers on opportunities either in the internal or the external markets. Farmers, fishers and livestock keepers are virtually disconnected from the local tourism industry for instance, and are not aware of the changing nature of the food industry opportunities and market segmentation. The uptake of new crops that are more marketable or of a higher value is also slow. This is a situation that can be aided by better availability of information and extension services, as well as by stimulating levels of farmer organization that may be better equipped to take advantage of market opportunities. The opportunities exist for widening the scope and volume of Zanzibar's local commodities into the domestic and export markets as well as in exploiting untapped potentials for secondary and tertiary processing, promotion of non-traditional crops and strengthening effective inter and intra-sectoral linkages.

Issues related environmental sustainability

Zanzibar's increasing population is placing formidable pressure on environment. The main issues that limit environmental sustainability include large scale encroachment on forest areas from settlement, farming and tourism development, habitat degradation particularly in the coral rag forests, coral reefs and mangroves. In addition, widespread wildlife harvesting – both in the terrestrial and marine environments poses a threat to the endangered terrestrial and marine biodiversity.

Zanzibar's natural land resource base, sufficient underground water and good climatic conditions, if efficiently utilized, favors expansion and diversification of both crop and livestock production. These features are of utmost importance in islands' ecosystems and in sustaining livelihoods. They protect, conserve and manage ecological resources, including flora and fauna, and in maintaining soil and water conservation. On the other hand, the coast and its resources are Zanzibar's most valuable assets. If used correctly, they can help in sustaining the present and future generations.

Agriculture as a support sector for economic growth and food security
Agriculture is a main source of growth for the national economy, a provider of investment opportunities for the private sector, a prime driver of agriculture related industries and the rural non-farm activities. The potential for agriculture to tackling greatest economic challenges including high levels of poverty and food insecurity is enormous but has not been realized as the sector is still confronted with dismal performance of low growth rates induced by inadequate and inefficient utilization of its resources. Zanzibar has a comparative advantage in the production of cloves, tropical fruits, spices and essential oils.

This can be further enhanced by increasing farm productivity, value addition and improved marketing efficiency. The expanding domestic market for food, especially for livestock, marine and vegetable products is another opportunity for Zanzibar agriculture. With expansion in the rapidly growing tourism industry and rise of high income market segments, domestic demand for fish, meat, milk, and other high-protein products is likely to grow at a rapid pace. Similarly, strengthened regional integration offers opportunities for Zanzibar products within EAC and SADC markets. Exploitation of these trading opportunities is vitally essential.

Opportunities also exist for the production and export of cash crops; including fruits like mango and papaya; spices, sea weed and other marine products. Furthermore, there is an increasing consumer preference to natural food ingredients globally; and many agricultural products which were replaced by artificial compounds over the last

fifty years are now making a comeback. Similarly new uses – culinary, industrial, and medicinal – are constantly being found for herbs, honey (and by-products), and plant extracts. Zanzibar needs to keep the horizons examined for such opportunities, looking for high value niche markets to match the limited production capacity.

Agriculture as a livelihood

Agriculture employs directly or indirectly about 70 percent of the total labour force. In addition to being a source of income, the agriculture sector has a direct contribution to the food security, nutrition and health status of the people and an indirect impact on many other aspects of livelihood. In comparison to other sectors of the economy, agriculture has enormous potential in supporting livelihoods in both rural and urban areas. The sector has wide scope to stimulate expansion of other sectors such as agro processing and value addition and market linkages to service and trade sectors. As such the sector creates employment and support livelihood to a large segment of the population. Increased investment in agriculture will accelerate the growth of the sector and therefore facilitate achievement of sustainable rural and urban livelihood systems and consequently promote overall food security and economic well-being.

Use of agricultural technologies

The generation of agricultural innovations in Zanzibar is guided by the Agricultural Master Plan. The Master Plan places high priority on adaptive research to help smallholder farmers to enhance their productivity. The adaptive research has been used by many projects to generate and disseminate farming technologies to the farming communities. The technological recommendations that have been generated from these research activities include good performing varieties in terms of yield and resistance to pests and diseases, agronomy including the use of recommended rates of organic and inorganic fertilizers, use of mulch, crops" pests and diseases control, post-harvest technologies and use of irrigation. Generally, adoption of various types of agricultural technologies in the survey areas was low. In the mechanization services, the findings show that only 24% use tractor hire services and only 1% use

oxen-drawn implements in the cultivation of their lands. This being the case, the use of handhoe still remains the principal tool in land cultivation. As it can be seen in Table 23, 75% of sampled households, indicated to use handhoe in tilling the land.

State of the Economy

Between 1986 and 2000 Gross Domestic Product (GDP) has shown an increasing trend with an average growth rate of 3.7 percent. The highest figure in GDP growth rate was recorded in 1996 when it reached 7.2 percent. However, there was as slight decline in GDP growth rate from 4.5 percent in 1999 to 4.2 percent in 2000. This decline was partly due to a decline in the level of agricultural production (particularly cloves), low investment levels and general poor economic performance.

Inflation rates have settled at a single digit, while the level of both private and public capital formation is on the increase. During the period 1986-2000, agriculture, trade, tourism and services sectors were the major contributors to GDP making up to 90 percent of its total value. Agriculture accounts for more than one third of the GDP, although in recent years its contribution has registered a constant downward trend. The declining contribution of agriculture in both relative and absolute terms has tended to have a negative impact on the growth of GDP.

2.3 Empirical review

Empirical review deals with presentation of reviews of theme, objectives, and methodology of previous studies. The review is presented under classification of trends in agriculture of Zanzibar, subsector role of agriculture in economic growth, the relationship between agriculture subsector and the GDP, summary of empirical review followed by conceptual frame work and model specification.

2.3.1 Trends

The recent Zanzibar economic performance demonstrates two major trends; there was a positive but unpredictable economic growth rates, and economic structure of the Island has been changing. During the last decade, size of the Zanzibar economy

almost doubled in real term and the GDP per capita increases from Tshs1030000 in 2012 to Tshs1077000 in (OCGS, 2014) while the previous year according to MKUZA and economic survey of 2008 the GDP growth in Zanzibar has not been steadily increasing; it has rather been showing irregular pattern. For instance, growth rate in 2003 was 5.9, which rose to 6.5 in 2004 but it slumped down to 4.9 in 2005, then rising to 6.0 in 2006, which was below the rate in 2004 by 0.5 percent. Although it again increased to 6.3 percent in 2007 it subsequently went down again in 2008 to 5.4. These data indicate that the overall economic growth has been a real phenomenon but not in a way that one would like for its sustainability.

Ukeji (2003) submits that in the 1960s, agriculture contributed up to 64% to the total GDP but gradually declined in the 70s to 48% and it continues in 1980 to 20% and 19% in 1985, this was as a result of oil glut of the 1980's, not only that but also . Bravo-Ortega and Lederman (2005) also employ panel data tools such as Granger causality tests to re-estimate the effect of agricultural growth on the overall growth rate. Using 1960-2000 panel data, they find that an increase in agricultural GDP raises non-agricultural GDP in developing countries, whereas a reverse relation exists for developed countries.

 In a survey conducted in all five regions of Zanzibar in December 2009, which involved 135 respondents, 66.7 percent of the respondents confirmed that the economic growth in Zanzibar was a real phenomenon. In the same survey, 22.1 percent considered the growth as not real and the rest (11.1 percent) were not sure whether the Zanzibar economy had grown or not. The 2008 economic survey shows that there were decline in production in almost all commodities due to a number of reasons including market constraints and lack of raw materials but Crops that attributed in increase in sector growth include cloves production which increased to 3,968.5 tons in 2008 compared to 1,085.6 tons in 2007, seaweed that increased to 11,177 tons in 2008 compare to 8,485 in 2007, maize (0.1 percent) paddy (4.2 percent) and sweet potatoes (21.2 percent, bananas (by 10.1 percent).

Ekpo and Umoh (2012) revealed that the contribution of agriculture to GDP, which was 63 percent in 1960, declined to 34 percent in 1988, not because the industrial sector increased its share but due to neglect of agriculture sector. It was therefore not surprising that by 1975, the economy had become a net importer of basic food items. Also Suleiman and Aminu (2010) conducted research on the contribution of agriculture, petroleum and manufacturing sector of the Nigerian economy so the trend show that the agricultural sector is contributing higher about 1.7978 units to GDP than both petroleum and manufacturing sectors and also a good performance of an economy in terms of per capita growth may therefore be attributed to a well-developed agricultural sector capital.. But Muhammad and Atte (2006) conducted study on production of agriculture in Nigeria and revealed that the negative coefficient of the value (-0.07) of the food imports indicates that as food import increases, domestic agricultural production decreases. The positive coefficient (286.91) of the GDP growth rate indicates that increase in the GDP also moves domestic agricultural production in the same direction.

This shows that increased domestic economic activity has the impact of increasing the domestic agricultural production. This may be due to the fact that most economic activity in the country is related to agriculture. The result also shows that population increases has been a major contribution to domestic agricultural production in Nigeria with the coefficient (18424.73). This may be due to the fact that majority of the populace are engaged in agriculture, meaning more hand on the farm as population increases.

Further study by Fuglie (2004) In Indonesia which identifies the drivers of growth in agriculture between the 1960s and 2000. He argues that although agricultural productivity in the 1970s and 1980s was increasing, this trend has been flat since the early 1990s, with most growth in agriculture being explained by increases in production inputs (labor and land). Also Enrique, Camilo, and Blanca 2010 show that spending on agriculture has a statistically significant positive effect on the agriculture GDP per capita growth rate, after controlling for the effects of nonagricultural GDP per capita growth and for private inputs (arable land and labor).

2.3.2 Role of agriculture Subsector in economic growth

Apart from that different author investigate on the area that can affect the agricultural growth in the developing countries. Syed Ali Raza, Yasir Ali and Rarhan Mehboob 2012, appliedsimple regression to identify the significance relationship of Agricultural sub-sectors with GDP. Results suggested that there is the significance role of agriculture sub-sectors towards the economic growth only forestry products showed insignificant relationship with GDP. Another objective is based on to know the contribution of each sub-sector over the aggregate agriculture amount. Result suggest that crops and livestock's total contribute 91% combined in the aggregate agriculture sector that represent significance contribution for the performance regarding in this sector while Fisheries and forestry have minimal contribution because of many reasons, major reasons involved low investment intensity in this sector , insufficient facilities , untrained and unskillful labor force engaged with it. Rhaji (2008) used ordinary least square method in determining the impact of agriculture on Nigerian economy. He found out that, the lack of adequate, accessible, and affordable credit is among major factors responsible for the systemic decline in the contribution of agriculture to Nigerian economy. Ayoola and Oboh (2006) examined the effect of agricultural production on the growth of Nigeria economy. They found out that every segment of agricultural production requires the availability of adequate capital since capital determines access to all other resources on which farmers depend. It has been shown that farm level credit if well applied, encourages capital formation and diversified agriculture, increases resource productivity, size of farm operations, innovations in farming, marketing efficiency, value added and net farm incomes (Nwagbo, 2005).

2.3.3 Relationship between agriculture subsector and GDP

In the study which was done by Titus O. Awokuse (2009) about the relationship between agriculture and economic growth, the results from the empirical analysis provide strong evidence indicating that agriculture is an engine of economic growth. Recently, Tiffin and Irz (2006) used bivariate Granger causality tests to examine the causal relationships between agricultural value-added and economic growth for a

panel of countries. They found strong evidence in support of causality from agriculture to economic growth for developing countries, but the causality results for developed countries were inconclusive.

Similarly the group of researchers like Jung and Marshall (1985); Darrat (1987); Chow(1987); Kunst and Marin (1989); Sung-Shen et al. (1990); Bahmani-Oskooee et al.(1991); Ahmad and Kwan (1991); Serletis (1992); Khan and Saqib (1993); Dorado(1993); Jin and Yu (1995) examined the causality test between growth of export and economic growth using the Granger causality test. The studies concluded that there existed some evidence of causality relationship between exports and growth, but The earlier studies for example, Strout (1966); Michaely (1977); Balassa (1978); Heller and Porter; (1978); Tyler (1891); and Kormendi & Mequire (1985) analyzed the relationship between economic growth and exports by using simple correlation coefficient technique and concluded that growth of exports and economic growth were highly positive correlated.

The main problem with causality test is that it is not useful when the original time series is not co integrated. Finally, the recent studies conducted to investigate the impact of exports on growth applying the technique of co integration and error correction models, was do Kugler (1991), Serletis (1992), Oxley (1993), Bahmani-Oskooee and Alse (1993),Dutt and Ghosh (1994, 1996), Ghatak et al. (1997), Rahman and Mustaga (1998) and Islam (1998) . Exports also provide the foreign exchange needed to purchase imports, which provides further beneficial effects on economic growth (Thirlwall, 2000). Crespo-Cuaresma & Worz (2005) argue that significant positive externalities accrue to the exporting country as a result of competition in international markets, including increasing returns to scale, learning spillovers, increased innovation, and other efficiency gains, all of which can increase the rate of economic growth.

Although many studies depict a positive relationship between total exports and economic growth, it is reasonable to question whether this relationship holds for all the primary exports. The main argument for a differing impact, according to Fosu

(1996), is due to differences in the output and also the fact that individuals and companies (who uses more technologically intensive method) are involve in the production of these cash crops. Thus we expect production from companies more likely to create positive spillovers. We have observed that most literature focused on the total exports as the only source of growth, but agriculture's share to total exports is generally substantial in developing economies. It is very astonishing that empirical research on the contribution of agricultural exports to economic growth has been to some extent ignored in the literature despite its role in the development process being long recognized. Over the past few decades, exports of agricultural products have played a pivotal role in the economic growth of many developing countries. Agricultural exports continue to be the most important source of foreign exchange for the majority of Sub-Saharan African countries (Gilbert 2009). In virtually every country in Africa with a major export crop, including Cameroon, the government has intervened through state-owned marketing boards, or stabilization fund, to coordinate the production and marketing of the crop, offering farmers stable farm gate price that shield them from price volatility. However, the economic crisis of the mid-1980s disrupted the positive trend of fore.

Aurangzeb (2006) studied the relationship between economic growth and exports in Pakistan based on the analytical framework developed by (Feder, 1983). Auther tested the applicability of the hypothesis that the economic growth increased as exports expanded by using time series from 1973 to 2005.The findings of the study showed that export sector had significantly higher social marginal productivities. Hence the study concluded that an export oriented and outward looking approach was needed for high rates of economic growth in Pakistan.

Kwa and Bassoume (2007) examined the linkage between agricultural exports and sustainable development. The study provided the case studies of different countries that were involved in agricultural exports. Nadeem (2007) provided the empirical analysis of the dynamic influences of economic reforms and liberalization of trade policy on the performance of agricultural exports in Pakistan. The author examined

the effect of both domestic supply side factors and external demand on the performance of agricultural exports. The major finding of the study was that export diversification and trade openness contributed more in agriculture domestic side factors performance. The results of the study suggested that agricultural exports performance is more elastic to change in domestic factors.

Sanjuan-Lopez and Dawson (2010) estimated the contribution of agricultural exports to economic growth in developing countries. They estimated the relationship between Gross Domestic Product and agrarian and non-agrarian exports. Panel co integration technique13 was used in analyzing the data set of 42 underdeveloped countries. The results of the study indicated that there existed long run relationship and the agriculture export elasticity of GDP was 0.07. The non-agriculture export elasticity of GDP was 0.13. Based on the empirical results, the study suggested that the poor countries should adopt balanced export promotion policies but the rich countries might attain high economic growth from non-agricultural exports.

In another study which was done by Syed A. Raza, Yasir and Farhan Mehboob where by simple regression applied to identify the significance relationship of Agricultural sub-sectors with GDP. Results suggested that there is the significance role of agriculture sub-sectors towards the economic growth only forestry showed insignificant relationship with GDP. Another objective is based on to know the contribution of each sub-sector over the aggregate agriculture amount. Result suggest that crops and livestock's total contribute 91% combined in the aggregate agriculture sector that represent significance contribution for the performance regarding in this sector while Fisheries and forestry have minimal contribution because of many reasons, major reasons involved low investment intensity in this sector , insufficient facilities , untrained and unskillful labor force engaged with it

Also in the results of Aminu Umaru and Anono Abdulrahman Zubairu 2012 through the application of Augmented Dickey-Fuller technique in testing the unit root property of the series, revealed that agricultural sector is contributing higher than the

petroleum sector, though they both possessed a positive impact on economic growth and development of the economy. A good performance of an economy in terms of per capita growth may therefore be attributed to a well-developed agricultural sector capital.

The results indicate that both the coefficient of agriculture and petroleum sector are statistically significant at 1 percent level as indicated by the probability value 0.0000.This implies that a percent change in the output of agriculture and petroleum will increase GDP by 215.29 and 79.25 respectively which is consistence to the theoretical expectation and found to be positive. The intercept is found to be statistically insignificant an inconsistent with the theoretical expectation and found to be negative (i.e.BO <0); this is indicated by its high probability value 0.7724. This high probability implies that the presence of that effect that can invalidate the parameter is high (77.24 percent). This implies that GDP (economic growth) in Nigeria depends only on the two sectors agriculture and petroleum.

Oji-Okoro (2011) employed multiple regression analysis to examine the contribution of agricultural sector on the Nigerian economic development. They found that a positive relationship between Gross Domestic Product (GDP) and government expenditure on agriculture between the period of 1986-2007. Significant statistical evidence obtained from the analysis showed that government spending does not follow a regular pattern and that the contribution of the agricultural sector to the GDP is in direct relationship with government funding to the sector.

The results of the regression which was done by Olajide, Akinlabi and A.A (2012) show that there is a positive relationship between the dependent variable (GDP) and the independent variable Agriculture Output. A unit change in agricultural output will cause 34.4 percent change in GDP. The estimated model shows F-ratio of about 4485.789 as compared with the F-table value of 3.55 with 5 percent level of significance. This implies that agricultural sector for the period of analysis has significant influence on macroeconomic output level. The explanatory power of the regression model with an adjusted R2 of 0.99 is impressive. This indicates that 99

percent of GDP is explained by the agricultural sector. The remaining 1 percent is explained by variables outside this model. From our results the standard errors for each parameter is statistically significant. At 5% level of significance for the variable, the t-value shows that there is a positive relationship between GDP and agricultural sector. The predictive model of this research is GDP = 13106.28 + 0.344909AgOutput.

Fajingbesi & Odusola (1999) empirically investigated the relationship between government expenditure and economic growth in Nigeria. The econometric results indicated that real government capital expenditure has a significant positive influence on real output. Moreover, Fan, Hazell and Thorat (2000) carried out a study on the relationship between government spending, agricultural growth and economic growth in India. The study showed that there is a positive relationship between public spending on agriculture and economic growth. Consumption and investment also showed a positive relationship to GDP.

But the Work by Gollin et al, (2002) shows the importance of agriculture in the early stages of development. Using both cross section and panel data for 62 developing countries for the period 1960 to 1990, the authors find that growth in agricultural productivity is important in explaining growth in GDP. This direct contribution accounts for 54 percent of GDP growth. The research shows that agriculture accounts for more than half of GDP growth between 1960 and 1990. In Uganda (1992-2003), periods of high overall growth coincided with strong performance in agriculture, the sector in which the bulk of the labour force was employed (Nkonya, 2004).

Other study by Xiaobo Wei, Jue Peng and Lu Cao 2014 which show the relationship between agriculture environmental efficiency and economic development, the relationship is that first decrease and then increase. According to Hausman test, according to the original assumption of the P values, P = 0.0040, under the 0.01 significance level declined to the original assumption: using random, so using fixed effects model, it can be seen from the regression equation of fixed effects: X =

97.70853+1.511859Y2 − 0.746648Y , the coefficient of YY = 1.511859 >0 , so the curve between agriculture environmental efficiency and economic growth is showing "U" shape, that is to say along with different economic development stages, agriculture environment efficiency showing the change that first decrease and then increase.

Apart from that Ramphul Ohlan, 2013 investigates the causality between agricultural exports and gross domestic product (GDP) agriculture in India using the Granger causality test via Vector Error-Correction Model over the period 1970–1971 to 2009–2010. The results of unit-root tests suggest that the series of India's GDP agriculture and farm exports are integrated of order one. The results of the Auto Regressive Distributed Lag bounds testing approach to co-integration show that there is a positive and stable long-run equilibrium relationship between India's agricultural exports and GDP of agriculture. We find a unidirectional causal link running from farm exports to gross domestic product of agriculture. It indicates that in India, agricultural products export Granger causes the growth in GDP of agriculture, which supports the export led growth hypothesis.

The importance of linkages between the agricultural sector and the rest of the economy differs across countries. Some authors have tried to shed light on the importance of such linkages in different developing countries. As shown by de Janvry and Sadoulet (2009b) for China over 1980 − 2001, a 1 percent agricultural growth had an effect on aggregate growth of 0.45 percent, whereas the indirect effect through the non-agricultural sector represents half this effect. According to Arias Segura, Joaquín (2010) in the research which was done in Jamaica state that during 1966-1996 periods, the forward elasticity of agriculture with the rest of the economy was found to be statistically significant and equal to 1.06%. In other words, a 1% increase in the value added of agriculture would have a positive long-run effect of 1.06% on the rest of the economy.

2.3.4 Summary of Empirical Review

S.no	Author's name	Year and place	Theme of study	Methodology	Variables studies	Relationship identified
1	Oji Okoro	2011 In Nigeria	Analysis of the Contribution of Agricultural Sector on the Nigerian Economic Development	Multiple regression method, using SPSS was employed to analyze the data	domestic saving, government expenditure on agriculture and foreign direct investment on agriculture	Positive relationship between GDP and the three independent variables
2	Aminu Umaru and Anono Abdulrahman Zubairu	2012 in Nigeria	contribution of agricultural sector and petroleum sector to the economic growth	multiple linear regression analysis including Augmented Dicky-Fuller test of stationarity	Agricultural output and petroleum output and GDP	agricultural sector is contributing higher than the petroleum sector, though they both possessed a positive impact on economic growth
3	Syed A. Raza, Yasir and Farhan Mehboob	2012 in Pakistan	the role of agriculture in the economic growth	Simple regression is used and (Descriptive statistics)	Major crops, Minor crops, Livestock's, Fisheries and Forestry.	there is the significance role of agriculture sub-sectors towards the economic growth only forestry Showed insignificant relationship with GDP.
4	Titus O. Awokuse.	2008 In India	Agriculture Really Matter for Economic Growth in Developing Countries	Econometric methodology	real gross capital, labor, and the Hicks-neutral productivity term	Agriculture is an engine of Economic growth.
5	Muhammad Zahir Faridi	2012 in Pakistan	Contribution of agricultural exports to economic growth.	Johansen co-integration technique	labor, capital, agricultural exports, non-agricultural exports and inflation and GDP	The coefficient of agricultural exports has statistically significant impact on economic growth.
6	Xiaobo Wei, Jue Peng and Lu Cao	2014 in China	the Relationship between Agriculture Environmental Efficiency and Economic Growth	SBM model	Agriculture environmental efficiency	The relationship showing "U" shape, that is to say first decrease and then increase
7	Ramphul Ohlan,	2013 in India	Agricultural exports and the growth of agriculture	Simple regression (Auto Regressive Distributed Lag bounds testing approach and co-integration)	Farm exports and GDP	There is a positive and stable long-run equilibrium relationship between agricultural exports and GDP of agriculture
8	Olajide, O.T., Akinlabi, B. H.and Tijani, A.A.	2012 in Nigeria	Agriculture resource and economic growth in Nigeria	Ordinary Least Square regression method	Agriculture output and GDP	The results revealed a positive cause and effect relationship between gross domestic product (GDP) and agricultural output in Nigeria.

2.4   Conceptual Frame Work

A conceptual framework (theoretical framework) is used in research to outline possible courses of action or to present a preferred approach to conduct a research. Theoretical framework is the foundation on which the entire research project is based, and the study want to look on the contribution of the agriculture to the economic growth of Zanzibar. Based on the critical and literature review and also agriculture scenario of a Zanzibar the following conceptual frame work is chosen for this study. The independent variable is taken as agriculture which is classified in to three groups viz, crops, forest and fishing. The GDP is taken as proxy for economic growth which is dependent variable. **Diagram**

Independent variables   **Dependent variable**
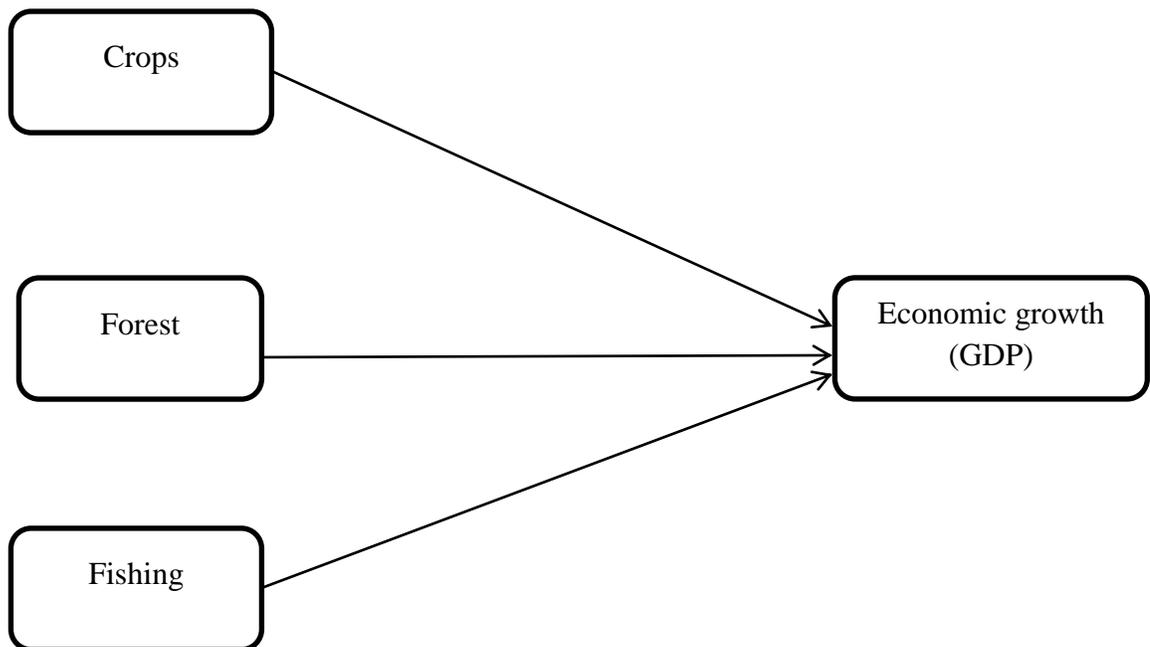
2.4.1 Model specification

The approach was to collate data for the agricultural sector output and GDP. By applying the multiple regressions in the model, economic growth which is the dependent variable is proxy by Gross Domestic Product (GDP). The independent variable is agricultural output. The statistical formulation of the model can therefore be presented as follows:

$$GDP = C + b1CR + b2FI + b3FO + \mu$$

Where by GDP defined as gross domestic product, C is a constant, CR is the contribution of crops to GDP, FI is the contribution of fishing to GDP and FO is the contribution of forest to GDP while b1, b2 and b3 are the constant elasticity coefficient of crops, fishing and forest respectively and μ is the error term.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This section focuses on the research techniques adopted for this study with the aim of achieving the research objectives. It elaborates the research design and provides details regarding the population, sample and sampling techniques and the research instruments used in collecting data for the study. It also discusses the data collection methods and data analysis plan. The term methodology refers as the way, methods, techniques, channels, or means that are systematically used to solve the research problems. Methodology is also understood as a scientific study on how any research work can be carried on or can be performed/done scientifically (Kothari, 2005).

3.2 Research area

A study area is geography for which data is analyzed in a report and/or map. The research was conducted in the Zanzibar area.

3.3 Research design

A research design is the arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure (Kothari 2004). In this study the quantitative approach was used as a design together with hypothesis testing as a purpose of the study in order to establish the relationship between the variables.

3.4 Population and sample size

Population refers to the entire group of people, event, or thing of interest that the researcher wishes to investigate. So in this study all element that their records have been taken will form the population and the sample size were the data of agriculture from 2005 to 2013 which contains three elements that can generate agriculture in Zanzibar.

3.5   Sampling techniques

Samples can be selected using two broad sampling techniques which are probability and non-probability sampling, in this study the non-probability sample which is purposive sampling was used as a sample technique because it associated with quantitative research. Although Zanzibar has agriculture history of many years, the study is based on nine years from 2005 to 2013. The confinement to this period is due to non-availability of data earlier to 2005.

3.6   Data collection methods

Is any process of preparing and collecting data, the purpose of data collection is to obtain information to keep on record, to make decisions about important issues, or to pass information on to others. The study was based on the secondary data and they were sourced from OCGS in Zanzibar. The variables for which data were sourced include crops products, forest products, and fishing products which are the part of agriculture subsectors.

3.7   Data analysis methods

The analysis that was made in this work was based on time series data and the historical data were taken on the perspective of the contribution of agriculture to the economic growth in Zanzibar. Due to the nature of the model formulation the regression method was used in obtaining the numerical estimates of the coefficients in the model and the data were collected for variables viz crops products, forest products and fishing products.

The trend in agriculture was analyzed in two stages. At the first stage descriptive statistic in the form of mean, standard deviation, minimum and maximum are calculated. At the second stage in order to know the nature of the trend the tsline (y) is applied.

In order to know the significant contribution of agriculture of Zanzibar the OLS regression is applied taking GDP as dependent variable and agriculture subsector as independent variable.

To know the relationship between agriculture and GDP, two tests were applied. The first one was Dickey fuller test for analyzing co-integration and the second test was Granger causality for the purpose of knowing the direction of the relationship between the variables. All tests applied using STATA special software program.

3.8 The expected relationship between agriculture subsector and GDP

S.no	Agriculture subsectors	Change	Economic growth (GDP)
1	Crops Products	Crop products increases	Increase in GDP
2	Fishing Products	Fishing products increases	Increase in GDP
3	Forest Products	Forest products increases	Increase in GDP

From the above scenario of expected relationship between agriculture subsector and GDP stated that if crop products increases, then the GDP also increases. Also if the Fishing products increases also the GDP will grow up to the same amount, the same as increases of Forest products will make the GDP to increase.

CHAPTER FOUR: DATA ANALYSIS AND FINDINGS

4.1   Introduction

This chapter analyses the data collected applying chosen tools of analysis and brings out the findings objective wise viz, trends in agriculture growth in Zanzibar, role of agriculture subsectors in economic growth and the relationship between agriculture and GDP.

4.2   Trends of agriculture growth in Zanzibar

The aim of this first objective is to know that the trends in agriculture which means that how the movements of agriculture are as the year goes in term of deterministic or stochastic trends. The data was analyses using descriptive statistic followed by tsline(y).the tsline (y) test helps in identifying the nature of trends viz: stochastic or deterministic trend. For the purpose, the agriculture activities are divided in to three groups viz, crops products, forest products and fishing products. The period of study covers for nine years from 2005 to 2013. The GDP of Zanzibar for the same period is taken as dependent variable. For analyzing trends the tools of analysis and variables used are shown below.

Objective	Tools of analysis	variables
To know the movement (trends) of agriculture from 2005 – 2013	Descriptive statistic and tsline(y)	Crops products, Forest products, Fishing products and GDP

For the purpose the relevant data in term of value of crops, forest, fishing and GDP for the years from 2005 to 2013 is ascertained and presented in table 4.2. For this data descriptive statistics is calculated by using STATA and the trends are presented in figure using tsliney. The trends, descriptive statistics are presented in 4.1 to 4.3 tables and the figures are presented in figure 4.1 to 4.4

Table 4.1: Gross Domestic product with crops products, forest products and fishing products from 2005 - 2013(values are in million)

YEAR	GDP market price	GDP %	CROPS PRODUCTS	FOREST PRODUCTS	FISHING PRODUCTS	AGRICULTURE
2005	394852	100	29900	1018	23279	54197
2006	509975	129	104200	1112	23522	128834
2007	589181	115.5	99700	1132	32682	133514
2008	7481	1.27	1596	1146	33043	35785
2009	8792	117.5	1829	1202	46006	49037
2010	9468	107.7	2011	1847	58300	62158
2011	11981	126.5	251	2147	80800	83198
2012	135420	1130	2563	1753	96100	100416
2013	14428	10.7	2847	2304	96100	101251

Source: office of chief government statistician (OCGS)

Table 4.2: trends in agriculture subsectors products

YEAR	CROPS PRODUCTS (%)	FOREST PRODUCTS (%)	FISHING PRODUCTS (%)	AGRICULTURE PRODUCTS (%)
2005	100	100	100	100
2006	348.5	109.2	101	232.7
2007	95.7	101.8	138.9	103.6
2008	1.6	101.2	101.1	26.8
2009	145.6	104.9	139.2	137
2010	109.95	136.7	126.7	126.8
2011	12.5	116.2	138.6	133.8
2012	1021	81.5	118.9	120.7
2013	111	131.4	100	100.8

Source: office of chief government statistician (OCGS)

Table 4.3: Descriptive statistics of the variable of the study(Values are in million)

Variable	Obs	Mean	Std. Dev.	Min	Max
gdp	9	186842	241826.6	7481	589181
cropsprodu~s	9	27210.78	43377.09	251	104200
forestprod~s	9	1517.889	497.3649	1018	2304
fishingpro~s	9	54425.78	29812.25	23279	96100
agriculture	9	83154.44	35240.96	35785	133514

Source: compiled from table 4.1 using stata

The following observation can be made from the analyses of table 4.1, 4.2 and 4.3

1) The GDP has gone up from 100% in 2005 to 1130% in 2012, but it has decreased to 10.7% in 2013. During this period the average GDP was Tshs 186842million and its standard deviation (SD) was Tshs 241826.6million with minimum of 7481 and maximum of TShs 589181million. The standard deviation is more than average of GDP which indicate highly uncertainty presented in GDP

2) The value of Crop products has gone up from 100% in 2005 to 111% in 2013, during this period the average of crop products wasTShs 27210.78million and its standard deviation (SD) was TShs 43377.09million with minimum of Tshs251million and maximum of Tshs 104200million. Based on standard deviation the fluctuation appeared to be low.

3) The value of Forest products has gone up from 100% in 2005 to 131.4% in 2013, during this period the average of Forest products was Tshs 1517.889million and its standard deviation (SD) was Tshs 497.3649million with minimum of Tshs 1018million and maximum of Tshs 2304million. It shows that there was increasing value of forest products during this period with more certainty as the standard deviation is far lower than average.

4) The value offishing products between 2005 and 2012 varied between 100% and 139.2% and came down to 100% in 2013. During this period the average of fishing products was Tshs 54425.78 million and its standard deviation (SD)

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was Tshs 29812.25million with minimum of Tshs 23279million and maximum of Tshs 96100million. It shows that though there was increase in the value of fishing products, there were fluctuations.

5) The value of Agriculture products has gone up from 100% in 2005 to 100.8% in 2013. During this period the average of Agriculture products wasTshs 83154.44 million and its standard deviation (SD) was Tshs 35240.96million with minimum of TShs 35785million and maximum of TShs 133514million. The tendency shows that there were widely fluctuations in between.

In order to know the nature of trends from agriculture products from 2005 to 2013, the results of tsline are shown in figure 4.1 to 4.4.

Figure 4.1: Trends of agriculture through crops products subsector
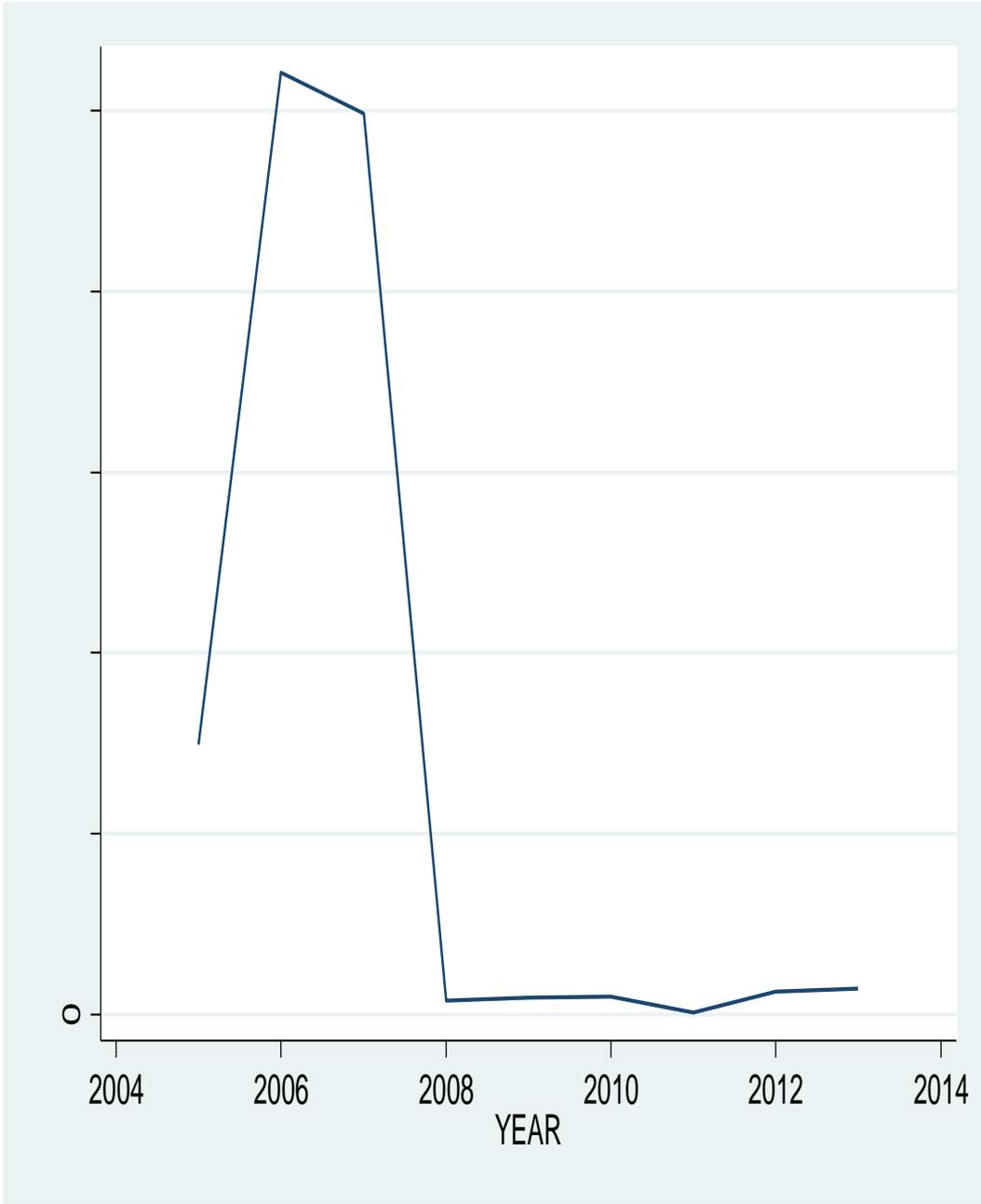
Figure 4.2: Trends of agriculture through forest products subsector
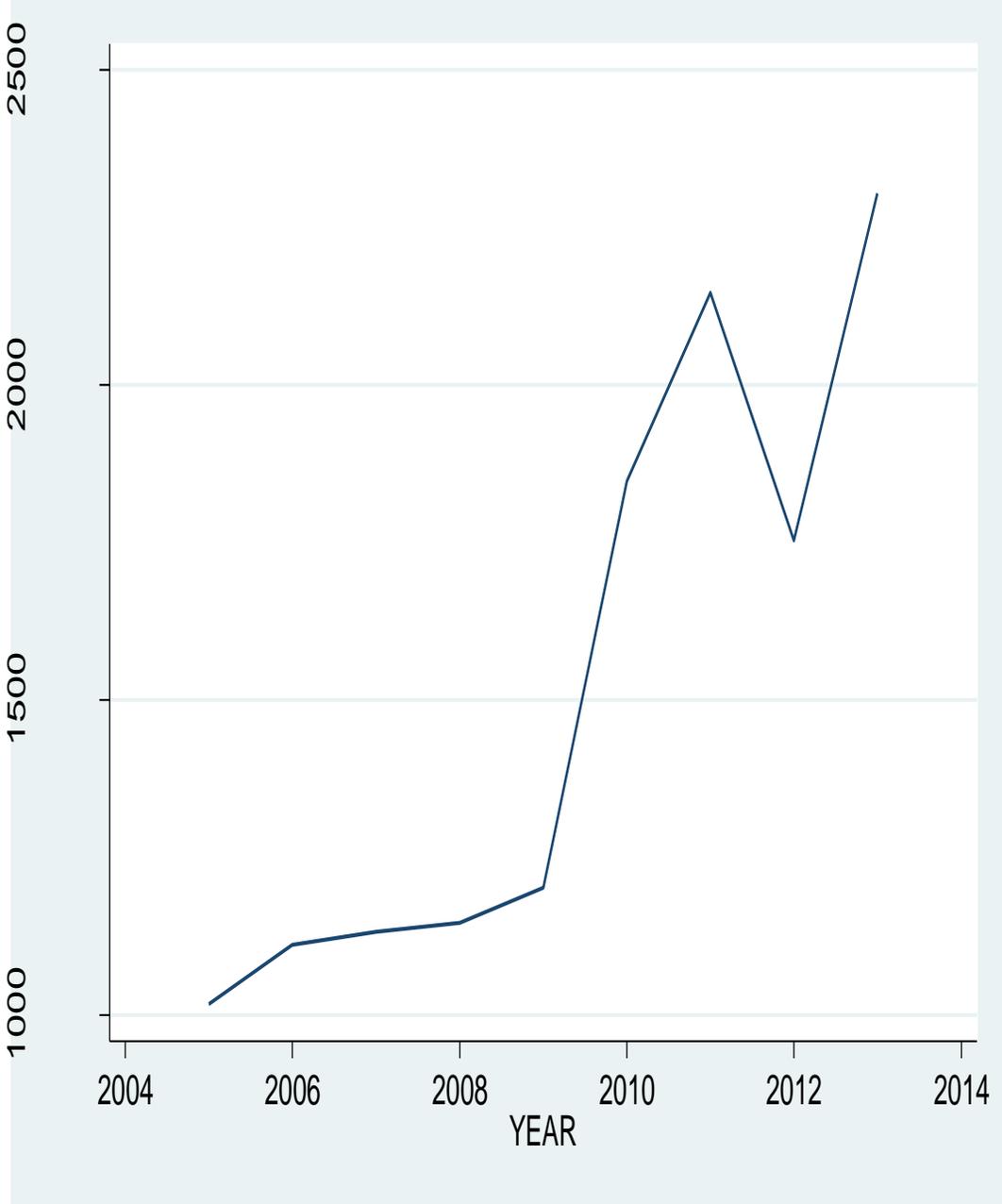
Figure 4.3: Trends of agriculture through fishing products subsector
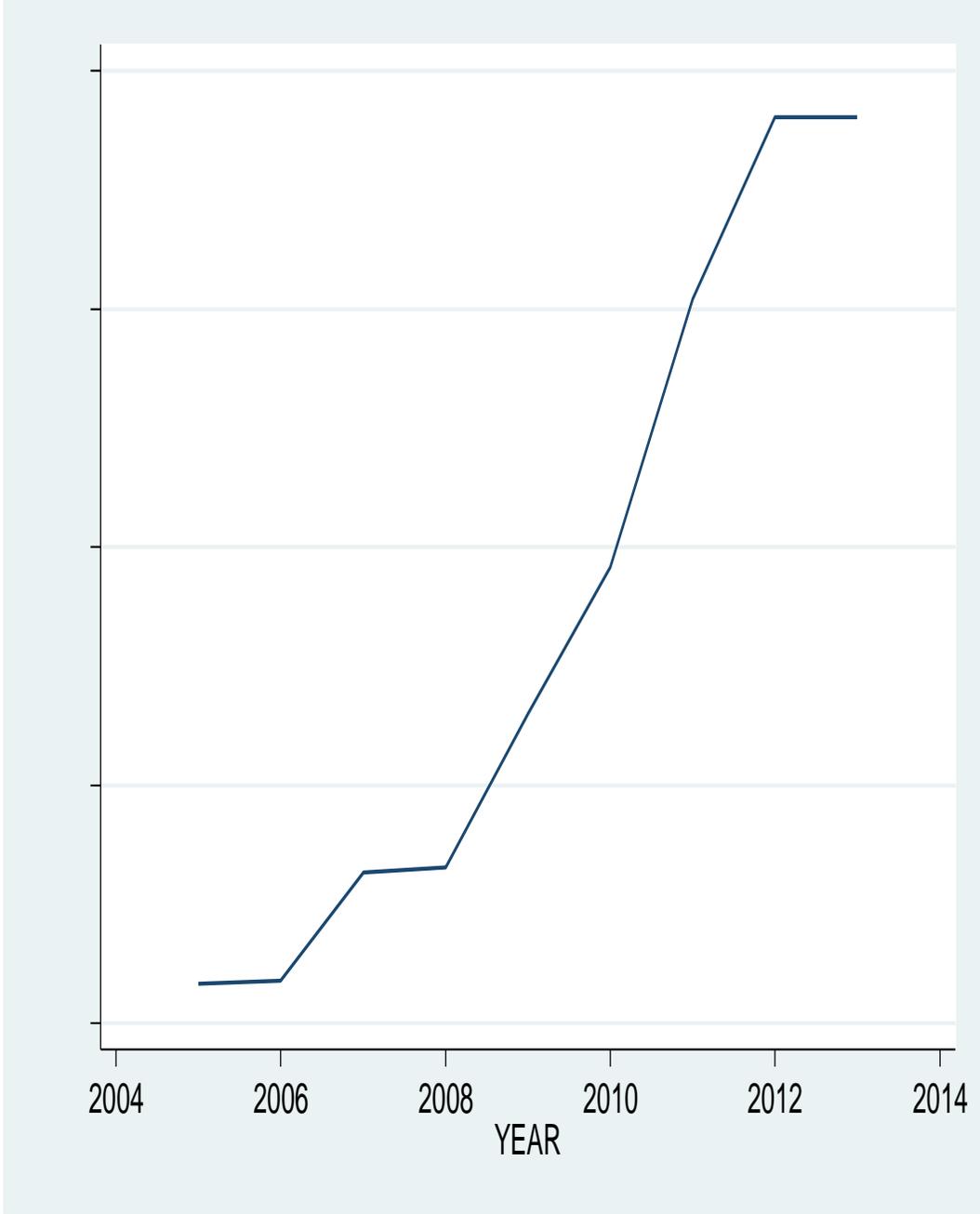
Figure 4.4: Trends of total agriculture products from 2005 to 2013
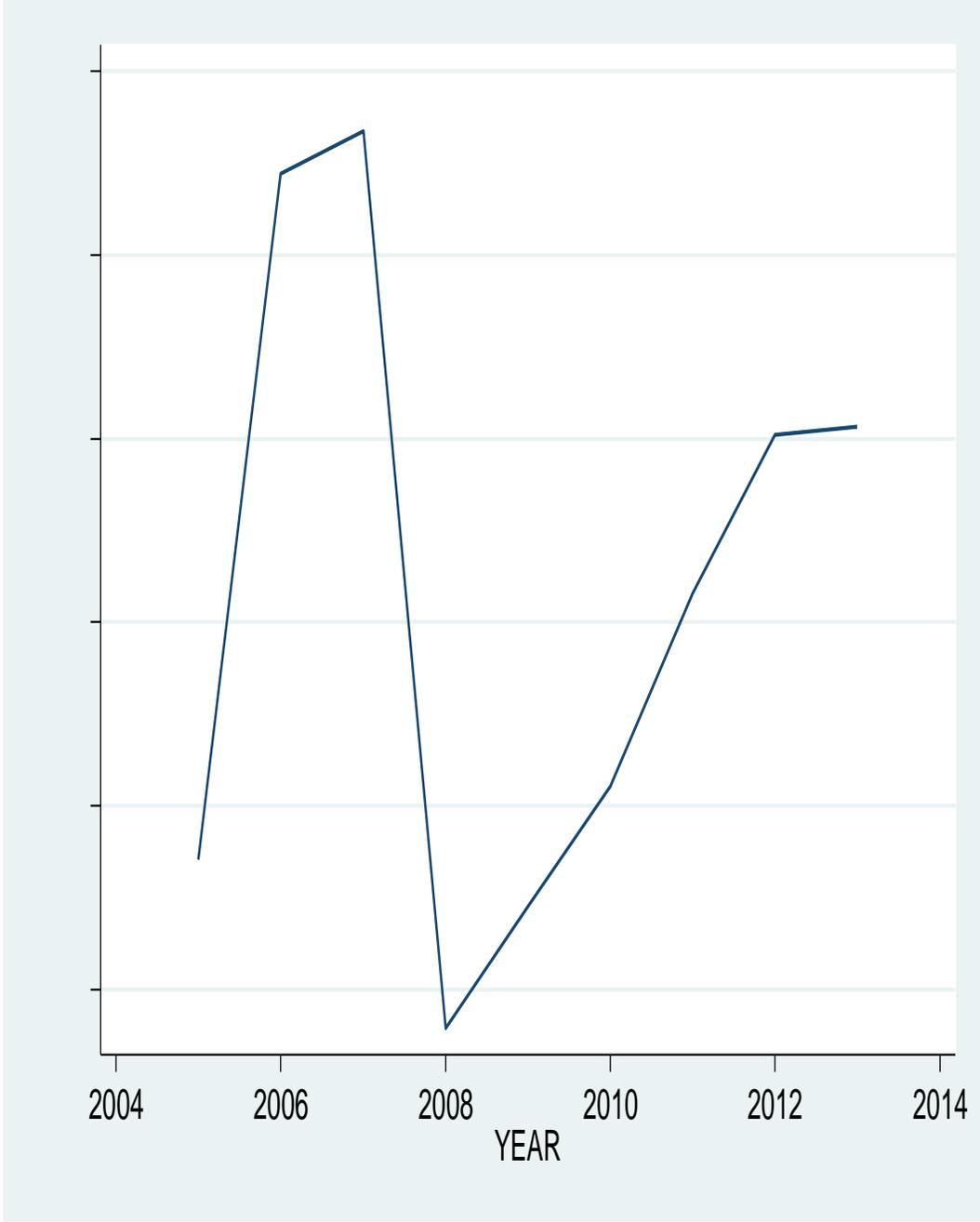
The following observation can be made from these figures;

6) The figure 4.1 show the nature of agriculture trend through crops products, during 2005 to 2006.The value of crop products increased from Tshs 104200 million to Tshs 299000 million then continues to decreases to Tshs1596 million in 2008. After that started to increases and decreases in small value up to 2013. It showed a stochastic trend because of prolonged increase and decrease on the value of crop products.

7) In figure 4.2the agriculture in term of forest products starting to grow in small amount from 2005 to 2009, then increases in high value from Tshs 1202 million in 2009 to Tshs 2147 million in 2011 then decreases to Tshs 1753 million in 2012 with increasing again to Tshs 2304 million in 2013. It showed a stochastic trend because of prolonged increase and decrease on the value of forest products.

8) The fishing products in figure 4.3 show that always increases from 2005 to 2013 where by its value starting from Tshs 1018 million in 2005 to Tshs 1847 million in 2010 up to Tshs 2304 million in 2013. It showed a deterministic trend because there was only growth.

9) The figure 4.4 which shows the trends of agriculture in term of (crops, forest and fishing products) from 2005 to 2013. The agriculture started to increases in 2006 and 2007 and decreases from Tshs 133514 million in 2007 to Tshs 35785million in 2008 but in the following year the agriculture started to grow again up to 2013. It showed a stochastic trend because of prolonged increase and decrease on the value of agriculture products.

From the above results it can be concluded that the entire agriculture products subsector has a random walk model of trends (stochastic trend) except fishing products which showed deterministic trends. This stochastic trend is due to prolonged period of increase followed by prolonged period of decrease as the year goes up.

4.3 Role of agriculture subsectors (contributing significantly) to the economic growth

The aim of this objective was to know which subsector of agriculture contributing significantly to the economic growth. For the purpose of achieving this objective multiple regressions is applied where by GDP used as dependent variable and subsector of agriculture as independent variable.

Table 4.4: Multiple Regression results

```
      Source |       SS           df       MS              Number of obs =         9
-------------+----------------------------------           F( 3,     5) =   14.41
       Model |  4.1933e+11         3  1.3978e+11           Prob > F      =  0.0068
    Residual |  4.8512e+10         5  9.7023e+09           R-squared     =  0.8963
-------------+----------------------------------           Adj R-squared =  0.8341
       Total |  4.6784e+11         8  5.8480e+10           Root MSE      =   98500
```

```
         gdp |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
cropsprodu~s |    4.968193   .9966002     4.99   0.004      2.40635    7.530035
forestprod~s |   -167.2929   165.9357    -1.01   0.360    -593.8441    259.2584
 fishingpro~s |    1.959849   2.891917     0.68   0.528    -5.474061     9.39376
       _cons |    198919.3   154975.8     1.28   0.256    -199458.8     597297.3
```

From the above table the following observation can be made;

- The value of R^2 is equal to 0.8963, this means that the agriculture subsectors which are crops products, forest products and fishing products can predict about 89.63% on the GDP growth of the Zanzibar
- The significant at 5% level of F test is 0.0068, this indicate that model can be taken as relevant.
- The crop products subsector contribute positively to the GDP and statistically significant because it has a positive coefficient of 4.968193 and p value of 0.004

- The forest products subsector contribute negatively to the GDP and statistically not significant because it has a coefficient of – 167.2929 and the p value of 0.360.

- The fishing products subsector although can contribute positively to the GDP but not significant because it has a coefficient of 1.959849 and the p value of 0.528

On the basis of above observation, it can be concluded that only crop products subsector influencing positively to the GDP and statistically significant although the fishing products subsector also can influence positively to the GDP but statistically not significant because the p value is greater than 0.05. As against this, the forest subsector contribution to GDP is negative, however not significant.

4.4 The relation between agriculture and economic growth

In order to establish the relationship between agriculture subsector and economic growth two tests are applied. The first one is to know co-integration between dependent and independent variables by applying Dickey fuller test. In order to know the direction of relationship granger causality test is applied between subsector of agriculture and GDP. The following aspects deal with the same

4.4.1 The relationship between value of total agriculture and GDP

To find the relationship (co integration) and direction (granger causality) between total value of agriculture products and GDP regression, Dickey fuller test and granger causality are applied for the data relating to 2005 – 2013. The results are presented in the tables 4.5 – 4.7

Table 4.5: Regression results between GDP and all products of agriculture

Source	SS	df	MS
Model	1.8852e+11	1	1.8852e+11
Residual	2.7932e+11	7	3.9903e+10
Total	4.6784e+11	8	5.8480e+10

Number of obs = 9
F(1, 7) = 4.72
Prob > F = 0.0663
R-squared = 0.4030
Adj R-squared = 0.3177
Root MSE = 2.0e+05

gdp	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
agriculture	4.355985	2.004054	2.17	0.066	-.3828496	9.09482
_cons	-175377.5	179456.3	-0.98	0.361	-599724.1	248969.1

Table 4.6: Co integration test between GDP and all products of agriculture

Dickey-Fuller test for unit root
Number of obs = 8

	Test Statistic	Interpolated Dickey-Fuller		
		1% Critical Value	5% Critical Value	10% Critical Value
Z(t)	-1.463	-3.750	-3.000	-2.630

MacKinnon approximate p-value for Z(t) = 0.5517

Table 4.7: Test for Direction between GDP and all products of agriculture

```
Vector autoregression

Sample:  2007 - 2013                              No. of obs    =         7
Log likelihood = -150.6062                        AIC           =  45.88749
FPE            =  6.01e+17                         HQIC          =  44.93243
Det(Sigma_ml)  =  1.67e+16                         SBIC          =  45.81022

Equation           Parms      RMSE     R-sq      chi2    P>chi2
```

Equation	Parms	RMSE	R-sq	chi2	P>chi2
gdp	5	47553.1	0.9838	426.1554	0.0000
agriculture	5	17826.2	0.9088	69.772	0.0000

	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
gdp						
gdp						
L1.	-1.782442	.1948581	-9.15	0.000	-2.164357	-1.400527
L2.	1.763919	.1214901	14.52	0.000	1.525803	2.002035
agriculture						
L1.	11.9166	1.079529	11.04	0.000	9.800766	14.03244
L2.	-8.882192	.5065787	-17.53	0.000	-9.875068	-7.889316
_cons	-266722.2	64277.39	-4.15	0.000	-392703.6	-140740.9
agriculture						
gdp						
L1.	-.3970108	.0730462	-5.44	0.000	-.5401787	-.2538429
L2.	.2244841	.0455428	4.93	0.000	.1352218	.3137464
agriculture						
L1.	2.471358	.4046816	6.11	0.000	1.678197	3.26452
L2.	-1.199198	.1899005	-6.31	0.000	-1.571396	-.8270003
_cons	-11873.83	24095.58	-0.49	0.622	-59100.3	35352.64

.

From the above observation it can be inferred that though there is a positive association between the value of total agriculture products and GDP it is not significant because of p value of 0.066.The co integration between the GDP and agriculture is not existed because the p value in table 4.6 is 0.5517 which is statistically not significant. With regard to the directional relationship between the variables, it shows that there is a two way direction influence between the value of agriculture products and GDP, because both variables have significant p value which is 0.000.

4.4.2 The relationship between value of crop products and GDP

To find the relationship (co integration) and direction (granger causality) between total value of crop products and GDP, regression, Dickey fuller test and granger causality test are applied for the data relating to 2005 – 2013. The results are presented in the tables 4.8 – 4.10

Table 4.8: Regression results between GDP and value of Crops products

Source	SS	df	MS		Number of obs =	9
					F(1, 7) =	47.73
Model	4.0801e+11	1	4.0801e+11		Prob > F =	0.0002
Residual	5.9835e+10	7	8.5478e+09		R-squared =	0.8721
					Adj R-squared =	0.8538
Total	4.6784e+11	8	5.8480e+10		Root MSE =	92454

gdp	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
cropsprodu~s	5.206285	.7535665	6.91	0.000	3.424383	6.988186
_cons	45174.95	37016.42	1.22	0.262	-42354.98	132704.9

Table 4.9: Co integration test between GDP and value of Crops products

```
Dickey-Fuller test for unit root                      Number of obs   =         8

                            ————————— Interpolated Dickey-Fuller —————————
                  Test        1% Critical        5% Critical       10% Critical
               Statistic         Value              Value              Value
          ————————————————————————————————————————————————————————————————————————
Z(t)           -6.916           -3.750             -3.000             -2.630
          ————————————————————————————————————————————————————————————————————————
MacKinnon approximate p-value for Z(t) = 0.0000
```

Table 4.10: Test for Direction between GDP and value of Crops products

```
Vector autoregression

Sample:  2007 - 2013                              No. of obs   =          7
Log likelihood = -137.6806                        AIC          =   42.19446
FPE          =   1.50e+16                          HQIC         =   41.23941
Det(Sigma_ml) =   4.16e+14                         SBIC         =   42.11719

Equation          Parms      RMSE      R-sq      chi2      P>chi2
───────────────────────────────────────────────────────────────
gdp                   5     77388.4    0.9572    156.5502    0.0000
cropsproducts         5     1638.09    0.9993    10703.11    0.0000
───────────────────────────────────────────────────────────────
```

	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
gdp						
gdp						
L1.	-.4091347	.3863733	-1.06	0.290	-1.166413	.3481431
L2.	1.533383	.2587086	5.93	0.000	1.026324	2.040443
cropsprodu~s						
L1.	4.067529	2.174046	1.87	0.061	-.1935231	8.32858
L2.	-9.517493	1.313699	-7.24	0.000	-12.0923	-6.942689
_cons	52136.12	24613.44	2.12	0.034	3894.665	100377.6
cropsprodu~s						
gdp						
L1.	-.0219801	.0081784	-2.69	0.007	-.0380095	-.0059507
L2.	.2901836	.0054761	52.99	0.000	.2794506	.3009166
cropsprodu~s						
L1.	.4407735	.0460182	9.58	0.000	.3505795	.5309675
L2.	-1.719794	.0278072	-61.85	0.000	-1.774295	-1.665293
_cons	1805.341	520.9946	3.47	0.001	784.21	2826.471

.

From the above observation in table 4.8, crop products contribute positively to the GDP and statistically significant because of 0.000 p value which is less than 0.05. the R square was 0.8721, which shows that the value of crop products explain about 87.21% in GDP. The F test showed significant value of 0.0002. Based on this the model can be taken as input for this study. The co - integration between GDP and value of crop products is existed. This means that they are moving together since the p value is 0.000 which is statistically significant. With regard to the directional relationship between the variables, it shows that there is only one way direction where by the crop products subsector contains information that can predict GDP since it has a significant p value of 0.007 while GDP has 0.061 which is not significant.

4.4.3 The relationship between value of forest products and GDP

To find the relationship (co integration) and direction (granger causality) between value of forest products and GDP regression, Dickey fuller test and granger causality are applied for the data relating to 2005 – 2013. The results are presented in the tables 4.11 – 4.13

Table 4.11: Regression results between GDP and value of Forest products

```
    Source |       SS       df       MS              Number of obs =        9
-----------+------------------------------           F(  1,      7) =     4.07
     Model | 1.7202e+11       1  1.7202e+11           Prob > F      =   0.0834
  Residual | 2.9582e+11       7  4.2260e+10           R-squared     =   0.3677
-----------+------------------------------           Adj R-squared =   0.2774
     Total | 4.6784e+11       8  5.8480e+10           Root MSE      =   2.1e+05
```

```
-----------------------------------------------------------------------------
        gdp |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
------------+----------------------------------------------------------------
 forestprod~s| -294.8289   146.1318    -2.02   0.083    -640.3756    50.71788
      _cons |   634359.5   232155.2     2.73   0.029     85399.67     1183319
-----------------------------------------------------------------------------
```

Table 4.12: Co integration test between GDP and value of Forest products

```
Dickey-Fuller test for unit root                    Number of obs   =         8

                              ─────────── Interpolated Dickey-Fuller ───────────
                    Test        1% Critical        5% Critical       10% Critical
                 Statistic         Value              Value              Value
─────────────────────────────────────────────────────────────────────────────────
Z(t)              -1.797          -3.750             -3.000             -2.630
─────────────────────────────────────────────────────────────────────────────────
MacKinnon approximate p-value for Z(t) = 0.3821
```

Table 4.13: Test for Direction between GDP and value of Forest products

```
Vector autoregression

Sample: 2007 - 2013                              No. of obs    =        7
Log likelihood = -139.1636                       AIC           = 42.61817
FPE            =  2.29e+16                        HQIC          = 41.66311
Det(Sigma_ml) =  6.35e+14                         SBIC          =  42.5409
```

Equation	Parms	RMSE	R-sq	chi2	P>chi2
gdp	5	315177	0.2901	2.860353	0.5815
forestproducts	5	320.814	0.8578	42.21194	0.0000

	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
gdp						
gdp						
L1.	.4903261	.3321524	1.48	0.140	-.1606807	1.141333
L2.	-.1083495	.3998766	-0.27	0.786	-.8920932	.6753942
forestprod~s						
L1.	85.39112	295.1454	0.29	0.772	-493.0831	663.8654
L2.	-124.3222	233.2557	-0.53	0.594	-581.495	332.8506
_cons	90000.56	438824.6	0.21	0.837	-770079.8	950080.9
forestprod~s						
gdp						
L1.	-.000342	.0003381	-1.01	0.312	-.0010046	.0003207
L2.	-.0013561	.000407	-3.33	0.001	-.0021539	-.0005583
forestprod~s						
L1.	-.1427683	.3004239	-0.48	0.635	-.7315883	.4460517
L2.	.295901	.2374274	1.25	0.213	-.1694482	.7612501
_cons	1811.071	446.6727	4.05	0.000	935.6088	2686.534

.

From the above observation it can be inferred that there is a negative association between the value of forest products and GDP, it is not statistically significant because of p value of 0.083.The co- integration between the GDP and value of forest products is not existed because the p value was 0.3821 which is statistically not significant. With regard to the directional relationship between the variables, it shows that there is only one way direction influence i.e. the value of forest products influence the GDP, since it has a significant p value of 0.001. The influence of GDP is not on the value of forest products because it has a p value of 0.594 which is not significant.

4.4.4 The relationship between the value of fishing products and GDP

To find the relationship (co integration) and direction (granger causality) between value of forest products and GDP, regression, Dickey fuller test and granger causality are applied for the data relating to 2005 – 2013. The results are presented in the tables 4.14 – 4.16

Table 4.14: Regression results between GDP and value of Fishing products

Source	SS	df	MS		Number of obs =	9
					F(1, 7) =	3.90
Model	1.6746e+11	1	1.6746e+11		Prob > F =	0.0888
Residual	3.0038e+11	7	4.2912e+10		R-squared =	0.3579
					Adj R-squared =	0.2662
Total	4.6784e+11	8	5.8480e+10		Root MSE =	2.1e+05

gdp	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
fishingpro~s	-4.853062	2.456672	-1.98	0.089	-10.66217	.9560436
_cons	450973.7	150483.6	3.00	0.020	95136.51	806810.8

Table 4.15: Cointegration test between GDP value offishing products

```
Dickey-Fuller test for unit root               Number of obs   =         8

                        ——————— Interpolated Dickey-Fuller ———————
                 Test     1% Critical      5% Critical     10% Critical
             Statistic       Value            Value            Value
———————————————————————————————————————————————————————————————————————
 Z(t)          -1.881        -3.750          -3.000           -2.630
———————————————————————————————————————————————————————————————————————
MacKinnon approximate p-value for Z(t) = 0.3409
```

Table 4.16: Test for Direction between GDP and value offishing products

```
Vector autoregression

Sample:  2007 - 2013                              No. of obs      =          7
Log likelihood = -160.8507                        AIC             =  48.81449
FPE            =  1.12e+19                         HQIC            =  47.85943
Det(Sigma_ml)  =  3.12e+17                         SBIC            =  48.73722

Equation            Parms       RMSE     R-sq       chi2     P>chi2
────────────────────────────────────────────────────────────────────
gdp                     5      274386   0.4620   6.010037    0.1984
fishingproducts         5     8019.18   0.9723   245.2632    0.0000
────────────────────────────────────────────────────────────────────
```

	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
gdp						
gdp						
L1.	.4975074	.2889651	1.72	0.085	-.0688538	1.063869
L2.	-.5981324	.4228164	-1.41	0.157	-1.426837	.2305726
fishingpro~s						
L1.	-19.95671	13.31742	-1.50	0.134	-46.05836	6.144946
L2.	19.57551	15.15039	1.29	0.196	-10.11872	49.26973
_cons	375239.4	264589.9	1.42	0.156	-143347.2	893826.1
fishingpro~s						
gdp						
L1.	-.0239159	.0084453	-2.83	0.005	-.0404683	-.0073634
L2.	-.0133692	.0123572	-1.08	0.279	-.0375888	.0108505
fishingpro~s						
L1.	.8844265	.3892137	2.27	0.023	.1215816	1.647271
L2.	-.1516257	.4427842	-0.34	0.732	-1.019467	.7162154
_cons	30203.89	7732.883	3.91	0.000	15047.72	45360.07

.

From the above observation it can be inferred that there is a negative association between the value of fishing products and GDP, it is not significant because of p value of 0.089. The co integration between the GDP and value of fishing products is not existed because the p value was0.3409 which is statistically not significant. With regard to the directional relationship between the variables, it shows that there is only one way direction influence i.e. the value of fishing products influence the GDP, since it has a significant p value of 0.005. The influence of GDP is not on the value of fishing products because it has a p value of 0.594 which is not significant.

From the forgoing analysis it can be concluded that the value of total agriculture products and its subsectors showed a stochastic trend except fishing products where it has deterministic trends. Among all the subsectors of agriculture only the value of crop products contribute significantly to the GDP. Among all the subsector of agriculture only the value of crop products consists of co-integration with GDP. The total agriculture products bears two way relationship whereas all subsectors of agriculture maintain only one relationship i.e. subsectors has impact on GDP but not otherwise.

CHAPTER FIVE

5.1   Introduction

This chapter presents the summary of the study, key conclusion made on this study, recommendation and the area for future research. The conclusion made according to the three objectives of the study which include Trends of agriculture, areas which contribute significantly to the economic growth andthe relationship between agriculture and economic growth, followed by some suggestion.

5.2 Summary

In recent decades, the potential contribution of agriculture to economic growth has been a subject of much debate among development economists. While some Contend that agricultural development is a precondition to industrialization, others strongly disagree and argue for a different path. Despite much debate and qualitative analyses of the contribution of agriculture to economic growth and development, few empirical investigations on this issue exist. This paper examines the contribution of agriculture to the Zanzibar economy but in quantitative design from 2005 to 2013.

The methodology used was Quantitative approach as a design whereby a sample taken from a population from the year 2005 to 2013. Time series data used and has been collected from office of chief government statistician (OCGS), the period of study was 2014 and the variables used was Crop products, Forest products and Fishing products as independent and the GDP as dependent variable. The tools of analysis applied in this study include descriptive statistic followed by tsline (y), multiple regression, co-integration followed by Granger causality test for the first, second and third objective respectively.

The findings revealed that agriculture have a random walk trends (stochastic trends). With regard to the subsector of agriculture, the study identified that only crops products contribute significantly to the economic growth. With regard to the third objective the results suggested that agriculture and GDP are not co-integrated and

only crop products among the subsector of agriculture is co-integrated with GDP but in only one direction where by crop products influence the GDP.

5.3   Conclusion

Results from empirical analyses can be concluded to the following;

The study reveals that the trend of agriculture is a random walk and varies over time which means it graphs takes the shape of stochastic trend due to prolonged increase followed by prolonged decrease in different time but only fishing products subsector appeared deterministic trend.

Also the results concluded that among the agriculture subsectors only crops products subsector is the area that contributing significantly to the economic growth although fishing products has positive coefficient but statistically not significant.

The results also suggested that GDP and total agriculture are not moving together but only crops products among the agriculture subsectors moving together with GDP while in the side of direction there are two way directions between total agriculture and GDP and only one way direction between agriculture subsectors and GDP. So these results show that the agriculture has important contribution to the Zanzibar economy.

5.4 Scope for further study

- From the second objective of this study results reveals that only fishing contribute negatively to the GDP, so this is the one area where by the government attention is required.
- All agriculture subsectors helping to influence the GDP while the GDP not helping to influence agriculture subsectors, also this is the area for further study.

5.5   Recommendation

- The government should provide more funding for agricultural universities in the country to carry out more research on all aspect of agricultural output, such as crops, forest, fishing and crops preservation.

- The bank of Tanzania (BOT) should come out with stable policy guideline to enable commercial banks to give out loans to farmers at a very low interest rate in order to help them expand their production capacity.

- The government should train more extension workers to educate farmers in the use of modern production techniques to help boost the country's production capacity.

- Establishment of more research Institute to improve seedling production

- Government should encourage more exportation of agricultural output as this in turn will enhance external foreign exchange earnings and improve the competitiveness of agricultural product in the international markets.

- Encourage the use of irrigation farming system and provision of storage facilities for seasonal products as means of improving the country's agricultural output.

- Government should encourage the use of modern mechanized farm tools, and support the prices of agro-chemical and fertilizer for farmers.

- Government should concentrate on fishing products subsector why it contribute negatively to the GDP

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APPENDICES

Gross Domestic product with crops products, forest products and fishing products from 2005 – 2013 (values are in million)

YEAR	GDP	CROPS PRODUCTS	FOREST PRODUCTS	FISHING PRODUCTS	AGRICULTURE
2005	394852	29900	1018	23279	54197
2006	509975	104200	1112	23522	128834
2007	589181	99700	1132	32682	133514
2008	7481	1596	1146	33043	35785
2009	8792	1829	1202	46006	49037
2010	9468	2011	1847	58300	62158
2011	11981	251	2147	80800	83198
2012	135420	2563	1753	96100	100416
2013	14428	2847	2304	96100	101251

Source: office of chief government statistician (OCGS)

Gross Domestic product with agriculture from 2005 – 2013 (values are in million)

GDP	AGRICULTURE	YEAR
394852	54197	2005
509975	128834	2006
589181	133514	2007
7481	35785	2008
8792	49037	2009
9468	62158	2010
11981	83198	2011
135420	100416	2012
14428	101251	2013

Source: office of chief government statistician (OCGS)