

AGRICULTURE AND ECONOMIC GROWTH IN SOMALIA (1999-2011)

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DECLARATION

I **AHMED MUMIN ALI OSMAN** registration number **BEC/32049/112/DF** declare that this research report is my work and it has never been submitted to any institution for any academic award.

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APPROVAL

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ABSTRACT

The study focused on Agriculture and economic growth in Somalia (1991-2011)

Its objectives were; to establish the trend of Agriculture in Somalia (1999-2011), to establish the trend of Economic growth of Somalia (1999-2011), to investigate the effect Agriculture on Economic growth in Somalia (1999-2011).

The hypothesis of the study was there is no significant relationship between Agriculture and economic growth in Somalia time series analysis such as Correlation analysis, regression analysis mechanisms were used. The trend of Agriculture and economic growth has shown cyclical fluctuation for the period under study.

Using the correlation, regression approach, there was a strong positive correlation between Agriculture and Economic growth($r = 0.733$), there was also significant relationship between Agriculture and economic growth at 0.05 level of significance).

In conclusion therefore both Agriculture and Economic growth has a general increase, there is a positive relationship between Agriculture and economic growth in Somalia which agreed with Karl et al (2003), Gallup et al (1997), Tiffin et al (2006), Katirciglu (2006) study on Agriculture and economic growth and found a significant relationship between agriculture and economic growth, this has implied that agriculture plays a very important role in economic growth of Somalia.

ACRONYMS

CBS	Central Bank of Somalia
GDP	Gross Domestic Product
GNP	Gross National Product
IFS	International Financial Statistic
IMF	International Monetary finance
MOA	Ministry of Agriculture
NAFP	National Accelerated Food Production
OFN	Operation Feed the Nation
SADC	South Africa Development Cooperation
UBOS	Uganda Bureau of Statistics
USD	United States Dollar
WB	World Bank

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CHAPTER ONE

PROBLEM AND ITS SCOPE

1.1 INTRODUCTION

In many regions-including Europe, North America China and Brazil humanity has become adopted to raising agricultural yield through using inputs like fertilizers and pesticides. Yet in many poorer countries with low productivity rates and growing population, agriculture continues to expand into marginal and fragile lands. The agriculture is therefore the farther of all other economic activities if it is well maintained there is progress of these activities but if it is neglected these activities will decline on the world as if they are oceans (**Diouf, 1994**).

In most developed countries of the economic world, agriculture has been the main pillar stone of social economic development through their people's strong commitment. It has launched the industrialization due to its abundant outputs. It has also contributed much in national economic growth of these countries. In the area of the East African economies like Kenya, Tanzania and Somalia the agriculture revolution is needed for the poverty alleviation program as the households depend on it for their daily diet and income through the export made of agriculture products to the external markets. The land has been therefore exploited with their new modern technologies in order to export for aboard (**Ghulam, 1965**)

In the same way to Somalia, for the agriculture sector to realize its full potential, credit availability is the next with banking sector with their strong presence in rural areas and microfinance institutions which have strong vocation to lend to very small businesses without security (**Daud, 1985**). However despite the success of agriculture towards an adequate economy in some countries of the world, the country of Somalia is still small as indicated by World Bank. Its agriculture accounted for 35% of GDP (Gross Domestic Product) in 2006. The challenges currently facing the country are building up its infrastructure, provision of the agriculture extension services and development of its labor force (**World Bank, 2004**).

Economic growth has traditionally been attributed to the accumulation of human and physical capital, and increased productivity arising from technological innovation. Economic growth was also the result of developing new products and services, which have been described as demand creating. Economic growth is the increase in the amount of the goods and services produced by an economy over time. It is conventionally measured as the percent rate of increase in real gross domestic product. Growth is usually calculated in real terms, i.e., inflation-adjusted terms, in order to obviate the distorting effect of inflation on the price of the goods produced. In economics, "economic growth" or "economic growth theory" typically refers to growth of potential output, that is, production at "full employment"**(Robert M. Solow 1956)**.

Professor **Kuznets (1973)** argues rather forcefully that economic growth is essentially a quantitative concept and hence if we are to make substantial progress in the empirical and theoretical analysis of the growth phenomenon we must consider the quantitative aspect as basic.

The economy of Africa consists of the trade, industry, agriculture, and human resources. As of 2012, approximately 1.07 billion people were living in 54 different countries. Africa is a resource-rich continent but many African people are poor. Recent growth has been due to growth in sales in commodities, services, and manufacturing. Africa is the world's poorest inhabited continent, as measured by GDP per capita. However, parts of the continent have made significant gains over the last few years. In recent years, African countries consist of the fastest growing economies in the world **(Lund et al ;2012)**.

According to the CIA and the Central Bank of Somalia, despite experiencing civil unrest, Somalia has maintained a healthy informal economy, based mainly on livestock, remittance/money transfer companies and telecommunications. Due to a dearth of formal government statistics and the recent civil war, it is difficult to gauge the size or growth of the economy. For 1994, the CIA estimated the GDP at \$3.3 billion. In 2001, it

was estimated to be \$4.1 billion. By 2009, the CIA estimated that the GDP had grown to \$5.731 billion, with a projected real growth rate of 2.6%.

Oral et al (1996) defined Agriculture as the cultivation of land, raising and rearing of animals for the purpose of production of food for man, animals and industries; Lewis' Encyclopedia (1970) defined agriculture as the care of live stock, forestry, and some manufacturing, as butter marking. Therefore agriculture is the growing of crop and rearing of animal, this was measured in term of value added (billion USD).

There are so many methods of measuring economic growth that is; Gross National Product, Gross Domestic Product, Net National Product among others but for this case the study adopted measuring economic growth in term of Gross Domestic Product since it is more reliable. Gross Domestic Product :According to **UBOS (2012)** Economic growth as the total value of goods and services produced within the economic territory of the country, **Jeff Holt (2007)** defined economic growth as the total market value of all final goods and services produced annually within the boundaries of the country whether by national or foreigner supplied resources. The study adopted Jeff definition and it was measured in billion US dollar.

1.2 Statement of the problem

Agriculture is an important economic growth in Somalia not only in terms of meeting the food needs of the population but also in terms of generating income through crop sales and agricultural labor opportunities. With roughly 50% of population's cereal requirements are met through domestic production, Agriculture is a major component particularly for two of the main rural livelihood systems in the Horn of Africa country: Agro-pastoralist, mix of agriculture and livestock production based livelihood and Agriculturalist, agriculture based livelihood

Although agriculture sector suffers from insufficient access to finance and insufficient investment capital for farming, agro-processing and export development. Low productivity and high vulnerability of the agriculture sector make bank reluctant to

offer financial services to rural farmers largely due to lack of information on profitability of value chain activities(**World Bank, 2011**).

Based on the consideration of is activity and of the continuing constraints facing the economy in general and the agriculture sector in particular, this study therefore seeks to investigate the contribution of Agriculture towards Economic growth in Somalia.

1.3 Purpose of the Study

The purpose of the study was to investigate the effect of Agriculture on economic growth within a period of seventeen years (1995 to 2011), to determine the trend of Agriculture and economic growth and the theory stated was tested.

1.4 Research objectives

To establish the trend of Agriculture output in Somalia (1999 to 2011)

To determine the trend of economic growth in Somalia (1999 to 2011)

To investigate the effect Agriculture on economic growth rate in Somalia (1999 to 2011)

1.5 Research Questions

What is the trend of Agriculture in Somalia?

What is the trend of economic growth in Somalia?

What is the effect Agriculture on economic growth in Somalia?

1.6 Hypothesis of the study

HA: there is a significant relationship between agriculture and economic growth in Somalia (1999-2011).

1.7 Scope of the study

1.7.1 Content scope

The study focused on the establishment of the trend of Agriculture in Somalia (1999 to 2011), the trend of economic growth in Somalia (1999 to 2011) and to investigate the effect of Agriculture on economic growth in Somalia, this shall be investigated empirically using the data starting from 1999 to 2011.

1.7.2 Geographical Scope

The study was conducted in Somalia (from 6th August 2013 to 201st December 2013), Somalia occupies a strategic position in the horn Africa in addition to ties with other African countries, it has close religious and historical links with the Arab and Islamic world and has a seat in both of African Union (AU) and Arab League, Somalia has a boarder with Djibouti north, Ethiopia west, Kenya south and Indian ocean east.

1.7.3 Theoretical scope

The study was based on theory by **Arthur L. (1955)**; which states that economic development is a process of relocating factors of production from the agricultural sector characterized by low productivity and the use of traditional technology to a modern industrial sector with higher productivity.

1.7. 4 Time scope

The study was conducted for five months, the researcher used three months to do the proposal and two months were used for data analysis making up a full report this time was used to review the thirteen-year time series data that is, from 1999 to 2011 in Somalia since this was enough to review all the literature on Agriculture and economic growth.

1.8 Significance.

The government policy / makers; the government can base on these findings of the study to formulate and implement Agriculture policies, Economic growth policies, such policies can be a platform for the sustained economic growth.

The study is useful to academia, especially researchers who may be interested in carrying out empirical studies on Agriculture and economic growth.

This study is useful to individuals in that it will help them to understand how Agriculture has led to economic growth in Somalia.

1.9 Operational definitions

Agriculture is defined as the cultivation of land, raising and rearing of animals for the purpose of production of food for man, animals and industries and it was measured in term of value added in billion of USD.

Economic growth is the increase in the level of goods and services of a country within a fixed period of time, in this case economic growth will be measured in term of Gross Domestic Product therefore GDP is defined Gross domestic product as the total market value of all final goods and services produced annually within the boundaries of the country whether by national or foreigner-supplied resources the unit of measurement was in term of billion US dollars

A farm is an area of land, or, for agriculture, lake, river or sea, including various structures, devoted primarily to the practice of producing and managing food fibers and, increasing fuel. It is the basic production facility in food production.

Agricultural productivity is measured as the ratio of agricultural outputs to agricultural inputs. While individual products are usually measured by weight, their varying densities make measuring overall agricultural output difficult. Therefore, output is usually measured as the market value of final output, which excludes intermediate products such as corn feed used in the meat industry.

CHAPTER TWO

LITERATURE REVIEW

2.1 Concepts, Ideas, Opinions from the Authors

Agriculture is the cultivation of land, raising and rearing of animals for the purpose of production of food for man, animals and industries. It involves and comprises of crop production, livestock and forestry, fishery, processing and marketing of those agricultural production. It accounts for about 65% of the GDP and employs 65% of the workforce. Livestock contributes about 40% to economic growth. and more than 50% of export earnings Other export includes fish, charcoal and bananas; sugar, sorghum and corn are products for the domestic market. According to the Central Bank of Somalia, imports of goods total about \$460 million per year, and have recovered and even surpassed aggregate imports prior to the start of the civil war in 1991. Exports which total about \$270 million annually, have also surpassed pre-war aggregate export levels but still lead to a trade account deficit of about \$190 million US dollars per year. However, this trade deficit is far exceeded by remittances sent by Somalis in the Diaspora, which have helped sustain the import level **(World Bank 2005)**.

With the advantage of being located near the Arabian Peninsula, Somali traders have increasingly begun to challenge Australia's traditional dominance over the Persian Gulf Arab livestock and meat market, offering quality animals at very low prices. In response, Persian Gulf Arab states have started to make strategic investments in the country, with Saudi Arabia building livestock export infrastructure and the United Arab Emirates purchasing large farmlands. Somalia is also a major world supplier of frankincense and myrrh. Additionally, fishing fleets from Europe and Asia have reached commercial fishing agreements in the northern Punt land region.

The modest sector based on the processing of agricultural products, accounts for 10% of Somalia's Economic. Prior to the outbreak of the civil war in 1991, the roughly 53 state-owned small, medium and large manufacturing firms were foundering, with the

ensuing conflict destroying many of the remaining industries. However, primarily as a result of substantial local investment by the Somali Diasporas, many of these small-scale plants have re-opened and newer ones have been created. The latter include fish-canning and meat-processing plants in the north, as well as about 25 factories in the Mogadishu area, which manufacture pasta, mineral, confection, plastic bags, hides and skins, detergent and soap, aluminum, foam mattresses and pillows, fishing boats, carry out packaging, and stone processing. According to the UNDP, investments in light manufacturing have expanded in Bosaso, Hargeisa and Mogadishu in particular indicating growing business confidence in the economy. To this end, in 2004, an \$8.3 million Coca-Cola bottling plant opened in Mogadishu, with investors hailing from various constituencies in Somalia. The robust private sector has also attracted foreign investment from the likes of General Motors and Dole Fruit **(Granger et al 1988)**

The national agriculture extension strategy therefore aims to contribute in achieving the national and international development goal such as (i) 2030 which considers agriculture sector as the main source of economic growth of the country (ii) Poverty reduction strategy which currently entered its second phase called economic development and poverty reduction strategy 2008-2012, (iii) national agriculture policy (iv) strategic plan for the transformation of agriculture millennium development goal and NEPAD perspective **(UNCTAD 2010: 10)**.

In other words, the main purpose of agriculture to the farmers is to meet the requirement of economic growth of the country, the effectiveness of this agriculture to the farmers as the receivers of the economic growth is seen in the areas such as agriculture and livestock, manufacturing industry, education and health care. The productivity of a region's farms is important for many reasons. Aside from providing more food, increasing the productivity of farms affects the region's prospects for growth and competitiveness on the agricultural market, income distribution and savings, and labour migration. An increase in a region's agricultural productivity implies a more efficient distribution of scarce resources. As farmers adopt new techniques and differences in productivity arise, the more productive farmers benefit from an increase

in their welfare while farmers who are not productive enough will exit the market to seek success elsewhere (**Gallup et al 2004**).

As a region's farms become more productive, its comparative advantage in agricultural products increase, which means that it, can produce these products at a lower opportunity cost than can other regions. Therefore, the region becomes more competitive on the world market, which means that it can attract more consumers since they are able to buy more of the products offered for the same amount of money. Increases in agricultural productivity lead also to agricultural growth and can help to alleviate poverty in poor and developing countries, where agriculture often employs the greatest portion of the population. The food security shall be enhanced by improving crop productivity and by enhancing area under cultivation of food crop; the major limitation on the already cultivated areas is the heavy reliance on the hand hoe used by the human labor. Increase in labour productivity shall not only increase the overall productivity, but also quickly make the hitherto uncultivated lands available for cultivation, experience from Latin America and in some African countries show the labour productivity shall be greatly enhanced by using alternate farm power such as motorized engines and draught animals, mechanization along with other farm inputs such as fertilizers improved seeds and pesticides can significantly improve agricultural productivity in a country (**Muhammad, 2010**).

A farmer is a person engaged in agriculture, raising living organisms for food or raw materials. The term usually applies to people who do some combination of raising field crops, orchards, vineyards, poultry, or other livestock. A farmer might own the farmed land or might work as a labourer on land owned by others. As farms become more productive, the wages earned by those who work in agriculture increase. At the same time, food prices decrease and food supplies become more stable. Labourers therefore have more money to spend on food as well as other products. This also leads to agricultural growth. People see that there is a greater opportunity to earn their living by farming and are attracted to agriculture either as owners of farms themselves or as

labourers. Technological progress was aided by literacy and the diffusion of knowledge that accelerated after the spinning wheel spread to Western Europe in the 13th century. The spinning wheel increased the supply of rags used for pulp in paper making, whose technology reached Sicily sometime in the 12th century (**Gardner et al 2007**)

In economics the term land includes all kind of natural resources given by nature free of cost to human being like soil, mineral wealth, rivers, seas and forests. In other words land sometimes referred to as dry land, is the solid surface of the Earth, that is not covered by water. The division between land and ocean, sea, or other bodies of water, is one of the most fundamental separations on the planet. The vast majority of human activity has historically occurred, and continues to occur, on land. Furthermore, the life forms that exist primarily on land, including terrestrial plants and terrestrial animals, differ from those that exist primarily in large bodies of water. The demarcation between land and water varies. In some places, it is sharply defined by solid rock landforms coming directly to the edge of the water. In other places, land may slowly give way to marshes or swamps, with no clear point at which the land ends and a body of water has begun. In such places, the demarcation can further vary due to tides and weather, with the area where land and sea interact being called the "coastal zone" (**Toda et al 1986**).

Human beings can increase productivity of land but using greater units of labour and capital, the price of land is rent or royalty. Labour means any mental or physical effort of human beings made for any material benefits, it is one of the factors of production comprising all human economic effort, mental and physical skilled and unskilled and in receipt of a reward (wages) for the effort, mental labour involves a lot of brain work and minimum physical effort. The supply of labour depends upon the size of the population, geographic mobility, skills, training and experience (which is known as human capital), the demand side of the market is represented by firms that are requiring labour as a factor input in the production process (**saleeman 2010**).

Economic growth is the total market value of the nation's annual final product, or output, produced per year by factors of production within national borders. Hence, it is

the market value of final goods and services produced in an economy during a year.(Roger et al 2000). Gross domestic product is the market value of final goods and services produced by the resources located in one country regardless of who owns the resources, in that country (**Jeff Holt 2007**) economic growth was measured in billion of US dollars.

Economic growth of Somalia was last recorded at 187 US dollars in 2010. The GDP per Capita in Somalia is equivalent to 2 percent of the world's average. From 1960 until 2010, Somalia economic per capita averaged 147.8 USD reaching an all time high of 299.0 USD in December of 2009 and a record low of 9.0 USD in December of 1991. The GDP per capita is obtained by dividing the country's gross domestic product, adjusted by inflation, by the total population. This page contains - Somalia GDP per capita - actual values, historical data, forecast, chart, statistics, economic calendar and news. 12-02- 2013.

The Effect of Agriculture on Economic growth

By highlighting the benefits of agriculture technology to economic growth of any country the mechanization in Somalia for instance would satisfy constraints and thereby allow farm and farm dependent families to devote more time on off farm activities earn additional income and expand their livelihood strategies even in areas that are heavily reliant on crop farming significant remuneration can be made from nonfarm employment such as small scale agro-processing industries trading and brick-making and thus indirectly promote activities in other sectors. Productivity improving technologies date back to antiquity, with rather slow progress until the late middle Ages. Important examples of early to medieval technology include the water wheel, the horse collar, the three field system (after 1500 the four field system-See: Crop rotation) and the blast furnace.

Coxhead and Warr (1991) used a computable general equilibrium (CGE) model, loosely styled on the case of the Philippines, to show how, in a small open economy, technical improvements in farming are likely to benefit labour, especially if the technical

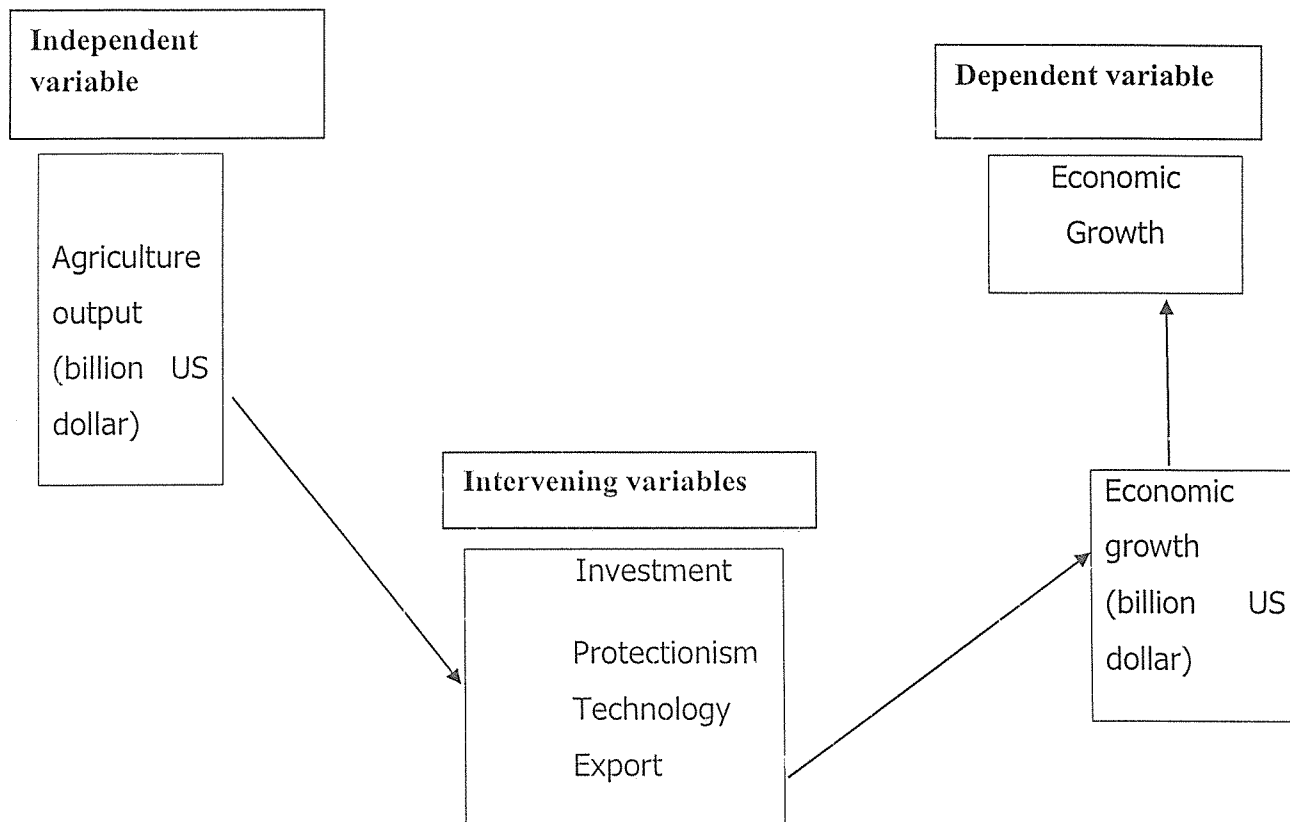
change is labour-using or land-saving. Taking the case of a 10% improvement in farm output, applicable to irrigated areas, with technology that saves land but uses labor, their work predicts almost an 8% increase in the incomes of landless laborers.

For **Bolivia, de Franco and Godoy (1993)** also built a CGE model to show that technical improvements to crops generate all-round benefits in the economy, stimulating growth and employment. But improvements to the main non-tradable crop, potatoes, have greater effects than improvements to traded crops such as wheat or soybeans in large part because the price of potatoes falls, raising real incomes in a country where the poor spend large fractions of their household budgets on foodstuffs. Cross-country examinations of the relationship between growth and poverty confirm the previous results.

Gallup et al. (1997) find that a 1 percent increase in agricultural leads to a 1.61 percent increase in the incomes of the poorest quintile, while the corresponding values for the manufacturing and services sectors are only 1.16 percent and 0.79percent. Other cross-country studies, reviewed in **Hanmer and Naschold (2000)**, provide further evidence of the pro-poor bias of agricultural growth, with only the results of White and Anderson contradicting this vie.

2.2 Conceptual Framework

The conceptual framework depicts the model of Agricultural and economic growth.



Source: Researcher (2013)

The conceptual frame works indicate the contribution of Agriculture to economic growth. It also portrays others factors apart from Agriculture, which promote economic growth and these are; government policy, taxation, protectionism, investment and the level of technology. Economic growth for this case will be measured in the yearly basis that is in billion US Dollars.

2.3 Theoretical studies

Arthur L. (1955) was one of the first of many development economists attempting to explain the paradox. He viewed economic development as a process of relocating factors of production from an agricultural sector characterized by low productivity and

the use of traditional technology to a modern industrial sector with higher productivity. Lewis's theory was interpreted as advocating for industrialization and used it to justify government policies that favored protection for domestic industries and, explicitly or implicitly, taxed the agricultural sector **(Kirkpatrick and Barrientos, 2004)**. That theory and its implications for policy have been largely debunked by later work and the degree to which economic policies of developing countries discriminate against agriculture has lessened dramatically in recent decades **(Anderson and Valenzuela, 2008)**.

Historically, few issues have attracted the attention of economists as has the role of agriculture in Economic development and poverty reduction, generating an enormous literature of both theoretical and empirical studies. Much of this literature focuses on the process of structural transformation of economies, from the least developed in which economic activity is based largely on agriculture, to high-income countries where industry and service sectors dominate. A declining share for agriculture in national employment and economic growth is an inevitable consequence of economic progress **(Byerlee, de Janvry and Sadoulet, 2009; Timmer, 1988; Cervantes and Brooks, 2009)**.

This is largely due to higher income elasticity's of demand for non-agricultural goods and services. As their incomes grow, consumers increase their consumption of manufactured goods and services faster than their consumption of food. Paradoxically, the process is usually accompanied by rising incomes and a lower incidence of poverty among those who depend on agriculture for a living. A paper produced by **(DFID 2004)** emphasizes the historically close correlation between different rates of poverty reduction over the past 40 years and differences in agricultural performance – particularly the rate of growth of agricultural productivity. The authors see links between agriculture and poverty reduction as being forged through four „transmission mechanisms 1) direct impact of improved agricultural performance on rural incomes; 2) impact of cheaper food for both urban and rural poor; 3) agriculture's contribution to growth and the generation of economic opportunity in the non-farm sector; and 4) agriculture's fundamental role in stimulating and sustaining economic transition, as

countries (and poor people's livelihoods) shift away from being primarily agricultural towards a broader base of manufacturing and services. They go on to note that the potential for future poverty reduction through these transmission mechanisms depends on the extent to which agricultural productivity can be increased where it is most needed.

2.4 Related studies

Many recent studies focus specifically on quantifying the relationship between agriculture and poverty. **Bresciani and Valdes (2007)** frame their analysis in terms of three key channels they say links agricultural growth to poverty: 1) labor market, 2) farm income, and 3) food prices. They provide a theoretical framework for investigating the quantitative importance of those various channels and then report findings from six country case studies. They conclude that when both the direct and indirect effects of agricultural growth are taken into account, such growth is more poverty reducing than growth in nonagricultural sectors.

Bresciani and Valdes emphasize especially that agriculture's contribution to poverty reduction is consistently greater than is agriculture's share of GDP. For their case study countries, agriculture's contribution came mainly through the labor market channel. They caution however that growth strategies based on such findings may not be valid in circumstances where the agricultural output mix does not feature labor intensive crops and livestock activity. Equally problematic for such a strategy is that much progress in agriculture historically has come from the introduction of labor saving technical change (**Thornton 1997**)

Arguments concerning the role of agriculture as the main determinants of economic growth are generally provided by trade aspect. Theoretical arguments have supported the relationship between agriculture and economic growth that related to trade (exports and imports) as the study of Thornton (1996, 1997) that found export-led economic growth in Italy, Norway, Sweden and Mexico by employing the Granger causality in

terms of a vector error correction model (VECM). Likewise, Love and Chandra (2005) studied between trade and economic growth by using three time series analysis techniques, namely, unit root, co-integration and causality. The results revealed that India, Maldives and Nepal were export-led economic growth as well as they found the growth-led exports in the cases of Bangladesh and Bhutan. In Thailand was also supported the hypothesis of export-led economic growth by the study of **Thungsuwan and Thompson (2003) and Vohra (2006)** that presented a positive impact in short-term and long-term relationships of exports and economic growth.

However, historical experiences have revealed that the developing countries, in particular Asian communities have derived their economic growth by the improvement of agriculture, starting with the study of **Katircioglu (2006)** that investigated the relationship between economic growth and agriculture in North Cyprus over the period of 1975 to 2002. The time series analysis was performed by using a vector autoregressive (VAR) system. The results indicated a long-run relationship running from economic growth to agriculture, and vice versa.

To confirm the study of **Katircioglu (2006)**, **Katircioglu (2004-2005)** examined the relationship between economic growth and agriculture including industry and service sectors over the period of 1977 to 2002. The findings were shown that agriculture in North Cyprus has stilled important for economic development in long-term, including with the other variables as well as economic growth can improve the development of agriculture. **Tiffin and Irz (2006)** also agreed that agriculture can lead in growth of gross domestic products, developing countries in particular, by using panel time series through unit root, co-integration, and Granger causality approaches from 85 counties.

Konya and Singh (2009) studied the causal relationship between international trade and domestic product focused on Indian agricultural and manufacturing sectors, starting from the beginning of 1950 to the end of 2003. The research consisted of unit root, co-integration and Granger causality based on the vector error correction model

(VECM). As the conclusion, this study confirmed that agriculture can support in economic growth of India's case. The focus in this study is on the causal relationship between agriculture and economic growth in Thailand by employing the Granger causality through Toda and Yamamoto (1995) which a long-run causal relationship can be identified without requiring the pre-testing of co-integration as the above literatures. While the following hypotheses are considered in order to verify a long-term stable in the case of Thailand.

Tsakok and Gardner (2007) argue that most early studies based on econometric investigation of cross-sectional data for a panel of countries have significant limitations and have not provided definitive results. Specifically, results from earlier studies using ordinary least squares (OLS) regression and simple correlation coefficient tests may have misspecification problems as the correlations may be spurious because they failed to account for the data's dynamic time series properties (e.g., unit roots and cointegration). Also, the results are limited to showing only that agriculture and economic growth are correlated, but could not provide information on the direction of causality. The issue of causality is dynamic in nature and is best examined using a dynamic time series modeling framework. Furthermore, the implicit assumption of an identical production function across different types of economies may be unrealistic as the level of technology may vary across countries.

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. The study by **Tiffin and Irz (2006)** is an improvement on previous cross-sectional analyses since it employed recent advancements in time series modeling techniques (cointegration and error correction models). Nevertheless, their empirical results may suffer from misspecification problems (e.g., omitted variables) because they failed to control for the potential influence of other key determinants of

economic growth. As emphasized in earlier critiques of related literature on economic growth, simple bivariate causality analyses of this sort are prone to spurious correlation because they ignore the potential role of other important factors (e.g., trade, capital and labor) as suggested by neoclassical growth theory (**Edwards, 1993; Caporale and Pittis, 1997; Frankel and Romer, 1999; Awokuse, 2008**). The positive relationship between agricultural growth and overall economic growth is empirically well established (Kieran and Karl, 2007). Evidence consistently shows that agricultural growth is highly effective in reducing poverty. **Gallup *et al* (1997)** (in Department for International Development (**DFID**), 2005) show that every 1% increase in per capita agricultural output leads to a 1.61% increase in the income of the poor. However, developing countries are still ineffective in reducing poverty (**Romea and Marcelle, 1998**).

Dawson (2005) studied the contribution of agricultural exports to economic growth in less developed countries. The author used the two theoretical models in his analysis, the first model based on agricultural production function, including both agricultural and non agricultural exports as inputs. The second model was dual economy model i.e. agricultural and non agricultural where each sector was sub divided into exports and no export sector. Fixed and Random effects were estimated in each model using a panel data of sixty two less developed countries for the period 1974 – 1995. The study provided evidence from less developed countries that supported theory of export led growth. The results of the study highlighted the role of agricultural exports in economic growth. The study suggested that the export promotion policies should be balanced.

Aurangzeb (2006) studied the relationship between economic growth and exports in Pakistan based on the analytical framework developed by (**Feder, 1983**). Author 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 underdeveloped countries. The results of the study indicated that there existed long run relationship and the agriculture export elasticity of economic was 0.07. The non agriculture export elasticity of economic 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.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Research Design.

A time series analysis was adopted and the use of quantitative techniques to analyze secondary data scientifically to critically conclude the research objectives, secondary data was collected from different ministries, some quantification were necessary because of the need to tabulate data and use of statistical techniques to arrive at a dependable conclusion. Also inferences were drawn by fitting the regression model and testing for its significance using the t-statistic statistic. The researcher also correlated the two variables and test for significant of the Pearson's correlation coefficient of determination Somalia for thirteen years (1999-2011).

3.2 Research Population

The study population of this study was published and non published reports on Agriculture and Economic Growth from 1999 to 2011. The study targeted annual reports by the Somalia Central Statistics, Central Bank of Somalia, Ministry of Agriculture (MOA) and Ministry of Finance Planning and Economic Development.

3.3 Sampling Technique

The researcher used purposive random sampling to arrive on the sample size of the population.

3.4 Research Instrument.

A record sheet was used in the collection of data from Somalia central Statistics, Ministry of Agriculture, National Bank of Somalia, and Ministry of Finance Planning and Economic Development.

3.5 Data Gathering Procedure and Source

After the proposal has been approved, the researcher got an introductory letter from the Department of Economics and Applied Statistics of Kampala International University, which introduced him to the respective ministries and they were informed by the researcher on area of interest of data to be collected. Data collection was done by skilled research assistants under close supervision of the researcher to ensure that all

the information required are collected. The domestic sources are the annual and quarterly bulletin of the Central Bank of Somalia, IMF's, International Financial Statistics, World Bank and United Bank of Africa. The data was entered into the record sheet and compiled; this was used to analyze the relationship between m Agriculture and economic growth in Somalia (1999-2011) with the help of computer -statistical package

3.6 Time Series Data Analysis

This was analyzed with the help of Ms. excel and word, STATA packages were used to derive descriptive statistics and accompanying table, diagrams and graphs were also relevant for the study prior to the estimation of the regression line ,descriptive analysis was also conducted to describe the behaviors of the individual variables over the duration of the study by plotting each variable against time ,it included testing for significant and correlation between the economic growth and Agriculture. The following formulae and computational equations were used.

The correlation is given by

$$r = \frac{n \sum xy - \sum x \sum y}{\sqrt{(n \sum x^2 - (\sum x)^2)(n \sum y^2 - (\sum y)^2)}}$$

The t_c compute will be

$$t_c = \frac{r\sqrt{n-2}}{\sqrt{1-r^2}}$$

Reject H_0 if $t_c \geq t_{\alpha}$ at 0.05 level of significance

The Simple Linear Regression Model.

Economic growth = $\alpha + \beta_0$ (Agriculture) + ϵ_i

$$Y = \alpha + \beta_0 X_{\epsilon 0} + \epsilon_i$$

Where y : Real Economic growth

α : The Economic growth without Agriculture

β_0 : The change of Economic growth to Agriculture

x_0 : Agriculture

3.7 Limitations of the Study

In Somalia, evaluating the quality of data, there is no adequate, consistent data in domestic sources. For example, there is a discrepancy of Economic data reported by IFS yearbook and the Central Bank of Somalia. One of the problems in data collection is that different sources use different calendar year. Since it is difficult to compare different calendar, yearly data effort will be made to convert data from different calendar years into the same calendar year.

The limitations of model used here are that it assumes that the rate of Agriculture was determined by an explicit optimization problem. Furthermore, it assumes that the long run level of international reserves is positively related to the long run Agriculture; it also assumes that the current level of foreign exchange receipts is a proxy for the long run level. Therefore, the data collected will be representative enough to enable the researcher to draw general conclusions

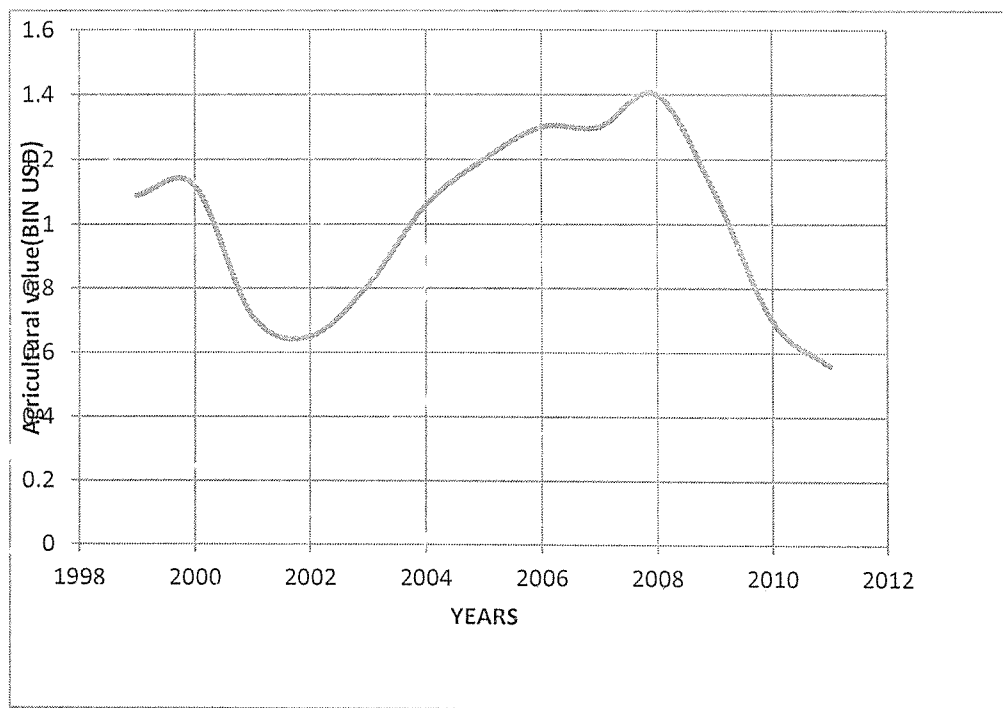
CHAPTER FOUR

PRESENTATION, ANALYSIS AND INTERPRETATION OF DATA

Data was presented using figures, graphs based on the research objectives and the corresponding research questions, testing the hypothesis and for implication of the findings. (i) To establish the trend of Agriculture in Somalia (1999 to 2011), (ii) To establish the trend of economic growth in Somalia (1999 to 2011), (iii) To investigate the effect of Agriculture on economic growth in Somalia (1999 to 2011).

4.1 The Trend of Agriculture in Somalia (1999-2011)

Objective one was to determine the trend of Agriculture in Somalia (1999-2011). Under this; the researcher used the line graph as shown below.



Source: Researcher (2013)

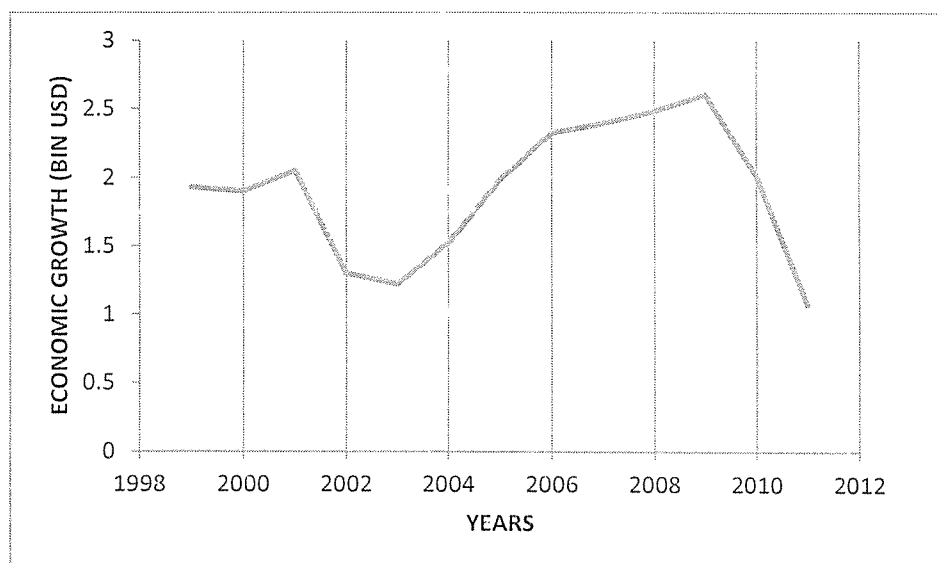
There has been an increase in agriculture from 2001 to 2008 and between 2008 and 2011 it decreases smoothly and a trough realized between 2000 to 2004, this might be due to drop in the level of production or lost in the market of agricultural product of

other factors such as drought, pest, among others. An increase is due to improve framing system, ready market among others.

The regression model is $\text{Agriculture} = 1.0096 - 0.0014 \text{ time}$. This indicates that when time is zero GDP is 1.0096 Billion United States Dollar .Also a unit change in time by one year lead to a decrease in Agriculture growth by 0.0014 billion US dollar.

4.2 The trend of the economic growth in Somalia (1999-2011)

Objective two was to show the level of trend of economic growth in Somalia. Under this, the researcher used line graph as can be seen below



There is general increase in the economic growth in Somalia ,in 2003 up 2009 there has been steady growth, from 2009 up to 2011 then it dropped .This could be due to other variable which influence economic growth in Somalia but it has been omitted.. The regression model is $\text{economic} = 1.7412 + 0.0235 \text{ time}$. This indicates that when time is zero economic growth is 1.741 billion US Dollar .Also a unit change in time by one year lead to an increment in economic growth by 0.0235 billion US dollar.

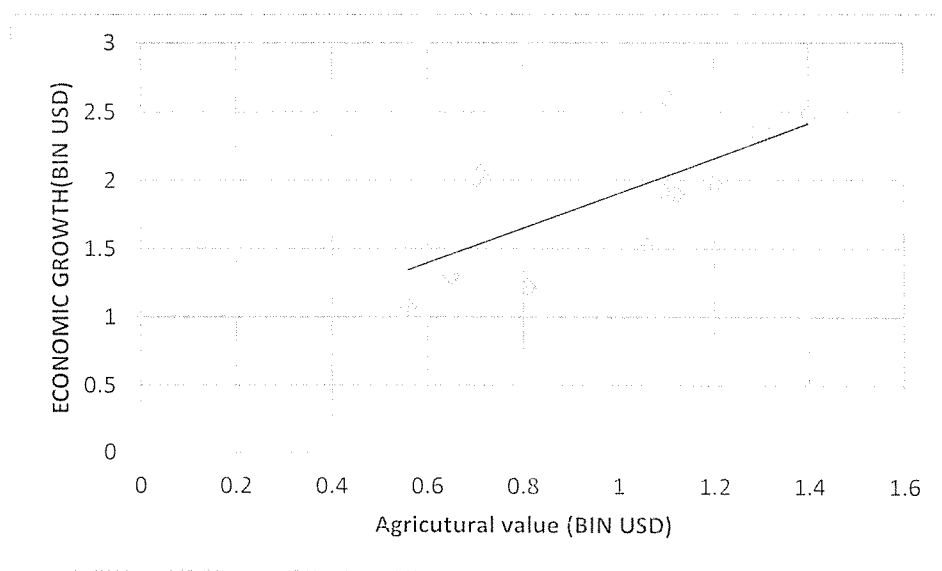
4.3 The effect Agriculture on economic growth in Somalia (1999-2011)

Objective three was to investigate the effect of Agriculture on economic growth in Somalia, the researcher used scatter plot graph, correlation analysis, regression analysis as observed below.

A scatter plot of economic growth against Agriculture in Somalia (1999-2011)

To investigate the effect Agriculture and economic growth in Somalia, the researcher used scatter plot as below.

Figure 4: A scatter plot of Agriculture and Economic growth in Somalia



SOURCE: RESEARCHER (2013)

Most of the points are normally distributed and are close to the fitted line. Those which are far away are due to other factors which contribute to economic growth but have been omitted such as Exports, Imports, and tariffs among others.

4.3.1 Correlations analysis of Agriculture on Economic growth of Somalia

The researcher used Pearson's correlation coefficient to investigate the effect of agriculture and economic growth.

Table 1: Correlation of Agriculture and economic growth in Somalia (0.05)

Table 1: Correlation of Agriculture and economic growth in Somalia (0.05)

Variable correlate	R-Value	Sign-value	Interpretation	Decision
Agriculture verse Economic growth	0.7302	0.005	There is a relationship	Reject the null hypothesis

Source: Researcher (2013)

There is a strong positive correlation between Agriculture and economic growth as can be seen from table 1 above ($r=0.7302$) the strength of relationship between Agriculture and economic growth is determined by the coefficient of determination ($r^2=0.519$). This implies that the variation in economic growth explained by Agriculture is 51.9 percent mean while **48.1** percent is explained by other variables, this reveal that the effect of these two variables is strong.

4.3.2 Regression analysis of Agriculture on economic growth in Somalia.

To establish this relationship the researcher used bivariate linear regression analysis as seen in the table below

Table 2: Regression of Agriculture and economic growth in Somalia (0.05)

Variable represented	Adj. R ²	F-Value	Sign-value	Interpretation	Decision
Agriculture and economic growth	0.4575	11.8	0.005	There is a relationship	Reject accept H ₀
Coefficient	Beta	T	Sign-value	Interpretation	Decision
Constants	0.63	1.6	0.005	There is a relationship	Reject H ₀
Agriculture	1.27	1.27	0.005	There is a relationship	Reject the null hypothesis

Source: Researcher (2013).

The researcher fitted the regression model using the information from table 2 above and this is represented by;

$$\text{Economic growth} = \alpha + \beta(\text{Agriculture}) + e_i$$

The fitted model becomes

$$Y = 0.63 + 1.27(\text{Agriculture}).$$

This implies that economic growth without Agriculture result into 0.63 (billion US dollars) and a unit change in Agriculture lead to an increase of economic growth by 1.27 (billion US dollars).

$$t(0.025, 11) = 2.201$$

The slope $t_1=3.44$, the decision rule if $|t| \leq t_{\alpha}$, accept H_0 , $\alpha=0.05$ level of significant, since $t_1=3.44$ is greater than $t_{\alpha}=2.201$. We reject H_0 which states that Agriculture is not part of the model and the researcher concludes that there is a relationship between Agriculture and economic growth in Somalia for the period under the study and other factors remain constant.

CHAPTER FIVE

DICUSSION, SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 DICUSSION

The Trend of Agriculture in Somalia

There has been a general fluctuation in the Agricultural value for the period under the study (trough and depression), from 2001 to 2008 it has shown an increase then it drop steadily. The increase in agricultural value might be as result of good climatic condition, favorable government policies, air price and the fluctuation is as result of factors such as pest, drought, among others. As seen from figure 2 above.

The Trend of Economic Growth in Somalia

There has been a general increase economic growth in Somalia over the period under study that is (1999-2011), an increase in the economic growth is due improvement Agriculture agricultural sector and other factors that might have led to increase in economic growth apart from Agriculture are exports, imports, highly level of technology, favorable government policy, and revenue and economic which are healthy for economic growth.

The effect of Agriculture on economic growth in Somalia

The effect of Agriculture on economic growth has been significant according to the fitted line and regression analysis, correlation were performed and there has been a strong positive relationship between Agriculture and economic growth ($r=0.7302$) as c seen from **table 1**.The study has confirmed **Gallup et al (1997)**, **Karl et al (2007)**, and **Kairtciogulu (2006)** who studied the same topic on Agriculture and economic growth and found a significant relationship and found that there was trend in Agriculture and economic growth in Somalia. Other factors remain constant.

5.2 SUMMARY OF FINDINGS

The main objective of this study was to investigate the effect of Agriculture on economic growth in Somalia. For the effect of Agriculture on economic growth, the

probability of the t-distribution was used based on a simple linear regression model at 0.05 level of significance. The dependent variable and the independent variables were found to be normally distributed. Implying significant effect of the two variables.

5.3 CONCLUSION.

This study has established the trend of Agriculture in Somalia (1999-2011) and found that there was cyclical fluctuation in the agricultural value for the period under study, it has established the trend of economic growth in Somalia (1999-2011) and found also cyclical fluctuation for the period under study due to other factors which determine economic growth apart from Agriculture, the study has also investigated effect of Agriculture and economic growth in Somalia using correlation, regression analysis with the test of hypothesis and found a positive relationship.

5.4 RECOMMENDATION

Somalia's economy which is still a developing country with low level of skilled labor, importation of capital and intermediate goods may lead to economic growth, therefore the researcher recommends the government to embark on industrialization, and modern technique of agricultural production since this area can employ large population resulting into high productivity hence economic growth.

The government should also embark on exportation of goods and services to ensure favorable balance of payment since it is healthy for the economy's growth.

5.5 SUGGESTIONS FOR FURTHER RESEARCH

The results presented in this report are very not conclusive and should be treated as being preliminary. Further analysis of the survey data (Agriculture and economic growth) needs to be done to validate these findings and provide greater confidence in explaining the changes in Agriculture and economic growth.

1. Agricultural input and household crop production.
2. How exchange rate affects the import demand.
3. The relationship between Foreign Direct Investment and economic growth.

Table 3: Record Sheet

Years	Agricultural value(BIN USD)	economic growth (BIN USD)
1999		
2000		
2001		
2002		
2003		
2004		
2005		
2006		
2007		
2008		
2009		
2010		
2011		

SOURCE: RESEARCHER (2013)

**Table 4: DATA ON AGRICULTURE ON ECONOMIC GROWTH OF SOMALIA
(1999-2011)**

Years	Agricultural value(BIN USD)	economic growth (BIN USD)
1999	1.09	1.93
2000	1.12	1.9
2001	0.71	2.05
2002	0.65	1.3
2003	0.81	1.22
2004	1.06	1.52
2005	1.2	1.98
2006	1.3	2.32
2007	1.3	2.39
2008	1.4	2.48
2009	1.1	2.6
2010	0.7	2.01
2011	0.56	1.07

SOURCE: WORLD BANK (2012),IFS ,IMF(2012)

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