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DEPARTMENT OF DEVELOPMENT STUDIES

**ASSESSING THE CONTRIBUTION OF AGRO PROCESSING SECTOR
ON THE ECONOMIC GROWTH OF CAMEROON: THE CASE OF
COFFEE, COCOA AND PALM EVIDENCE FROM 1980-2013**

**A Thesis Submitted to The Department of Development Studies in Partial Fulfillment of
the Requirement for the Award of a Masters in Science Degree in Sustainable
Development with Specialization in Agriculture and Development**

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DECLARATION

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CERTIFICATION

The thesis entitled: **“ASSESSING THE CONTRIBUTION OF AGRO PROCESSING SECTOR ON THE ECONOMY GROWTH OF CAMEROON: THE CASE OF COFFEE, COCOA AND PALM EVIDENCE FROM 1980-2013”** is submitted to the Department of Development Studies of the Pan African Institute for Development – West Africa (PAID-WA) Buea, by **NKWELLE JEROME ALOBWEDE** Registration No. **PAID-WA 00563/MSC./AD/15** for the award of a Master of Science (M.Sc.) degree in Agriculture and Development.



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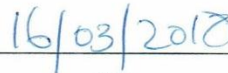
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DEDICATION

This dissertation is dedicated to my parents Chief Nkwelle Simon Nsioge and Dione Anna Nkwelle. Who have spent relentless effort to see that I get the best education.

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ABSTRACT

Worldwide, the utilization of agro processing sector offers potentials for economic and social benefits including employment creation, income generation and reduction in postharvest losses and overall economic growth. Their impacts vary from country to country and from one product to another. This dissertation is aimed at assessing the contribution of agro processing sector on the economic growth of Cameroon, the case of coffee cocoa and palm nuts”. Specifically, it examined the trend of coffee, cocoa and palm nut processing sector in relation to economic trend of Cameroon, To assess the individual impact of the cocoa, palm and coffee agro processing sectors on the economic growth of Cameroon and To assess the combined impact of the coffee, cocoa and palm agro processing sector on the economic growth of Cameroon. The research made used of time series data obtained from the World Bank Development Indicators and FAO data base from 1980-2013 and made used of the ordinary least square technique to estimate. The result revealed that coffee processing sector had decreasing trend since the 1980, while the palm nut industry has an upward sloping curve. Further empirical result shows there is an overall positive and significant effect (1% confident interval) ($\text{pro} > F = 0.000$) of the agro processing sector on economic growth of Cameroon with Adj R value of 0.5970. Considering individual industries, coffee processing had a negative and significant (10%) effect on GDP with the other two having positive effect on GDP. It is concluded, agro processing which is still at its growth stage in Cameroon though it has significantly contributing to economic growth, for the sector to acquire maximum gain, the government should set up farm settlement schemes with necessary infrastructure, favorable business environment that encourages investment in the agro processing sector especially the coffee industry that needs to be revamped.

Key word: Agro processing, Economic growth, GDP

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LIST OF ABBREVIATIONS

(FDI)	Foreign Direct Investment
(NEPAD)	New Economic Partnership for African Development

(UNIDO)	The United Nation Industrial Development Organisation
(FAO)	Food and Agricultural Organization
(CAADP)	Comprehensive Africa Agriculture Development Program
(AU)	African Union
(ICT)	Information Communication Technology
(SADE)	Southern African Development Community
(GDP)	Gross Domestic Product
(EIA)	ENERGY INFORMATION ADMINISTRATION
(DSCE)	Growth and Employment Creation Strategy
(SSA)	SUB SAHARAN AFRICA
(BHNA)	Basic Human Needs Approach
(MDGs)	Millennium Development Goals
(USD)	United State Dollas
(OECD)	Organization for Economic Cooperation and Development
(UNCTAD)	The United Nation Conference on Trade and Development
(FAOSTAT)	Food and Agricultural Organization Statistic
(CEMAC)	Commission of the Economic and Monetary Community of Central Africa)
(CHOCOCAM)	Chocolaterie Confiserie Cameroonaise
(SODECAO)	La Societe De Developpement Du Cacao
(IFAD)	International Fund for Agricultural Development
(CPO)	CRUDE PALM OIL
ADB	African Development Bank Group
PAIDWA	Pan African Institute for Development West Africa

CHAPTER ONE

INTRODUCTION

1.1 Background to the Studies

Industrial growth is a vital pathway to economic development with multiplier potentials of significantly reducing poverty in the African continent. Unfortunately, African economies are dominantly narrowly focused on agricultural production and mineral extraction, generating limited incomes for a largely rural population. The promotion of micro, small and medium-sized enterprises to further process the primary products generated from these sectors would provide alternative livelihoods for rural communities, empower citizens and generate employment opportunities as well as stimulate growth in the agriculture and services sectors (UNIDO, 2004). As such, industrial growth is an indispensable pre-requisite of sustainable development. Most development forums focusing on development in Africa have endorsed this. For example, the New Economic Partnership for African Development (NEPAD) endorsed by African Heads of States and Governments. It emphasize that African countries must diversify their economies away from their dependence on primary production and a narrow export base. It furthermore emphasizes that the logical starting point for doing so is to “harness Africa’s natural resource base and increase value added in *inter alia* agro-processing and that diversification should be based on strong inter-sectorial linkages” (UNIDO, 2004).

Several studies have shown that conditions for dynamic agro-industrial development and the promotion of agribusiness in Africa are yet to be achieved, but that there have been some progress made towards this end (FAO, 2008; OECD/DC, 2013; Larsen *et al.*, 2009, UNIDO, 2011). Thanks to greater effort to the work of the Comprehensive

Africa Agriculture Development Program (CAADP) which was launched in 2003 and steered by the New Partnership for Africa's Development (NEPAD) of the African Union (AU). CAADP, supported by some of Africa's development partners (like the Bill & Melinda Gates Foundation and the Kofi Annan Foundation as well as the traditional multilateral and bilateral partners), Policy interest in developing African agriculture has risen in recent years. Through these policies, most African countries have succeeded in raising awareness of and support for agricultural transformation. During the AU's Summit of AU Heads of State and Government (in Malabo, Equatorial Guinea in June 2014) under the theme "Agriculture and Food Security", calls were made for agricultural transformation on the continent, the importance of making agriculture attractive to the continent's youth, of which agro processing was highlighted. The time is therefore right for coming up with practical solution to the challenges of African agricultural transformation to help translate this clear policy intent into action (African Transformation Report 2015)

A good summation of the (Agro Processing Summit of 2015) indicated Africa is dominated by agricultural sector, thus making the continent a prime location for the establishment of agro processing industries. Processing of food adds value to agriculture and edible animal products by grading standardization, packing and preserving of produce so that products could be formed in such a way that they can be sold in market of the country and abroad. It sees agro processing as being very vital since it creates employment and helps in import substitution, foreign currency earnings from exports of processed products. The agro processing value chain has high multiplier effects on the economy. Agro processing is known for its potential to spur growth and create jobs because of its strong backward linkage with the primary agricultural sector. Agro processing is in essence manufacturing as it processes raw materials and intermediate

products derived from the agricultural sector. African governments and the private sectors need to develop concerted efforts and strategies to support agro processing ventures since they convert raw materials into manufactured products and reduce the number of farmers practicing at subsistence level. Agro processing in Africa is in the hands of the few conglomerates and this effectively closes doors for aspiring small holder farmers and small business to benefit from the earnings that agro processing has to offer. Agro processing can succeed if farmers and agro processors were able to access the requisite funding to embark on sustainable ventures. Investment, ICT, access to markets as well establishing and enabling environment also play a crucial role in making agro processing a success story. (Agro Processing Summit, 2015)

Despite the efforts of most SSA countries to achieve greater economic diversification, agriculture continues to dominate the economies of the majority of member countries. The majority of the economies in the region are agriculture and natural resource based, with up to 80 percent of the population in the SADC region, 48 percent in East Africa, and 50 percent in West Africa being dependent on agriculture for subsistence, employment and income (EIA, 2007).

Agro-processing sub-sector in SSA has experienced diverse significant growth since the 1990s. The expansion of processing sector witnessed by SSA is as a result of foreign direct investment (FDI) from relatively rich countries, such as South Africa, into the smaller and/or poorer countries (Reardon & Berdegúé, 2002; Reardon et al., 2003). In addition to FDI, urbanisation and concomitant food diversification have increased opportunities for the processing sector in SSA. The development of the industrial agro-processing sector in Western and Central Africa was predominantly promoted by the need of processing export-oriented cash crops (such as cotton, coffee, cocoa, fish

canneries, etc.) or with the local processing of imported agricultural commodities (milling industry, breweries, milk reconstitution, etc.). In most countries, industrial processing of local products for local markets is often limited to a few products, for which both western technology and a mass standardised market are available (e.g. sugar, tomato concentrate) (Kanyili, 2003). In other words, industrial-scale food processing has been present in 'local-to-global', as well as in 'global-to-local' value chains. But it often fails regarding domestic, 'local-to-local' markets. This is due to the difficulty of inserting an industrial segment into local food supply chains, which are characterised by the atomisation of production on one hand and by a diverse and fragmented demand on the other hand (Sautier, 2000). Urbanisation and subsequent food diversification is an area of opportunity for processed African foods. The growing importance of the urban environment reinforces the trend toward food diversification and increased demand for processed food.

Agriculture in Africa is currently characterized by: (a) a large traditional smallholder sector (over 80 %) with farmers generally uneducated and operating without use of modern inputs or commercial orientation, and with low productivity; (b) a very small large-scale and modern commercial farm sector (often owned by ethnic minorities, settlers or foreign firms); (c) a tiny and struggling small and mediumsize modern commercial sector owned and operated by nationals and (d) little domestic processing of agricultural products and weak linkages between agriculture and other sectors of the economy. (African Transformation Report, 2015)

According to the African Development Indicators, the average agricultural value added per capita in Sub Saharan Africa was lower in 2008 than in the early 1970s. Haggblade

and Gabre Madhin (2010) also reported instance that SSA remains the only developing region where per capita agricultural production has fallen between 1960 and 2005

Table 1 shows that Africa's agro-industrial exports increased from about \$14 billion in 1990 to \$51 billion by 2008—an average annual compound growth rate of 7.2 %.Despite this, the region's world market share of agro-industrial merchandise imports fell by half from 18 % to 9 %, partly reflecting the increasing importance of non-agricultural products, especially oil and other mineral commodities. Trade in horticulture and processed commodities exported for final use grew faster than total agro-industrial exports, albeit from a low base. These commodities grew annually at 10.7 % and 10.8 %, respectively, compared with only 7.2% for total agro-industrial exports and 5.0% for unprocessed commodities exported for processing. In part this faster export growth for horticulture and processed commodities reflects the global shift in the commodity composition of agro-industrial trade.

Table 1.1, World total merchandise and agro-industrial imports from Africa by commodity category, 1990-2008

Year (\$ billion)	Total merchandise exports	Total agroindustrial exports	Processed commodities exported for final use	Semi-processed commodities exported for processing	Unprocessed commodities exported for processing	Unprocessed commodities exported for final use	Horticulture
1990	81.9	14.4	1.6	2.7	6.5	2.2	1.6
1991	76.7	13.9	1.7	2.4	6.0	2.2	1.8
1992	76.4	13.9	1.6	2.5	5.9	2.2	1.8
1993	68.4	13.5	1.5	2.3	5.8	2.1	1.8
1994	71.7	16.5	1.9	3.2	7.5	2.1	1.9
1995	83.6	20.3	2.5	3.6	9.3	2.9	2.2
1996	96.9	21.0	2.7	3.4	9.6	2.9	2.4
1997	97.7	20.9	2.7	3.5	9.8	2.8	2.2
1998	83.4	21.2	2.8	3.6	9.6	2.8	2.3
1999	87.6	19.9	2.8	3.0	8.7	2.8	2.6
2000	149.7	24.7	4.3	4.4	8.3	3.9	3.8
2001	146.9	25.7	4.6	4.9	8.0	4.1	4.1
2002	148.0	27.3	5.0	5.2	8.4	4.2	4.5
2003	182.3	32.3	6.1	5.9	10.4	4.3	5.6
2004	237.6	35.9	7.5	6.5	11.2	4.5	6.4
2005	301.9	37.4	7.6	6.5	11.6	4.8	6.9
2006	371.8	39.1	8.4	6.6	12.2	4.9	7.1
2007	430.8	46.4	10.0	7.7	14.3	5.4	9.1
2008	563.5	50.7	10.1	9.1	15.7	5.8	10.0
Average annual growth rate (%)	11.3	7.2	10.8	7.0	5.0	5.5	10.7

Source: UNCTAD (2010)

Compared to its neighboring countries and more generally to countries of the CEMAC (Commission of the Economic and Monetary Community of Central Africa), Cameroon has a relatively diversified industrial base both in terms of variety of activity and in company size, with a large number of SMEs and informal businesses.

According to the last general census of enterprises (RGE, 2009), Cameroon counts 12 154 companies in the secondary or manufacturing sector, which represent approximately 13 % of the total number of enterprises. The breakdown of manufacturing firms by sector is the following: mining (0.2 %), food industry (6.1 %), beverages and tobacco (0.3 %),

electricity, water and gas (1.6 %), and others (11.3 %), including the textile, wood, metallurgical and chemical industries. Manufacturing accounts for 22.8 % of total employment and turnover represents 34.3 % of the national total. On average, each company in this sector employs 8 people and generates an average turnover of XAF 300 million (CFA Francs).

1.2 Problem Statement

Cameroon is endowed with high Agriculture resources which for ages has been the backbone of most African economies and African agriculture as a whole and Cameroon in particular is currently based primarily on traditional smallholders producing food items for home consumption or local consumption through traditional markets or for exports in unprocessed forms which are always in bulk and of low value thus leading to low earnings. (Dada, 2007).

Higher agro processing holds the capacity to improve development moving the core agricultural activity from the farm gates to the agro industry sector and its services represent higher level of incomes, productivity, nonfarm employment, especially in rural areas. This scenario could be more feasible if a dynamic link existed between the farm sector and the industry in the country. This situation is worsened by the fact that data is not always made available and its unreliability. In fact both the farm and the industries lack or do not provide data that could be used for their own measurement of productivity and thus give them room for expansion. The government too has been trying to provide data with its institution concerned like the national institute for statistics but this data are inadequate. The disconnection between the smallholder farmers and the Agro-Industries has prohibited the traditional supply driven agro-production system from evolving into a commercial demand driven agro-production system. Thus, there are little or no incentive for the smallholder farmers to produce the desired quality and consistent quantity of raw

materials demanded by agro processors, which in turn has severely affected the competitiveness of Cameroonian agro-industry in an increasingly globalized market. Cameroon is for example importing large quantities of cereals to feed its people and meet the demand of the brewing industry (UNIDO 2016)

Agricultural value added per worker in the least developed countries is \$336 compared to \$1,060 in middle-income and \$18,497 in high-income countries. This is due to the fact that in the developing countries on average only about 38 per cent of products are processed, this leaves the sector with huge untapped resources (UNIDO ANNUAL REPORT 2014) Even though the country signed the Comprehensive Africa Agriculture Development Program (CAADP) on July 17th 2013, it has not yet met the CAADP 10% expenditure target as its agricultural spending in 2013 only stood at the CAADP annual increase of agricultural productivity of 6%. All of this could be blame on government slow pace in the implementation of its policies and administrative bottle neck Cameroonian enterprises still support heavy regulatory and administrative constraints than other regions, and property rights and investors' rights are not well protected in the country. Cameroonian authorities have put an accent on the facilitation of enterprise creation, trade opening, fight against corruption and reduction of importation and exportation cost (World Bank, 2009). According to the World Economic Forum report's on the global competitiveness in 2009, Cameroon was classified 18th in Africa and 111th in the world on a total of 133 countries. The most considerable efforts were observed at the level of macroeconomic stability (34th), recruitment and firing (40th), flexibility of salaries (61th) and transparency of the government in driving economic policy (76th). However, more efforts should be mobilised with respect to the improvement of Institutions (112th); bureaucratic efficiency of the Government (102nd); "access to

financing" (125th) and the quality of infrastructures (121th) which are important for investment (MINFI, 2010).

In the Growth and Employment Strategy paper (GESP, 2003) of the government of Cameroon agricultural development features prominently as a way to reduce poverty. Specifically, as the key income generating activity and the main source for economic growth and poverty reduction in rural areas, this document highlight the importance of economic diversification with a strong focus on agricultural development. However, the developments since have shown how difficult changes in the sector are and how severe the poverty situation still is. The development of agriculture faces structural constraints and weaknesses that should have been adequately addressed since then

Full utilization of small agro-processing firms offers the potential for economic and social benefits, including employment creation, income generation and reduction of post-harvest losses. As the world's poorest region, with half of its population living in extreme poverty on less than \$1.25 a day (World Bank & IMF, 2010), sub-Saharan Africa (SSA) to which Cameroon belong is behind the curve in terms of industrialization with manufacturing accounting for 15 per cent of GDP.

The estimated youth unemployment rate in Sub-Saharan Africa is one of the highest in the world at 40 percent to which Cameroon belongs. Moreover, by 2040, Africa will be home to one in five of the world's young, and will have the world's largest working age population. According to the International Labour Organization (ILO), between 2000 and 2008, Africa created 73 million jobs, but only 16 million were for young people (African Development Bank, 2012)), thus the is great need to open avenues for more decent and sustainable jobs. With regards to two of our product under consideration, the trade of Cocoa and coffee involves so many intermediaries who most often exploit the

farmers due to bad roads (no means to transport) or using false scales. Some of these intermediaries (licensed buyers) sell to local bigger exporting organizations such as TELCAR COCOA, sell to local cocoa processing companies in Douala or they export themselves to Europe. A small amount of cocoa butter, paste and powder are produced in Cameroon and sold/consumed locally or sold to neighboring countries.

Cameroon has the capacity to be an important palm oil exporter, but currently, domestic production does not meet total demand, hence, the imports from other countries such as Indonesia and Malaysia. Cameroon exports limited quantity of palm oil to its regional partners in CEMAC(PAPI 2015) thus with those series of lop holes plaguing agriculture as a whole and agro processing in particular the studies seek to the address the following objectives.

1.3 Research Objective

The main objective of this study is to assess the contribution of the agro processing sectors on economic growth of Cameroon case of coffee, cocoa and palm.

Specific objective

- To assess the production trend of coffee, cocoa, and palm processed products in Cameroon
- To assess the impact of the cocoa agro processed sector on the economic growth of Cameroon
- To assess the effect of the coffee agro processed sector on the economic growth of Cameroon
- To assess the impact of the palm agro processed sectors on the economic growth of Cameroon
- To assess the combined impact of the coffee, cocoa and palm agro processed products on the economic growth of Cameroon

1.4 Research hypothesis

- Ho= the coffee, cocoa and palm agro processing sector have no significant impact on the economic growth of Cameroon

1.5 Justification of the studies

Agriculture plays a pivotal role in the economy of Cameroon with a range of contribution such as creating employment, income to farmers, foreign direct earnings and a host of others, which are mostly of the rural farming population with little involvement of the non-farming population, thus creating a gap between the two leaving the outcome to be far from satisfactory compared to their counterpart who are involve in the value addition of raw agricultural product especially through agro processing and thus gaining better from such activities. Thus this study aims at awakening the consciousness of government to set up better policies to improve on the sector. This will foster farmers readiness to jump pass their usual tradition cycle of production and engage themselves in most of the activity of the agro value chain especially agro processing so as to rip better and business men to identify agro processing as a priority area for investing in the country. This study also seeks to breach the gap of academic research as very few academic research has been carried out in the field of agro processing in Cameroon.

1.6 Scope of Study

This study will be base in the Cameroon economy. Emphases will be laid on the coffee, cocoa and palm processed products which covers revenue of output originating from activities after postharvest and their relationship to the economic growth thus data on various product, with respect to their processed output, total income per year and foreign earnings and the GDP within the period 1980-2013 of the country will be used. This will be gotten from the FAO statistics and world development indicators of the World Bank

report for the record period from 1980-2013. This period is considered because of the limitation to get up to date data right up to 2017.

1.7 Area of Study

Cameroon being a sub Saharan country is located in Central Africa with a total land area of 475,440 km² and a population of about 22 million inhabitants. It is bordered by Nigeria to the West, Chad to the Northeast, the Central African Republic to the East and Equatorial Guinea, Gabon, and the Republic of Congo to the South. Cameroon's coastline lies on the Bight of Bonny, part of the Gulf of Guinea and the Atlantic Ocean. Cameroon is sometimes described as "Africa in miniature" because it exhibits all the major climates and vegetation of the continent: mountains, desert, rain forest, savannah grassland, and ocean coastland. Cameroon can be divided into five agro-ecological zones (Table 1) distinguishable by dominant physical, climatic, and vegetative features. The climate varies with terrain, from tropical along the coast to semi-arid and hot in the north. Exceedingly hot and humid, the coastal belt includes some of the wettest places on earth, as is the case with Debundscha, at the base of Mt. Cameroon, with an average annual rainfall of about 10,287 mm.

Agriculture is the backbone of Cameroon's economy; employing 70% of its workforce, while providing 44% of its gross domestic product and 30% of its export revenue. Cameroon produces several agricultural commodities, for export and domestic consumption. The most important of these, which vary from one agro-ecological zone to another (see Table 1.2) are cocoa, coffee, cotton, banana, rubber, palm oil, sugarcane, tobacco, tea, pineapple and peanuts for cash crops, and plantains, cassava, corn, millet, sorghum, yams, potatoes, sweet potatoes, dry beans, and rice for food crops. Animal husbandry is practiced throughout the country and is particularly important in the Northern region

Cameroon, a triangular nation in central Africa precisely around the Gulf of Guinea. Cameroon is a bilingual country that occupies a greater part of the equatorial rainforest of West Africa with a wide range of forest resources. Presently, estimates of the population of Cameroon by the Cameroon Officials and the World Bank (2010) as at 2010 stand at about 19,600,100 inhabitants distributed across the national territory in over 250 ethnic groups, speaking English and French as well as other local languages.

Table 1.2 Major crops cultivated and animal species reared in each agro-ecological zone

Agro-ecological zones	Main crop and animal production
Sudano-Sahelian	Maize, millet-sorghum, rice, cowpea, soybean, onion, sesame, fruits, cotton, cattle and small ruminants
High Guinea Savanna	Maize, yam, cassava, sweet potatoes, rice, cotton, cattle, pig, small ruminants, poultry birds
Western Highlands	Maize, beans, potatoes, rice, sweet potatoes, vegetables, coffee, pig, poultry, cattle, small ruminants, fisheries
Mono-modal Humid Forest	Banana, plantain, cassava, cocoyam, sweet potatoes, maize, vegetables, cocoa, coffee, oil palm, rubber, fruits, poultry, pig, poultry birds, small ruminants, fisheries
Bimodal Humid Forest	Plantain, cassava, banana, maize, cocoyam, sweet potatoes, cocoa, oil palm, rubber, coffee, maize, cocoa, oil palm, fruits, poultry, pig, fisheries, small ruminants

A brief review of the economic facts on Cameroon reveals that the main characteristics of Cameroon's economic situation are balance of payments deficits, current account deficits, high external debt and high debt service ratio. An analysis of the country's recent macroeconomic achievement can be done by reviewing its economic performance during three main periods. The period economic boom period (1963-1986); the recession period (1987-93); and the period 1994-96 (post devaluation period) (Amin, 1998).

From 1963 to 1977, Cameroon experienced a period of steady economic growth with its real GDP growing on average by 4.6% per year mainly as a result of global stability of the terms of trade and rapid expansion in its agricultural exports (World Bank Group, 2008). Government revenue represented 17% of GDP, and total government expenditure averaged about 18% of GDP, with the average overall budget deficit being maintained at 1% of GDP during this period (Khan, 2011). In fact, this period usually constitutes what is known in Cameroon as the economic boom period.

From 1978 when oil production started, the agricultural sector declined immensely giving way to the oil and service sectors. Oil became the main source of foreign exchange earnings improving Cameroon's foreign exchange earnings resulting to high growth of the economy. This growth accelerated in 1982 fuelled by the oil boom. In real terms, the economy grew at a rate of about 8, 8 percent propelled by the oil sector accounting for two thirds of export earnings. Resource inflow peaked at 22.14% in 1978 (Khan, 2011). The government carried out large investment expenditures from domestic resources with very little foreign borrowing, such that in this period, external financing represented only 6% of total expenditure. External debt was less than 27% of GDP in 1988/89 (World Bank, 1989 and Khan, 2011).

From the Post-devaluation period (1994-to Present), the government of Cameroon implemented some structural reforms related to the reorganization and cutting down of the civil service, privatization of public enterprises, bank restructuring, and the liberalization of domestic prices and interest rates based on IMF SAP prescriptions. These reforms have contributed a great deal in stabilizing Cameroon's economy. As such, Output recovered steadily leading the restoration of Cameroon's international competitiveness. With this, Real GDP reversed from an average decline of 4% during

1987-93 to an average growth of about 2% during 1994-96 and to an average 5% in 1996-2000. This growth in the GDP has been accompanied by a rise in private investment from 11% of GDP to 13% (World Bank, 1989 and Khan, 2011).

In recent times, the economy clamours about the vision 2035, which aims at making Cameroon an emerging nation by the year 2035. The government of Cameroon has elaborated a long term development strategy aimed at transforming the country into a prosperous and democratic nation. The development scheme is expected to propel Cameroon to an emerging economy. In the Growth and Employment Strategy Paper (GESP) in which the fundamental principles to attain this economic vision of Cameroon is imbedded, it shows that public expenditure will mainly focus in areas such as those that aim at accelerating growth, improving access to infrastructure (energy, transport, information technology etc), human capital development, innovative trade and initiatives, vocational training, funding investment especially on agro processing etc.

1.8 Organisation of the Study

This study is organised into five chapters. Chapter one is the introduction. It contains the background of the study, the problem statement, the objectives, hypotheses, the scope and limitations, the significance and justification of the study. The theoretical, conceptual and empirical literatures are dealt with in chapter two. This shows what some scholars have established in relation to agro processing industries and in relation to economic growth. Chapter three covers the methodology. It explains the various ways used in gathering data and information for the study as well as the variables used in the research. Chapter four covers the data analysis and discussion. These data are analysed using some statistical tools, while chapter five focuses on the summary, conclusion and recommendations of the study. The summary gives a synopsis of the study; the conclusion is recapitulating the researcher's finding, while recommendations offer

proposals on policies to better the agricultural activity, agro processing industries and sustainable development.

1.9 Definition of key term

Agro-processing

Agro-processing is the “subset of manufacturing that processes raw materials and intermediate products derived from the agricultural sector. “This includes products originating from agriculture, forestry and fisheries.FAO1997

Agro-processing industries refer to those activities that transform agricultural commodities into different forms that add value to the product. "Agro-based industries are those industries which have either direct or indirect links with agriculture (Bhattacharya 1980). Agro-processing industries, especially food manufacturing, tobacco and textile processing dominate the commercial industrial sector. In this sense the agro- processing could be defined as set of techno economic activities carried out for conservation and handling of agricultural produce and to make it usable as food, feed, fiber, fuel or industrial raw material. Hence, the scope of the agro-processing industry encompasses all operations from the stage of harvest till the material reaches the end users in the desired form, packaging, quantity, quality and price. Ancient Indian scriptures contain vivid account of the post-harvest and processing practices for preservation and processing of agricultural produce for food and medicinal uses. But, inadequate attention to the agro-processing sector in the past put both the producer and the consumer at a disadvantage and it also hurt the economy of the Country. (Kachru 2008)

Agro-industry

The agro-industry constitutes all the post-harvest activities involved in the transformation, preservation and preparation of agricultural products for the consumption of food and non-food products.(Wilkinson and Rocha, 2009) The agro-industry consists of six main groups: food and beverages, tobacco products, paper and wood products, textiles, footwear and apparel, leather products and rubber products. Captured within agro-industry are a diverse range of primary and secondary post-harvest activities, and involves varying levels of scale, complexity, labour, capital and technology intensity

Agribusiness

According to Davis (1956), agribusiness is the sum total of all the operations involved in the manufacture and distribution of farm supplies, production operations on the farm and the strong processing distribution of commodities and items. Davis and Goldberg (1957), view agribusiness as dividing the structural components of the production process into substructures which are capable of being administered interactively. Three substructures of this sector are the input; farm productions and the marketing section for processed products. This concept implies the process by which corporate firms supply agricultural inputs or purchase farm outputs and process them for onward distribution in an integrated pattern. Agribusiness is grouped into three primary tri-aggregates: (i) farm supply (ii) farm production (iii) processing distribution.

Operationalize definition of agro processing sector.

This is the part of the agro industry that commences from the post-harvest activity involving activities like preservation, preparation, of both Simi-finish and finish product to the hands of final consumer or for further production.

Economic Growth

Todaro and Stephen (2012) Economic growth refers to an increase in the capacity of an economy to produce goods and services, compared from one period of time to another. In other words, it is the change in national income over time, usually measured over one year or better still; it is a positive change in the output, or production, of a country or an economy. Economic growth can be measured in nominal terms, which include inflation, or in real terms, which are adjusted for inflation. It is conventionally measured as the percent rate of increase in real gross domestic product, or real GDP. Positive economic growth signals a wealthier economy, and increased prosperity. There is increased production, which means increased profits for the production companies. Increased production also translates to increased tax collection for the government and, reduced unemployment levels, and better prospects for the economy.

Increase in the capital stock, advances in technology, and improvement in the quality and level of literacy, levels of infrastructure – such as transport and communication, levels of corruption, educational standards and labour productivity, labour mobility, flow of foreign aid and investment, level of savings and investment etc., are considered to be the principal causes of economic growth. At the same time, the notion of economic growth is often used interchangeably with economic development. In other words, some authors view economic growth to be synonymous to economic development while others distinguish it clearly from economic development. In this light the ideas or views of some authors are here presented. The structuralist school of thought that emerged in Latin America in the 1940s regards economic development as the structural transformation of the underdeveloped economies so as to permit a process of self-sustained economic growth. To them, economic development could only be achieved through the expansion

of those sectors of the economy which are neglected and with appropriate state intervention. (Todaro and Stephen, 2012).

In the context of this study therefore, economic growth is simply regarded as the increase in the output of the economy over time, measure by the value of the annual gross domestic product (GDP) and the annual growth rate.

CHAPTER TWO

LITERATURE AND THEORETICAL REVIEW

2.1 Conceptual Literature

2.1.1 An overview of agro-processing firms

The industrial sector in developing countries is typically dominated by small manufacturing firms. Such firms are generally characterized by poor physical infrastructure, limited human capital endowment and unskilled labour with low levels of education (UNIDO, 2000; Shifer *et al.*, 2012 and Daniel *et al.*, 2012). A large number of these manufacturing firms are agro-related, using agricultural products as their main raw material or those producing agricultural inputs (UNIDO, 2000). The manufacturing sector contributes over 70% of total formal employment in Africa and 60% of manufacturing value-added is from agro-related firms (UNIDO, 2000 and FAO, 2008). These firms are often labour-intensive, especially those for food processing, textiles, clothing, leather and footwear (FAO, 2008). A study on the patterns and trends of agro-industrial products trade during the period 1990-2008, showed that the world agro-industrial exports increased more than three-fold from \$520 billion to \$1.66 trillion an average annual compound growth rate of 6.7% UNCTAD (2010). Over the same period, total world merchandise exports expanded almost five-fold from \$3.1 trillion to \$14.7 trillion, an average annual growth rate of 9 per cent. As a result, the share of agro-industrial exports in total merchandise exports fell from almost 17% in 1990 to 11 % in 2008. The fastest growth rates were achieved by exports of processed commodities destined for final use (7.7% a year) and horticulture (7 % a year), while unprocessed commodities exported for processing grew by 5.8 % annually.

Processed and semi-processed commodities constitute the vast bulk of world agro-industrial exports. Processed commodities destined for final use accounted for almost 40% of total agro-industrial exports in 2008. Processed commodities had the highest share of agro-industrial exports, and also had the fastest growth rate (UNCTAD, 2010). The share of semi-processed commodities exported for further processing declined slightly from 30 % in 1990 to about 27 in 2008. Taken together, trade in processed and semi processed commodities accounted for two thirds of global agro-industrial exports in 2008.

The value and rate of growth of exports of different agro-industrial commodities by major regional groups and countries in the same studies by UNCTAD (2010) indicated that the EU and Asia dominate processed and semi-processed commodities exports with a total of \$165 billion and \$157.2 billion in 2008, respectively. The world's top exporter of unprocessed commodities destined for processing is the US, with total exports worth \$58.6 billion in 2008, followed by Latin America and the Caribbean with exports worth approximately \$37 billion in the same year. During the period 2005-2008, exports of unprocessed commodities destined for processing grew faster than exports of other commodity groups in all the three regions and the US, partly reflecting the hike in food prices that occurred during this period.

Within East African countries, agro-processing firms account for more than 80% of manufacturing firms, but these firms are capable of processing only 28% of the agricultural produce (EAC, UNIDO and FAO, 2011). The remaining agricultural products are sold in raw form or lost. Such a low level of processing is due to an unreliable supply of good quality and inadequate quantity of raw materials which are too scattered to reach processing firms (EAC, UNIDO and FAO, 2011). Long distances

between producing areas and the location of agro-processing firms, coupled with the poor state of transportation infrastructure also contribute to the small percentage of agricultural produce being processed.

In Tanzania there are only a few large agro-processing firms focusing on regional and international markets meanwhile the sub-sector being dominated by small and medium sized firms. Over 90% of these firms are characterised by low technology, undertaking semi-processing of products that are sold in the local market (Tiisekwa *et al.*, 2005a and Hawassi, 2006). This is in contrast to Kenya's agro-industry which accounts for more than 30% of export values, and also constitutes 70% of the value of processed products coming from medium sized and large agro-processing firms (URT, 2012a; FAO, 2008; MOTI, 2007 and Wangwe, 2002).

In Cameroon, agriculture contributes more than half of the country's non-oil export revenues and employs almost 60 % of the economically active population (World Bank, 2009). Moreover, agriculture accounts for nearly 20.2% of gross domestic product (GDP) (Kessous & Ekoka, 2008). About 80 % of the population live in rural areas most of who rely on agriculture-related activity for their livelihood (Fambon *et al.* 2000). The agro-industry is therefore an engine of economic growth, welfare enhancement, and poverty reduction. The so far largely untapped potential can be utilized much better by the full implementation of the growth and employment strategy (DSCE 2009)

2.1.2 Coffee Processing Sector in Cameroon

Cameroon was once reportedly the second leading coffee producer and exporter in Africa with annual production of as high as 132,000 tons in 1986. Since then, the production has been steadily declining with swinging annual production that went down as low as 36, 000 tons in 2010. According to ICO statistics, the production over the last 12 years (2000 – 2011) ranged between 66,780 in 2000 and 36,480 in 2010 with an annual average

of 49,505 tons indicating a trend of stagnation. The productivity is also very low, about 204 kg/ha for Arabica and 340 kg/ha for Robusta according to early reports. However, data collected from the farmers and divisional ministry of Agriculture Office shows lower figures, 100 kg/ha for Arabica and 300 kg/ha for Robusta. (Amadou, 2007)

2.1.3 Cocoa Processing Sector in Cameroon

According to FAOSTAT (2012), Cameroon is ranked 14th in terms of world cocoa production with about 256,000 metric tons. Cocoa also ranked 3rd in terms of the country's export commodities. Cocoa is one of the best crops to increase income in households within forest communities in Cameroon. Except the three northern regions, cocoa is produced in all the other regions but with highest production (about 80%) in three of the regions; Southwest (35%), Centre (28%), and South (16%). Unlike other cash crops like oil palm and rubber, only smallholders are involved in cocoa activities. A cocoa development society (SODECAO) exists, that supports extension services to farmers. Production trend in the country has been on a steady rise from the period 1960 (600,000tons) to 2005 (2,400,000 tons) and the country contributes 4% to world cocoa production.

After harvesting and extraction of the beans (mostly done manually by family labour or hired labour), the beans are dried using ovens and then put into bags. These are sold to intermediaries who most often exploit the farmers due bad roads (no means to transport) or using false scales. Some of these intermediaries (licensed buyers) sell to local bigger exporting organizations such as TELCAR COCOA, sell to local cocoa processing companies in Douala or they export themselves to Europe. A small amount of cocoa butter, paste and powder are produced in Cameroon and sold/consumed locally or sold to neighboring countries as pointed out by. (Program of Accompanying Research for Agricultural Innovation (PARI, 2015)

It is worth noting that local processors purchase a negligible quantity of cocoa and coffee. A very small fraction of cocoa output goes to some local industries (CHOCOCAM, SICCACAO) for transformation into cocoa butter and chocolate, part of which is also exported. But we are concerned with the export of cocoa beans, which is a homogeneous product. Over the study period about 76% of all cocoa produced was exported. According to (Khan, 2002) cocoa is a good indicator of the performance of the agriculture sector. Restrategising the cocoa sector will secure high quality raw product for agro-processing. A national cocoa policy will contribute to this effort (Dada, 2007). As agricultural producers in Cameroon are the only socio-economic group for which poverty has recently increased, agro-processing development and agribusiness promotion give hopes for these producers and for the regions in which they live (World Bank, 2009).

Import dependency on food and export dependency on few products are realities in developing countries. In Cameroon new strategies and policies have been adopted purposefully for her Vision 2035. Some of the objectives are directed towards agro industrial development for overall economic growth, poverty reduction, and global market integration. However, the huge agro-based potentials of the country are not used despite favourable endowment factors and comparative advantages as highlighted by (Agribusiness for Africa's Prosperity, 2012)

2.1.4 Palm Processing Sector in Cameroon

The oil palm a perennial tree is an important agro crop (Rieger, 2012). It is native to the countries bordering the Gulf of Guinea (Hoyle and Levang, 2012), with the main belts running through the southern latitudes of Cameroon, Ivory Coast, Ghana, Liberia, Nigeria, Sierra Leone and into the equatorial region of Angola and Congo (Bakoume and Mahbob, 2006; Carrere, 2006). In the wild, the oil palm fruit occurs in two forms, termed *dura* (with a large kernel) and *pisifera* (having no shell and yet sterile). Tenerais a hybrid

from dura and pisifera, and the most cultivated variety because it produces fruits with higher oil content (Rieger, 2012). It is the preferred commercial variety cultivated by agro-industries in Cameroon and smallholders close to the agro-industrial areas (Hoyle and Levang, 2012).

Processing oil-palm fruits for edible oil has been practiced in Africa for thousands of years, and the highly colored and flavored oil produced is an essential ingredient in much of traditional West African cuisine. This crop is versatile and its products [such as palm oil, sauces, soap, wine, fertilizer (ashes), roofing (leaves), building material (trunk), medicines (roots)] are of great economic value in West and Central Africa (Carrere, 2010; Ibitoye et al., 2011). For centuries, oil palm has provided local communities with a large number of benefits. Its primary purpose until now has been the extraction of palm oil (from the flesh of the oil palm fruit) and palm kernel oil (from its kernel or seed) for the production of edible and industrial oils (Carrere, 2006). Palm kernel waste (after the oil has been extracted) is also used as animal feed and in co-firing in electricity generation. The palm oil industry is worth at least USD 20 billion annually (Hoyle and Levang, 2012).

The production of palm oil can be grouped into traditional (artisanal) and industrial milling (Carrere, 2010). Modern processing of oil-palm fruit bunches into edible oil (CPO) may be categorized into traditional methods, small-scale mechanical units, medium-scale mills and large industrial mills depending on the degree of complexity. In Cameroon, the production is stratified in three sectors: an agro-industrial sector, smallholders (SH) in contract with agro-industries and a traditional independent artisanal sector (Bakoume et al., 2002).

The traditional process is simple, but tedious and rather inefficient. Red or Crude palm oil (CPO) is an important source of vitamin A (Atinmo and Bakre, 2003) obtained from the transformation of loose palm nuts. The process entails activities that provide many job opportunities to rural people at different levels (skilled and unskilled, formal and informal). This helps in income generation and poverty reduction in the rural setting. The women are involved in different stages of production and commercialization of CPO to assist in the upkeep of their families (Ibeckwe, 2008).

Cameroon is ranked the world's 13th largest producer of palm oil. In 2010, it was estimated that Cameroon produced 230,000 tons annually (MINADER, pers.com). Oil palm production in Cameroon increase following the drop in the prices of cocoa and coffee in the early 1990s, which at that time were the major commercial farming crops in the country. This caused many smallholders in the ecologically suitable areas to switch to planting oil palm (Ngando et al., 2011).

Consequently, the purchase of germinated oil palm seeds (chitted nuts) by small and medium-sized farmers at the Centre for Oil Palm Research at La Dibamba (Cameroon) rose from 20% of the total production in 1996 to an average of 60% during the past 10 years. It is thus estimated that about 5,000 ha of oil palm were planted by small land owners and medium-sized farmers each year during the last decade, making a total of about 90,000 ha for the non-industrial palm grove in Cameroon (Bakoume and Mahbob, 2006). This increase in the number of oil palm smallholders and oil palm plantations has equally resulted in an increase in the number of artisanal oil palm presses in the palm oil production basins in Cameroon. The upsurge has been more in communities around the oil palm agro-industrial corporations of SOCAPALM, CDC and PAMOL Plc, probably initiated by the operations of the corporations.

2.1.5 Importance of Agro-Processing sector

Agro-processing has great important in developing countries for its role in generating employment and income. Many people are directly employed in firms that process agricultural products and in servicing processing machines (Nambbodii *et al.*, 2003; URT, 2008; Lazaro *et al.*, 2008; Da silva *et al.*, 2009). Moreover, the sub-sector generates backward employment linkages by creating markets for raw materials from agriculture (Hawassi, 2006; Khosla and Sharma, 2012; Eze *et al.*, 2013). At the same time forward employment linkages are generated as people are engaged in supplying processed products to the market. In addition to generating employment and cash income, agro-processing firms reduce postharvest losses. The shelf-life of processed products is higher, which facilitates storage and transportation, therefore making agriculture more profitable both at the processing and marketing levels (UNIDO, 2004a, IMF, 2006, Lazaro *et al.*, 2008, URT, 2008, ADBG, 2010, Vilane *et al.*, 2012 and Karthick *et al.*, 2013). The ability of agro-processing firms to promote low-cost preservation, processing, marketing, and transportation of food products compared to imported processed food helps to provide the poor with cheaper food alternatives, thereby preserving their income. For instance maize flour that is processed by local firms is cheaper than imported flour.

It has been demonstrated that, agro-processing firms have the highest contribution towards processing agricultural inputs such as seeds grains and the firms have employment multiplier effects in terms of labour productivity and total factor productivity (Luthfi, 2007). Agro-processing could therefore be a powerful means for generating employment and improving agricultural productivity in Tanzania as it provides a strong link between primary production at the farm level, processors, final

consumers and other services linked to agro-processing firms (Hawassi, 2006 and URT, 2008).

Furthermore, several studies FAO (2004) and (2008) have shown that small agro-processing firms serve as a catalyst which stimulates rural development from different dimensions, such as health, education, development of infrastructure such as roads, electricity and water thereby helping to reduce the rural–urban income disparity. Small agro-processing firms also enhance the viability of small scale farms by providing market outlet for their products, often within the vicinity of rural areas.

- The overall potential of agro-processing is huge as it can:
- Increase the value of crops of poor farmers and thus yield higher returns;
- Expand marketing opportunities;
- Improve livelihoods of people;
- Extend shelf-life of commodities;
- Improve palatability of commodities;
- Enhance food security;
- Overcome seasonality and perish ability constraints; and Empower women who are often involved in agro-processing.

Similarly, agro processing provides great possibility for conversion of farm produce to consumer goods and in the process limiting wastage, increase shelf- life resulting in value addition and increase income transfer to the farmers from different categories of consumers, as the processed commodities has broader market (Chengappa 2004). Agro-industries is also viewed as a ‘safety valve’ that needs to be built within rural areas to absorb surplus labour and provide assistance to the problem of large scale disguised unemployment. At the same time Srivastava (1989) brought out the fact that, agro-

industry provides the crucial farm industry connections which helps accelerate agricultural development by creating backward linkages (supply of credit, inputs and other production enhancement services and forward linkages (processing and marketing), adding value to the farmers produce, generating employment opportunities, and swelling the net income of farmers. This in turn motivates the farmers to improved productivity and further opens up possibilities of industrial development. Also, the agro-industry creates new demand on the farm sector for more and diverse agricultural outputs which are more suitable for processing. At the same time it can open up new crop and livestock opportunities to the farmers and thus increase the farm income and employment (Austin, 1981).

2.1.6 Factors Constraining Agro-Processing Industries in Africa

(Otieno and Mwangola 2006) outline some factors that constrain agro-processing in Africa, They attributed the depressed economic conditions that prevailed in the world in the 1980s and parts of 1990s and the multiplicity of continuing crises in Africa to have had and continue to have negative impact on the processing of African raw materials. The hope that African countries would progressively increase exports of its raw materials with increasing value added has not been widely realized. Thus, the constraints inhibiting the growth of Africa's food industry include:

- Inadequate agricultural, industrial and economic policy
- Weak integration between agriculture, manufacturing and trade
- Conceptual mistakes in the establishment of enterprise
- Technological inadequacies
- Poor demand stimulation

- Inability to adapt to the increasing sophistication of international markets including the development of new packing materialslack of inter-sectorial integration between large and small enterprises, low level of domestic sub-contracting
- Inadequate infrastructure
- Debt service burden, inflation budget deficits and import dependence of industry

2.2 Empirical Literature

Agro processing has for ages attracted a lot of scholastic attention due to its contribution of the economic growth of countries and most especially in aspects such as employment creation, income generation, value addition to agricultural products and export earnings amongst other which has not left the attention of major conferences, reports of international organization such as FAO, UNIDO, IMF, AU a host of others as mention by their works below.

According (IFAD, 2000) Agro-industrial development has a direct bearing on the lives of the poor. Significantly it promotes increased employment in agro-industrial activities, and leads to an augmented demand for primary agricultural products. Early stage agro-industry is predominantly labour-intensive and provides various opportunities for self and wage employment. It also recommends to Sub-Saharan Africa's which have a majority rural population made of youth people to invest in agribusiness as a priority source employment opportunities and livelihoods,

In addition to encouraging economic growth, an agribusiness development path would contribute substantially to poverty decline and improved social outcomes, forming part of a socially-inclusive development strategy (Yumkella, 2011). In the same light the

World Bank confirms strong synergies exist between agribusiness, agricultural performance and poverty reduction in Sub-Saharan Africa. Thus see efficient agribusinesses to stimulate agricultural growth and strong linkages between agribusinesses and smallholders can decrease rural poverty, giving that agro-industry is fairly reachable and can be pursued at small-scale due to relative low start-up cost and has low technical obstacles to entry. Thus Small and medium enterprises (SMEs) as most of them are called remain important actors in the largely informal networks that dominate urban Sub-Saharan Africa and have proved fairly adaptive amidst various challenges.

In terms of employment creation and income generation among agro-processing firms, (Mutabaziet al.,2007) in their evaluation on employment creation in southern highland zone of Tanzania through correlation analysis, use descriptive statistics such as percentage to capture the relationship between the numbers of new jobs generated in relation to the volume of products processed in small agro processing sub-sector. Their findings indicated that the number of paid labour in a firm in southern highland zone had a positive and significant effect on the volume of marketed milk.

(Rijkers, 2009) in the same light analyze employment growth rate of manufacturing enterprises in Ethiopia using ordinary least square regression analysis. His model limited the annual employment growth rate as a dependent variable which was regressed against the age of a firm, activities performed by the firm, management effectiveness and the geographical location of a firm (urban or rural). The results showed that rural firms grow less quickly than urban firms and rural firms are less labour productive than urban firms. (Benavente *et al.*, 2008) in his case find out employment growth using ordinary least square regression method to assess how the growth of products sold was influenced by investments and products innovations. His findings indicated that product innovation had

a significant positive effect on employment, concluding that emphasis on innovation is important for effective jobs creation.

(Myint, 1971) on his part highlighted that the logic of developing agro-based industries by not-well to-do developing countries on the ground that the export potentiality of processed agricultural product present better prospect than the raw products. The slow growth of agriculture in most less developed countries is due to the poor terms of trade for their agricultural products in the world trade. Processed labor cost involved in processing the raw agricultural products in the developing countries. Agro industry can play a considerable role in pro-poor growth policies, particularly in developing countries, like Bangladesh where 75 percent of the poor live in rural area (UNIDO, IFAD and FAO, 2008). As possibilities for income creation are restricted in rural areas, rural non-farm earnings from trading, agro-processing, manufacturing, commercial and service activities comprise a significant part of household income. As a whole, non-farm earning account for 30 to 45 percent of rural household income in developing countries (UNIDO, IFAD and FAO, 2008). The expansion of agro-industry have an vital impact on the local agricultural sector as well as the means of support to small holder farmers, provided they can produce on a steady basis, supplying consistent quantity and quality

(Verma and Kesavan, 1986; Sivakumar *et al.*(1999) suggested that added employment may be created by using policy options in the agro-industry which would mostly benefit the rural areas and that would reduce the movement of labour to the urban areas.

(Dhiman and Rani, 2011) similarly reported Agro based industry which is regarded as the emergent sector of the Indian economy due to its large prospective for growth and probable socio economic impact (specifically on employment and income creation). Some assessments suggest that in developed countries, about 14 % of the total work force

is involved in agro-processing sector directly or indirectly. However, in India, only approximately 3% of the work force gain employment in this sector signifying its underdeveloped state and vast unexploited potential for employment. Therefore, there is need to make an overall development among all sections of the society with emphasis in rural agro based industrial units. The agro-industry creates new demand on the farm sector for more and varied agricultural outputs which are more appropriate for processing and it is key for raising export earnings, generating employment and achieving food security (Babu, 2000). An agro-processing plant can generate new crop and livestock openings to the farmer and thus improving the farm income and employment. Particularly the food and beverages processing sector remains significant at all levels of economic development (Wilkinson and Rocha, 2008). As potentials for income generation are limited in rural areas, rural non-farm earnings from agro-processing and its trading embodies a significant part of household income. In terms of employment structure, rural industries (manufacturing) accounts for roughly one fifth of rural non-farm employment, comprising mostly of occupations in agro industries (UNIDO, MAD and FAO, 2008). This sector provides the small farmers the prospects to expand their incomes through the value added generated by processing their own agricultural products (Schejtman, 1994). The significance of agro-industry for employment is further underscored by high and increasing levels of female participation to more vulnerable forms of work (casual, temporary and seasonal), that attract lower pay and more labour hours for preparation and processing.

In agrarian countries, a higher agribusiness/ratio holds a capacity for diversification and socioeconomic development as Da Silva et al (2009:49) have rightly observed that; to increase productive diversification and gain higher levels of productivity and income generation, the most be movement within the fundamental economic activities from the

farm gate to the agro-industrial sector and its services, as well as higher shares of non-farm employment in rural areas.” This scenario is made possible with an active link between the farm sector; rural industries and all associated activities.

Pawa(2014) examined the role of agribusiness in all its tri-aggregates to the socio-economic development of the rural sector in Nigeria. His work acknowledges the position of agriculture as it employs a majority of the rural population in a principally agrarian society like Nigeria. He consult mostly from empirical literature on agribusiness and agro-industrial linkage. He revealed that, the farm, off farm and processing components of agribusiness have the ability of generating jobs, provision of income, poverty reduction and infrastructural growth. His study however detects poor policy articulations, lack of working capital, poor infrastructure, lack of ideology etc. as major hindrances to effective agribusiness. Thus his paper recommends a robust political will, a sound ideological frame, adequate funds among other measures to develop a strong interface between agricultural policies and politics in achieving a sustainable agribusiness as an authentic tool for rural development in Nigeria

(Ehui and Delgado1999) recounts that, Processing of meat and crops represents a large share of manufacturing in Sub-Saharan Africa (SSA). They assessed empirically the impact of hypothesized productivity change in agro-food processing on growth, trade, employment, and input and output prices in SSA. They used 13 commodity, 7region version of the Global Trade Analysis Project (GTAP) and applied the general equilibrium model with a 1995 database. Results are compared to impacts off actor neutral and biased technical change in primary agricultural production-grains, non-grain crops, and livestock--overall and with respect to the agro food sector itself. Increasing the percentage of total factor productivity in primary agricultural production, will show

different criteria's having much greater favorable impacts than the same increase in any form of technical change in processing, even when attention is given only to the welfare of people in the agro-food processing sector itself. Technological improvement in the non-grain high value agricultural sectors such as horticulture and livestock are second-best, but still powerful promoters of increased welfare.

(Quddus, 2009) evaluated the contribution of agro-industry in the Bangladesh economy. He used the input-output tables of the year 1993-94 and 2001-2002 in Bangladesh were used to calculate inter-industry linkage indices and multiplier effects. His result indicated Agro industry contributes a substantial portion of national income and the prospect of employment generation was in an increase to a higher extent for the food processing sector, tanning and leather finishing, leather industry, saw milling and wooden furniture. He found out that Food processing, fish processing, tanning and leather finishing, leather production, livestock, and poultry were the essential sectors of the Bangladesh economy. The dependence on input by some of the agricultural production sectors increased from early nineties to early two thousand. Tanning and leather finishing, leather processing, edible oil, food processing and paper industry draw heavily on other primary industries across a broad range of supplying industries and these sectors have powerful motivation to the economy than the other sectors. Most of the agricultural processing sectors including some agricultural production sectors have better prospective to increase income. All the agro-processing industries except edible oil generated high income of which tanning and leather finishing, jute bailing, rice milling and sweeteners generate high level of income. The sector livestock followed by poultry where found to generate the highest employment. The agro industries that have the largest multiplier values were the edible oil, leather finishing, rice milling, ata and flour milling and fish processing.

In their findings (African transformation report 2014) declared agriculture to make up the bulk of most African economies, and with most of the poor relying on subsistence farming for their livelihoods, emphasize Africa's economic transformation has to include modernizing agriculture to increase the productivity of smallholders. Using agriculture as a base for manufacturing and services, mainly by increasing agro processing and other agribusiness, will create jobs, particularly for women and youth and will also improve the demand (and prices) for what smallholders produce. (African transformation report 2014) also adds that Agro processing typically offers a big step up in generating employment, income, and foreign exchange, which can often be unlocked by well-designed strategies to overcome obstacles that thwart domestic players from emerging, reaching scale, and becoming globally competitive.

(Kaldor, 1975, 1995) argued that industrial growth was constrained by the demand growth of the agricultural sector in poor developing countries and hence agriculture revolution (increasing productivity) was necessary for industrial development, not only because it created the extra wage goods for the growing urban population, but also because it created the circumstances for autonomous demand of the goods produced by the manufacturing sector

As mention in the AGENDA 21 Industrial growth is an unquestionable pre-requisite of sustainable development. Most development forums in Africa putt at the top of their agenda, economic transformation, environmental sustainability and poverty reduction. They adopt this general consensus for the need for rapid industrialization. It is, however, to be noted that general growth in industry has been slow. Positive performance in a few countries and an increase interest in foreign direct investment in African industry indicates a potential for industrial take-off. (UNIDO, 2006)

Cameroon vision 2035 has as one of its priority Agro-industrial development, which depends on a combination of the available potential and on policy choices. Agriculture and agro-industry are important value-adding business sectors, with a highly positive development impact, and with a great contribution to a country's economic growth. In its Vision 2035 Cameroon has emphasizes this role. Given that one of the development objectives of the Vision 2035 is to reduce poverty to an acceptable level in the society (DSCE 2009), the agro-industry sector can play a paramount role in pro-poor growth strategies.

The development of agro-industry will have an important effect on the livelihoods of rural farmers, for example, creating opportunities for income generation and thus representing an important mechanism for rural poverty reduction. On the other hand, agro-industrial development can also contribute to broad based industrialization and to a diversification of the export base.

2.3Theoretical Framework

2.3.1The theory of Rosenstein-Rodan on industrialization

This theory seeks to explain the importance of industrialization in relation to employment creation and income generation. The theory assumes returns that spill-overs from industrial activities lead to increased returns from other linked sub-sectors (Hoff, 2001; Fan, 2002; Hossain and Papadopoulou, 2010). This phenomenon is also referred to as the multiplier effect. Based on this theory, at various development investment stages, one sector may increase the profitability of other sectors due to multiplier effects of services and goods from those industries, hence increasing the number of people involved in corresponding activities and thus creating new jobs (Hoff, 2001 and Fan, 2002).

The theory elaborates that, demand effects depend on two factors: economies of scale with respect to labour and some non-tradable input (raw-materials). For example, if intermediate goods for processing firms are non-tradable (they are not imported) they will be obtained and used within the country hence reducing importation cost. Use of such inputs increases returns from production processes (Hoff, 2001). If the industry is expanded, it would increase the demand for non-tradable inputs thus stimulating more production of these in-puts, hence increasing production of final goods which creates more income and employment through spill-over effects.

2.3.2 The theories of balanced / unbalanced growth

In their book “Agro industries & economic development” Kar and Mishra (2004) stressed that certain industries which make use the produce of agriculture directly or indirectly are considered more desirable in the context of the economic development of the country. Such a development has a two way effect i.e. the Agricultural sector helps agro-processing industries by supplying them raw materials directly and it facilitates the growth of those types of industries which produce several inputs like fertilizer, pesticides and agricultural implements that help to promote the productivity and expansion of agriculture

2.3.4 The cross country model

(Puga and Venables 1998, 1999), Using a cross country model, describes the process of development to be influenced by fast industrialization. Whereby the industry spreads successively from one country to other. At the beginning, the development of industry in a country has the ability to increase wages with respect to other underdeveloped countries. Beyond a certain level, the wage gap stimulates the transfer of a portion of the industry towards a marginal country in which upstream-downstream relations ensure the

extension of the process of industrialization. As wage gap increases from the first industrialised countries, other countries follow the trend, this way; the process of fast industrialization then extends from one country to the other. Within the confine of our studies if this theory is applied if industrialization is giving a priority through agro processing by setting up of farm settlement schemes with necessary infrastructural facilities, such as accommodation, access roads, water, energy, communication, health care and integrated network of satellite, storage facilities to reduce post-harvest losses, ease transportation, reduce rural-urban migration and motivate more people to take to farming and related activities, it led to higher income, export earnings and overall economic growth.

2.3.6 Managing productive transformation:

A structuralist macroeconomic policy framework

The Structuralist economics views change in economic activity composition as among the major movers of growth and employment and income, thus their ideology is focused on exploring the relationship, by taking a holistic approach that considers the role of macroeconomic, trade, technology and sectorial policies. The structuralist system put growth, employment and poverty reduction as a key role in the strategy to facilitate dynamic restructuring of production and trade, and argue that “growth can only address poverty concerns if it generates new jobs to keep pace with a rising labour force” (Ocampo, Rada and Taylor, 2009, p. 1). From this perspective, diversification within and across sectors, rather than specialization, is a key driver of income growth in low-income countries (Imbs and Wacziarg, 2003; UNCTAD, 1964). If government take agro

processing as a priority as advised by the structuralist that changing economic activity component is a major booster to growth then the economy of Cameroon must move its agricultural sector from the farm gate to nonfarm activities to acquire the much needed economic growth, reducing unemployment and poverty.

2.3.7 Industrialization through global value chains

Global value chains (GVCs) is fast becoming a global economic agenda, which account for an increasing share of international trade, output and employment. The advent of these chains has been facilitated by the “fragment ability” of production as a result of advances in technology, and by the liberalization of trade and investment in current decades (Lall, Weiss and Oikawa, 2005). It has also been fostered by competitive strategies adopted by multinational enterprises, which have sought to locate labour-intensive and low value added tasks in low-wage countries while retaining high value added activities in high-wage countries. GVCs provide a stepping stone for firms and workers in developing countries, offering openings to integrate into the global economy and initiate the path of catching up.

In the light of productive transformation and industrial policy, value chains have the ability to become important learning networks and promoter for the generation of capabilities, productive capacities and productive employment. Performance and productivity are improved by learning within the value chain, which stimulates productive transformation, the creation of jobs and a dynamic catching-up process in the economy through spillover effects. UNCTAD also took a critical look to the issue, cautioning countries of the dangers of “trading more but earning less” in the context of GVCs (UNCTAD, 2002). Park, Nayyar and Low (2013); Elms and Low (2013). Also argued that since the early 1990s the expansion of GVCs has played a vital role in moving the

patterns of international trade and has significantly affected the processes of industrialization and deindustrialization. Trade in intermediates rather than in final goods and services has grown rapidly and, as a consequence, the import content of exports has risen. They claim that economic development within the framework of GVCs takes the form of “vertically specialized industrialization”, that is, a process of advancing into higher value added tasks and functions, either within a given chain or in new chains that generate more value added as a whole. However, they recognize that this is not an automatic process and that, even when it is deliberately and successfully pursued, the economic gains may not be matched by wider social gains.

2.5 Gap identified

Due the complex nature of science and academics and bearing in mind that the most constant element in life is change, this has left science and work of academics to be in exhaustive thus giving room for new findings to complement existing findings. Though may scope of search might have been limited with regards to exploration very little was found concerning Cameroon. Thus this study though with its short comings seeks to bridge the gap of literature reviewed in our studies. The first gap identified is that very little has been said about agro processing industries and its impact on economic growth of Cameroon which in one way this study answer. Secondly, most of the studies carry out an overall impact of agro processing in the economy like Quddus (2009) who evaluated the contribution of the agro-industry in Bangladesh using the input-output table, (Ehui and Delgado1999) recounts the Processing of meat and crops accounts for a large share of manufacturing in Sub-Saharan Africa (SSA). They assessed empirically the impact of hypothesized productivity change in agro-food processing on growth, trade, employment, and input and output prices in SSA, using a 13 commodity, 7region version

of the Global Trade Analysis Project (GTAP) applied general equilibrium model. But our study looks at three major sub industries in the agro processing industries which is so important in the assessment of sectorial performance in an economy since looking at the overall economy will give room for policies that effect the entire economy .

CHAPTER THREE

METHODOLOGY OF THE STUDY

3.1 Research Design

Given the time series causal nature of the study, we adopt longitudinal research design which employs continuous measures to follow particular variables over prolong period of time. This research design is observatory in nature with the collection of data from variable under consideration having no influence from the researcher. It has the ability to follow changes that occur over time in variables within models.

Nature and Sources of Data

Data used in this study are secondary data collected from the World Bank's World Development Indicators (WDI, 2017) and FAO. Data on various agro processed product is collected from FAO data base and economic growth are collected from the WDI. Within the context of the food and agricultural organisation (FAO stats 2016),

The variables under consideration are total agricultural export earnings in the various agro processed product, export earnings from the various agro processing sector, output

of the various agro processing sector. These sectors, their measures and sources of data for them are as summarised on table 3.1 below;

Table 3.1 shows the different indicators that were used and their sources. Note should be taken that the various sectorial performance are represented by the proxy in table 3.1

Table 3.1 Definition, Measurement and Denotation of Variables

Variable	Proxy	Description / Measurement	Denotation	Source
	Tonnes PER YEAR	Out	FAOSTAT	
Agro processing Sectors (Cof S, Coc S, palm S)	income	Thousand US dollar	Inc	FAOSTAT
Economic Growth	GDP	GDP Current Local Currency	Growth	WDI

Source: Author's Conceptualisation, 2017

3.1 Model Specification

To measure the effect of the agro processing industry on development, the Cobb Douglas production or a model of production functions that incorporated agro processing industry in the context of growth theory was used. Considering the aspect of agro processing under investigation and on the basis of available data, each of estimated variables was measured using the following;

Income (inc) =f (Cof ,Coc , Rub).....1

These various elements of agro processing sector was modelled with economic growth to estimate the individual elasticities in the following equation or model.

➤ Agro processing sector-Economic Growth Model

To be better analyze the impact of agro processed for the selected product on economic growth in Cameroon, the Cobb-Douglas production function was borrowed to state the Growth model which is similar to the augmented Solow-Swan model with income values for each agro processing industry:

$$\text{Ln Growth}_t = \delta_0 + \delta_1 \text{COFinc}_t + \delta_2 \text{COCinc}_t + \delta_3 \text{palminc}_t + \varepsilon_t \dots\dots\dots 2$$

Where;

Growth=Economic Growth; COFinc is income from coffee processing; COCinc is income for cocoa processing ; palminc is income from processed palm, and ε stands for stochastic elements not taken into consideration a priori and t is the time series element. Also, δ_0 , δ_1 , δ_2 , and δ_3 are all parameters to be estimated. We are expecting a priori that all our various agro processing industries have a positive effect on the regress and (economic growth) such that $\delta_0 > 0$, $\delta_1 > 0$, $\delta_2 > 0$ and $0 > \delta_3$.

3.2 Justification of models and a priori expectation

According to equation 2 above, the total income from processed product, export earnings from the processed product of coffee, cocoa and rubber are represented by the coefficient δ , have a positive relationship with economic growth represented by GDP this is because increase in income will lead to increase in GDP thus economic growth

3.3 Techniques of Estimation

The study adopted ordinary least square (OLS) techniques to estimate. The rationale behind the choice of this technique is that it producer the BEST linear unbiased estimate by minimizing the sum of squared errors. Also the use of the log in the regression enables the OLS estimates to be interpreted in terms of elasticities

3.4 Validation of Estimated Parameters

Parameters of the model stated above are analysed and validated based on the following three main criteria:

3.4.1 Economic or a priori Test

This test is concerned with the magnitude (size) and direction (sign) of the estimated parameters. With this criterion, economic theories on the variables and their relationship are made to conform to the a priori or expected signs of the parameters in question. As such here, the functional relationship as revealed by the signs and magnitude of the variables of interest is revealed and its consistency with theory and empirical result established.

3.4.2 Statistical Criteria or First Order Test

This test involves the use of statistical test such as the student t-statistic, probability values, F-ratio and the R-squared. The adjusted R-squared measures the percentage of the total variation in growth in Cameroon accounted for by income or agro processing earnings and export earnings on the total agricultural output. The t-statistic and p-values justify whether the coefficients of the estimated parameters are significant particularly at 5% while the F-ratio tests the overall significance of the adjusted R-squared and to show the degree of reliability of the results obtained as well as the forecasting ability of our model.

3.4.3 Econometric Criteria or Second Order Test

This criterion aimed at testing the assumptions of the error term or stochastic element and other parameters so as to test for some statistical problems possible in regression analysis such as auto-correlation or serial correlation between variables, stationarity of

variables included in this research study. The main tools used here are the Durbin-Watson Test, the Phillip-Perron unit-root test, while the existence of heteroskedasticity is taken care of by the OLS technique of estimation adopted by making the standard errors robust.

The Variance Inflation Factor (V.I.F.) has also been used to test for multicollinearity only for the models of economic agro processing industry and growth, through an initial OLS process since this is not possible in the GMM framework. To test for multicollinearity the basic premise is that if $VIF > 2.5$, then there is a high degree of Multicollinearity. Our null hypothesis is that there is no multicollinearity between our independent variables.

CHAPTER FOUR

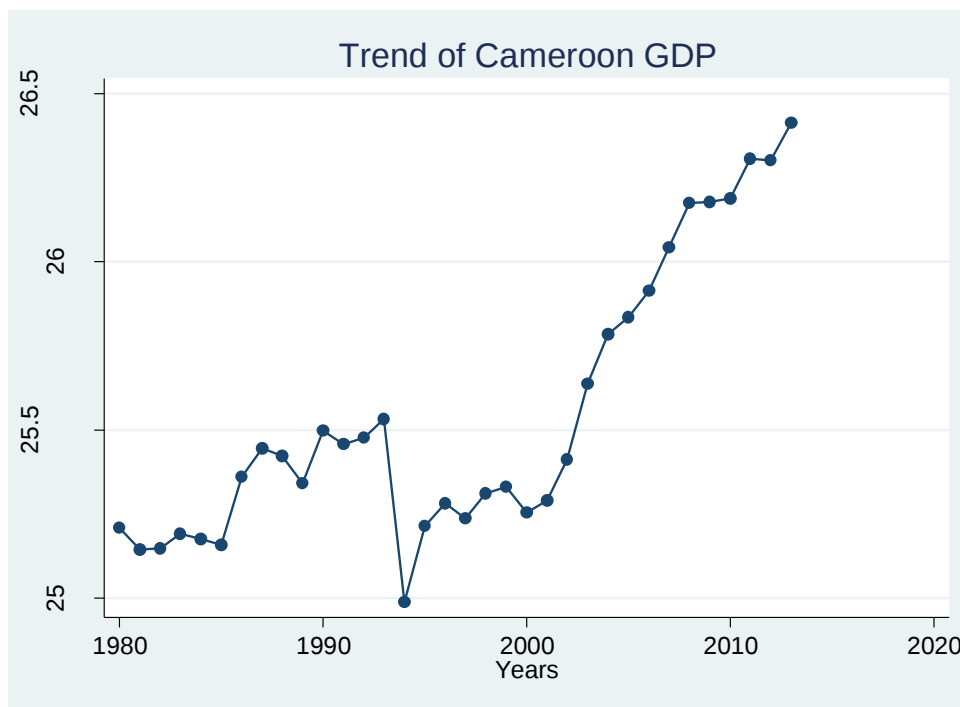
PRESENTATION AND DISCUSSION OF FINDINGS

4.1 Presentation of Results

The results of this study are presented on the basis of trend, summary statistic, correlation results, unit root test result and the regression result.

4.1.1 Trend of GDP, coffee, cocoa and palm processing in relation to economic trend

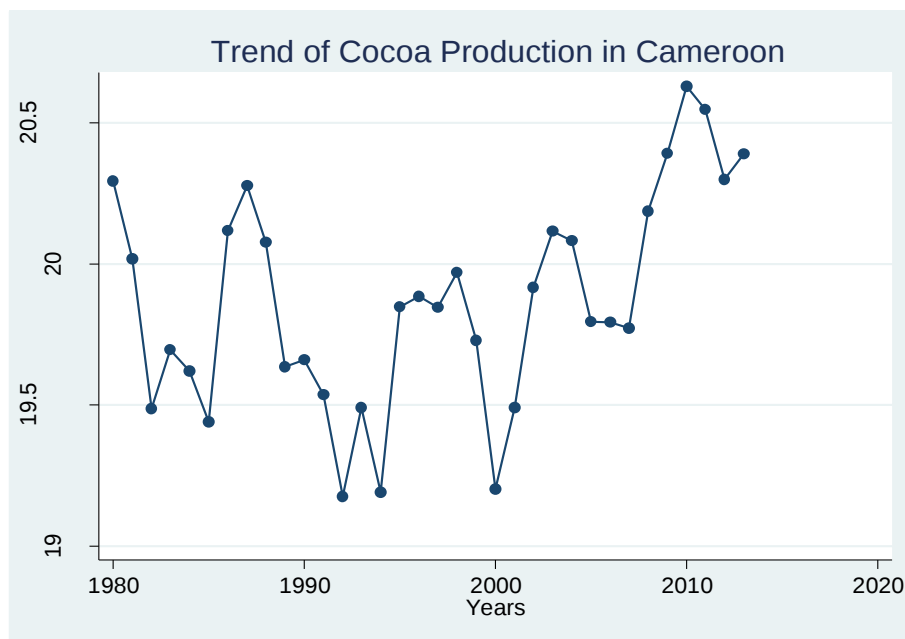
The trend of the variables used for the study has been fluctuation or non-stationary over time as illustrated by the figures below.



Source; computed by author, using stata 2010

Fig 4.1 GDP Trend of Cameroon

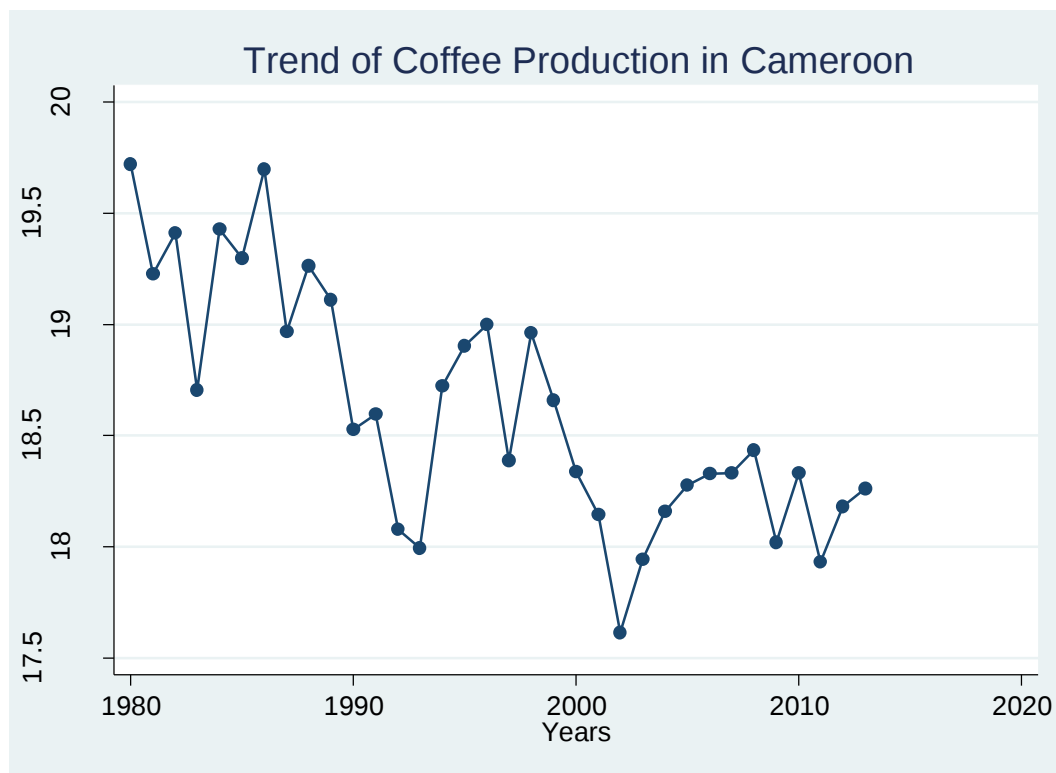
As observed from the graph above there has been variations of the GDP of Cameroon over the years. Around the early 80s to mid-80s GDP was low which was accounted for by low productivity of all sectors and mostly the dependence solely on agricultural sector during this period, from the mid-80s right up to the early 90s, there was a slight increase in the GDP of Cameroon from about 25.2billion USD to 25.5 billion USD, this increase could be associated with the discovery of petroleum in the country and the introduction of the structural adjustment program, from this period there was a sharp fall of the GDP which was accounted for by the economic crisis in the mid-90s. from this period on there has been a steady increase in GDP with its peak being in the years 2013 within our study period, all of this is due to the recovery of the economy accounted for by the reforms carried out by the government such as the liberalization of the economy in the early 90s, Cameroon involving in the millennium development goals (MDGs) HIPC initiative, the GESP and the recent vision 2035 and to a greater extent agro processing.



Source; computed by author, using stata 2010

Fig 4.2 trend of income from cocoa and its product in Cameroon

Cocoa is one of the major cash crop produced in Cameroon and thus its production and processing is of great importance to the economy of Cameroon. From the period 1980 which shows income from cocoa and its product was high, it dropped gradually to the mid-80s due to government interest direction to the petroleum sector away from the agricultural sector that was the main source of the country income. From the mid-80s to the late 80s there was a slight increase in the income from cocoa and its product which could be accounted for by the SAP and stabilization program, from then on the income dropped steadily to the mid-90s, all due to economic crisis experienced by the country during this period. From the mid-90s to the late 90s, income from cocoa and its product increased and this was due to the liberalization of the economy which made the economy more competitive. There was a sharp drop of income from the late 90s and early 2000s as a result of the financial crisis that hit the world. From 2000, incomes have been increasing though with little variation around mid-2000 and realized again after 2010 but on a whole incomes have been high. This increase in income is due to Cameroon involving in the millennium development goals (MDGs) HIPC initiative, the GESP and the recent vision 2035 with most of the funds targeted towards the agriculture especially in promoting and empowering women. On a whole GDP growth in Cameroon can also be accounted for by the continual increase in agro processing industry existing in the country.

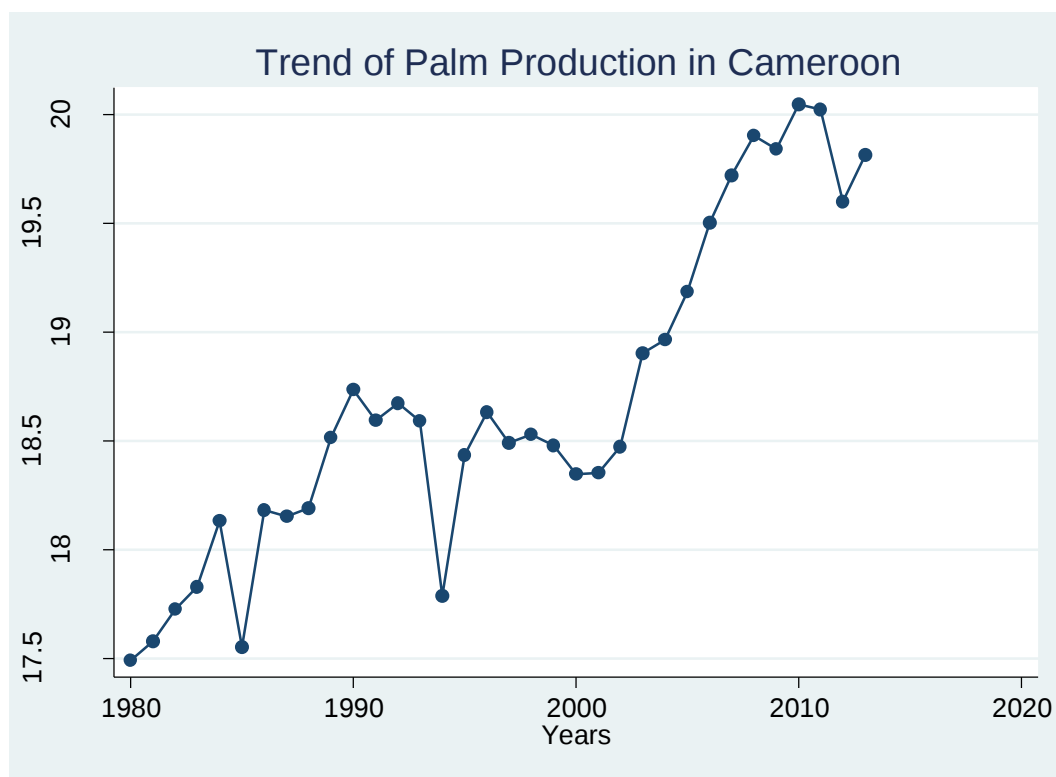


Source; computed by author, using stata 2010

Fig 4.3 trend of income from coffee and its product

Fig 4.3 shows income variation from coffee and its product between the year 1980-2000 indicating a downward sloping curve with its highest point being in the year 1980 probably due to government vested interest in the agricultural sector but this gradually drops still the mid-80s, then went up again till the late 80s. From late 80s income started dropping again till the early 90s and it kept fluctuating from then on till the late 90s. From the late 90s there is a sharp fall in income to early 2000 then increase to a level and remain almost constant with little undulations till 2013. On a general note the income from the coffee industry had downward trend which can be accounted for by the low and unstable price of coffee, the closure of the marketing board which regulated the activities of coffee and cocoa production and the abandonment of many farmers who are at the extracting phase of the coffee industry due to low returns from the activity.

With regards to fig 4.4 below showing the trend of income from palm and its product presents a clear contrast from the trend of the income of coffee and its product. The trend shows a general upward sloping curve with undulation appearing within our study period like in the mid-80s, mid90s 2000, and around 2011. The continuous increase in income from this industry is due to the ever increasing number of farmers engage and expansion of government in palm production. The drop of income in this industry is due to similar factors that affected the cocoa and coffee industries.



Source; computed by author, using stata 2010

Fig 4.4 trend of income of palm and its product.

Table 4.1 summary of the trend of variables

Periods	Cocoa	coffee	palm	GDP
1980-1999	Drops	drops	Increases	Increases
1999-2000	drops	drops	Increases	Slight drop
2000-2010	Increases	drops	Increases	Increases
2010-	Increases	drops	Increase	Increases

4.1.2 Impact of Agricultural processing industry on economic growth

To fully evaluate the impact of agro processing industry on economic growth, we will use summary statistics, Philip perron unit root test for stationarity and the regression

4.1.2.1 Summary Statistics

The summary statistics of variables used in this, study show some variation with respect to their means, standard deviation, minimum and maximum values as shown in the table below

Table 4.3 descriptive statistics of variables

Variables	Observation	Mean	Std Dev	Minimum	Maximum
GDP (million usd)	34	13609.3	6350.853	7113.905	29567.5
PALM	34	1.72e+08	1.42e+08	3.95e+07	5.09e+08
COFFEE	34	1.42e+08	8.46e+07	4.46e+07	3.67e+08
COCOA	34	4.57e+08	1.77e+08	2.13e+08	9.11e+08

Source; computed by author, using stata 2010

Within our period of study, the average GDP, income from processed palm, coffee and cocoa in real terms have been, 13609.2million USD, 1.72 million, 1.42million and 4.57million USD respectively with their standard deviation ranging as follows $\pm$

7113.905million, 1.42 million, 8.46million and 1.77million USD respectively deviating from the mean which are not too high thus making the variables good for estimation.

As observe from table 4.1, the industry with maximum amount of income is cocoa processing followed by palm then coffee sector with value of 9.11million, 5.09million and 3.67million respectively with minimum and maximum values of 7113.9 million and 29567.5million USD respectively.

4.1.2.2 Diagnostic Test Results

Table 4.4 Philips perron unit root test for stationarity

	Philips Perron Unit Root Test			
	Levels		First Difference	
Variable	Test Statistic	P-value	Test Statistic	P-value
LGDP	0.425	0.9824	-6.491	0.0000
LOGCOCOA	-2.565	0.1005	-5.656	0.0000
LOG COFFEE	-2.686	0.0000		
LOGPALM	-1.021	0.7454	-7.499	0.0000

Source; computed by author, using stata 2010

The results showed that the variables are all found to be non-stationary at levels using a 5% level of significance except for coffee which is stationary at 5% level of significant. The other variables that is GDP, cocoa and palm turn to be stationary after the first difference at 1% level of significance using both the Philips Perron unit root test, thus verification of a long run relationship among the variables can be verified

4.1.2.3 Pair-wise Correlation Results

Table 4.3 below presents the correlation coefficients intended to show the relationship between the variable of interest. The values I parentheses show the significance level of the correlations.

Table 4.5 Pair-wise Correlation Results

variables	Log gdp	logcocoa	logcoffee	logpalm
Loggdp	1.0000			
Logcocoa	0.6369 (0.0001)	1.0000		
Lagcoffee	-0.5687 (0.0004)	-0.0750 (0.6732)	1.0000	
logpalm	0.9397 (0.0000)	0.5205 (0.0016)	-0.6513 (0.0000)	1.0000

Source; computed by author, using stata 2010

From table 4.3 above, coffee has a negative and significant correlation with cocoa and GDP as shown by their log values, meaning increasing coffee production will lead to a fall in the production of all the other variables but that of palm is not significant, meanwhile cocoa palm and GDP all have positive and significant correlation to each other with palm and GDP having a close to perfect correlation

4.1.2.4 Regression Results for growth equation

The regression results presented on table 4.4 below measure the impact of the three agroprocessing impact on economic growth

Table 4.6 regression result for economic growth

Variables(dependent variable) d1.log GDP	coefficient	Standard error	t	p> t
D1.logcoco	0.1075285	0.056074	1.92	0.065
Logcoffee	-0.552602	0.0297218	-1.86	0.073
D1.logpalm	0.2905378	0.0587727	4.94	0.0000
_cons	1.04262	0.551703	1.89	0.069
Number of observation	33			
R-squared	0.6348			
Adj.Rsquared	0.5970			
F(3,29)	16.80			
Prob>F	0.0000			

Source; computed by author, using stata 2010

Table 4.5 is use to present results for objective 2 to the forth objective

4.1.2.5 To assess the impact of the cocoa agro processed sector on the economic growth of Cameroon

From the table above showing results of the growth model, cocoa has positive effect on the economic growth of Cameroon as indicated by its elasticity coefficients, with this significant at 10% as showed by it $p > t = 0.065$. Going by the coefficient of cocoa processing sector, a 100% increase in cocoa processing in the country will lead to a potential increase in GDP by approximately 10.7% with the increase being statistically significant at 10% level and it is in accordance with our a priori expectation. Such finding is supported by The big push theory of (Hirschman, 1958), which is an advice for the hopeless, on how developing countries without real industries because of the lack of financial and human resources to invest in all the activity sectors, or not to invest at all, such nations have to concentrate their resources in key sectors during the first phases of development. Besides, non-competitive countries are organically connected to a fast growth. Da Silva et al (2009:49) also observed that; “moving the core economic activities from the farm gate to the agro-industrial sector and its services may represent productive diversification and lead to higher levels of productivity and income generation as well as higher shares of non-farm employment in rural areas .(African transformation report 2014) also adds that Agro processing typically offers a big step up in generating employment, income, and foreign exchange, which can often be unlocked by well-designed policies to overcome barriers that prevent domestic players from emerging, reaching scale, and becoming globally competitive.

4.1.2.6 To assess the impact of the coffee agro processed sector on the economic growth of Cameroon

Contrary to the above result coffee on its part has a negative effect on economic growth of Cameroon as indicated by the coefficient with the result being significant at 10%

confident interval. With regard to this coefficient, a 100% increase in coffee processing will decrease GDP by approximately 5.5% which is not in concurrence with the a priori expectation. This is contrary to empirical studies of (Dhiman and Rani, 2011) who reported Agro based industry which is regarded as the sunrise sector of the Indian economy having a large potential for growth and likely socio economic impact (specifically on employment and income generation) and the World Bank confirmation of a strong synergy existing between agribusiness, agricultural performance and poverty reduction in Sub-Saharan Africa. Thus see efficient agribusinesses to stimulate agricultural growth and reduce rural poverty, giving that agro-industry is fairly accessible and can be pursued at small-scale.

4.1.2.7 To assess the impact of the palm agro processed sector on the economic growth of Cameroon

On its part cocoa processing has a positive and significant effect on economic growth and going by the coefficient with it being significant at 1% confident interval, a 100% increase in cocoa processing will lead to an approximate 29.1% increase in GDP. Similar to this result is that of (Wilkinson and Rocha, 2008) who acknowledge agro-processing plant can open up new crop and livestock opportunities to the farmer and thus increase the farm income and employment. Particularly the food and beverages processing sector remains important at all levels of economic growth.

4.1.2.8 To assess the combined impact of the coffee, cocoa and palm agro processed sector on the economic growth of Cameroon

Overall the agro processing sector with the joint variation of coffee, cocoa and palm processing sector in Cameroon has the capacity to account for about 59.7% of the total variation in economic growth in Cameroon as shown by the value of the adjusted R-squared and significant at 1% level and thus 99% reliable for policy prescription. Such

forecasting ability of this prediction is asserting by a high significant level of prob>F value of 0.0000 with random variables not specified in the model accounting for the remaining 40.3%. This in line with (Babu, 2000) findings who says agro-processing plant can open up new crop and livestock opportunities to the farmer and thus increase the farm income and employment. Particularly the food and beverages processing sector remains important at all levels of economic development (Wilkinson and Rocha, 2008) also added there is possibilities for income generation to be restricted in rural areas, but in rural non-farm earnings from agro-processing and its trading constitute a significant part of household income thus giving the importance of the agro processing industry on economic growth both in rural and at the national level.

On the bases of the empirical result we reject the null hypothesis that agro processing sector has no significant effect on economic growth of Cameroon as shown by their p value ($p > |t|$ 0.0000)

4.2 Discussion of Result

With regards to our first objective, our results indicated the existed variation and fluctuation with regards to trends. It revealed that coffee industry as represented by income from the cash crops and their product had a downward sloping curve which is opposed by palm with an upward sloping curve. While cocoa on its part though with fluctuation of up and down had an almost steady increase. This show that both the production and the prices of the crop varies with time. Worthy of note is that coffee industries has face lots of problems which includes the destruction of coffee farms around the 80s and late 90s by farmers due to low returns from the farm cause predominantly by fluctuating prices, the closure of the marketing board and inadequate factories that deal in the processing of coffee. Cocoa on its part gain a lot of attention by farmers and government due to its relative importance it plays as food and its supplements.

Meanwhile palm is continually gaining attention both by government and small holder due to its indispensable nature

Owing to the fact that agriculture is the backbone of Cameroon economy, agro processing by implication was supposed to be one of the major activity carried out in the country, especially by small holders or artisanal processor using lighter equipment and making use of mostly local raw materials and also establishing a good market for its product abroad so as to improve on the export earnings and thus balance of payment situation.

On an individual bases increasing processing of palm and cocoa have positive impact on the economic growth of Cameroon which is in some position with a priori prediction and reality with one of economics factors that favour economic growth as increase in production pushes the GDP upwards, and following the cobb-douglas production equation that assumes a positive relationship for both sides of the equation. On like this normal phenomenon explain by the cobb-Douglas production function, coffee has a negative impact on the economic growth as shown on the empirical result coffee processing industry has negative on GDP though insignificant. Coffee exhibits a contrary result to (Babu, 2000) who says agro-processing plant can open up new crop and livestock opportunities to the farmer and thus increase the farm income and employment. Particularly the food and beverages processing sector remains important at all levels of economic development (Wilkinson and Rocha, 2008) also added there is possibilities for income generation to be restricted in rural areas, but in rural non-farm earnings from agro-processing and its trading constitute a significant part of household income thus giving the importance of the agro processing industry on economic growth both in rural and at the national level.

From the empirical result above, the agro processing sector with the joint variation of coffee, cocoa and palm processing industries in Cameroon has a positive effect on economic growth that is an increase in agro processing will lead to increase GDP thus economic growth. This is line with the theory of Rosenstein-Rodan on industrialization, which explain the importance of industrialization in relation to employment creation and income generation. With assumption about the returns from spill-overs from industrial activities which lead to increased returns from other linked sub-sectors (Hoff, 2001; Fan, 2002; Hossain and Papadopoulou, 2010). A phenomenon referred to as the multiplier effect. Thus when there is increase number of agro processing plant or increase in production, it will lead to increase employment hence output and a further increase in income thus overall increase in economic growth. In same light Pawa Tersoo(2014) falls in line with our studies as he examined the role of agribusiness in all its tri-aggregates to the socio-economic development of the rural sector in Nigeria. His work acknowledges the importance of agriculture as it employs a majority of the rural population in a predominantly agrarian society like Nigeria. He draws conclusion majorly from documentary evidence on agribusiness and agro-industrial linkage and reveals that, the farm, off farm and processing components of agribusiness are capable of generating jobs, provision of income, poverty reduction and infrastructural growth which are all indicators of economic growth.

4.3 Implication of the Study

The topic under consideration was aimed at assessing the contribution of agro processing sector on economic growth of Cameroon taking cocoa coffee and palm agro processing sector as case study. Found coffee processing was having a downward trend since the 80s while palm processing had been increasing continually but palm production does not meet current demand. Other result obtained showed there was overall positive and

significant effect of the agro processing sector on economic growth of Cameroon. Thus with such result and there is an obvious need for the government to revamp the coffee sector especially with current situation of unemployment, poverty, food insecurity and post-harvest losses, unstable prices for agricultural product, government needs to put in place policies that favor agro processing so as to increase agricultural value thus increase income, employment, export earnings and overall economic growth while making agro processing a priority.

4.4 Limitation of the Studies

Though this study is far from being perfect, it could have been much better if it never face the following limitation. In the course of achieving this work we had to drop one variable which was employment in the various industries, which should have given much inside to the study but data was not found with respect to it. Also our study had to extend to the year 2016 but we could only source data which ended in 2013, thus our level of predictability may be affected as five years of any economic cycle is enough for substantial change to arise.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATION

5.1 Summary of findings

The main objective of this study is to assess the contribution of agro processing sectors of coffee, cocoa and palm nut on economic growth of Cameroon. To bring out the best result from the main objective, the study had as specific objective to examine the trend of coffee, cocoa and palm nut processing in relation to economic trend of Cameroon, to assess the individual and combine impact of the coffee, cocoa and palm nut agro processing sector on the economic growth of Cameroon. This were done using statistical graph and tables for the first objectives and the ordinary least square technique of estimation to major impact. With regards to objective one, the existed variation and fluctuation with regards to trends. It revealed that coffee industry as represented by income from the cash crops and their product had a downward sloping curve which is opposed by palm with an upward sloping curve. While cocoa on its part though wit fluctuation of up and down hard an almost steady increase.

Looking at the second objective, we found cocoa has positive and significant effect on the economic growth of Cameroon

With regards to the third objective, we found coffee processing sector to have a negative effect on GDP of Cameroon with this effect being significant.

Regarding our fourth objective, we found that palmagro processing sector had an overall positive and significant effect on GDP

And the result with respect to the fifth objective shows that the agro processing sector with the joint variation of coffee, cocoa and palm processing sectors in Cameroon has a positive effect and significant impact on economic growth.

5.2 Conclusion

This study was aimed at assessing the contribution of agro processing sector on economic growth of Cameroon, found coffee processing was having a downward trend since the 80s while palm processing had been increasing continually. Other result obtained showed there was overall positive and significant effect of the agro processing sector on economic growth of Cameroon. Meanwhile cocoa and palm had a positive impact on economic growth, coffee processing had a negative impact on the economic growth of Cameroon. Thus we conclude that, for country especially those that depend on agriculture for their livelihood in order to acquire maximum gain from the sector, they should make agro processing industry a priority as this will increase employment, non-farm income, export earnings, reduce postharvest losses and increase overall economic growth.

5.3 Recommendations

Base on the findings of our study, policies recommendation will be propose with respect to our objectives and result obtained, with regard to improving agro processing sector in particular and overall economic growth in Cameroon. This involve the concerted efforts from all stakeholders: public that is the government and private sectors that is entrepreneur, and farmers. Thus each of this stake holder will be charge with certain responsibilities as recommended.

To the farmer,

- It is recommended that farmer including parastatals should keep record of their activities in terms of labor inputs, cost of production and revenue from their activity as this will help both government and NGOs on the amount of support that can give to a particular farmer,
- Secondly farmer are advised to add value to products by changing farming practices to access higher income, markets, enhance product quality and incorporate processing and packaging activities and this should not be limited to only coffee industry
- Farmer should keep themselves up to date with modern methods of farming and marketing information relating to price and possible avenues to acquire support especially coffee farmers with their product facing a downward trend

To entrepreneur

- To make available data on their activities for those already in the activity of agro processing as this will provide government with information on implementing policy option of taxation or subsidizing
- An advise to exploit available opportunity in the agro processing sector by investing in such ventures as this is an area that is still unexploited and lucrative especially in the palm and cocoa processing as it increase both income and export earnings
- Entrepreneur should shift away from the old routine of maintenance marketing to a more purposeful and development oriented innovative market, fully backed by basic consumer research and opportunity identification is required. Thus,

marketing strategy should ensure that all sections of the organization are consumer oriented taking cognizance of both home and foreign taste

- Enhance dissemination of marketing information amongst business owners especially in agro processing industry through marketing information systems/technologies so that both farmers and entrepreneur have access to real time prices and other market opportunities both home and abroad that will increase income and export earnings and encourage investment especially in the fading coffee processing industry.

To the government

- In designing policies on taxation and subsidy government needs reliable and accurate data in order to know the extent of implementation to various activities including the agro processing industry thus the government needs to put in place a sound system through its institution like the national institute for statistics to acquire such data.
- There is a need for government to support public-private sector dialogue and activities, in order to develop networks and synergies. There is also a need to provide a more conducive policy environment which includes macro-economic stability, political stability and contract enforcement focused on pro-poor policies to improve the entire agro processing industry
- The government should provide appropriate training and develop local capacity for designing and preparing projects, she should also enhance Research and development (R&D) support focus on modifying processing technologies and introducing design concepts for technologies especially where activities

replicates of processes already developed and tested in other developed countries especially to revamp the coffee processing industry.

- setting up farm settlement schemes with necessary infrastructural facilities, such as accommodation, access roads, water, energy, communication, health care and integrated network of satellite, storage facilities to reduce post-harvest losses, ease transportation, reduce rural-urban migration and motivate more people to take to farming and related activities especially in coffee producing towns and villages.
- training of business owners to effectively awaken and reinforce entrepreneurial skills, upgrading processes to make unit operations more efficient and more responsive to market demands prescribing grades and standards through regulatory agencies for the finished products to ensure consistently high and uniform quality especially for export products
- Government should put up policies that protect home industries especially on Food products that are locally fabricated using tariff and non-tariff barriers.

5.4 Area for Further Research

The current study is obviously not exhaustive as far as the dynamics of agro processing industry and economic growth are concern. As such it is necessary to evaluate the effect of total agro processing on economic development in Cameroon and the contribution of the processing crops and processing of animal. Moreover it will be imperative to carry out an empirical study to tradeoff between the export and import of agro processing out and total home consumption. Such studies will help enable policy makers to appreciate the level of production and to know what policy to place as regards importation an exportation. Also it is expected that issues concerning poverty reduction be handle especially looking at working condition in such agro processing factory and they has

been as the welfare of workers in such industries determines productivity. There could also be a cross sectional study carried out in the CEMAC region comparing each countries performance in the agro processing industry.

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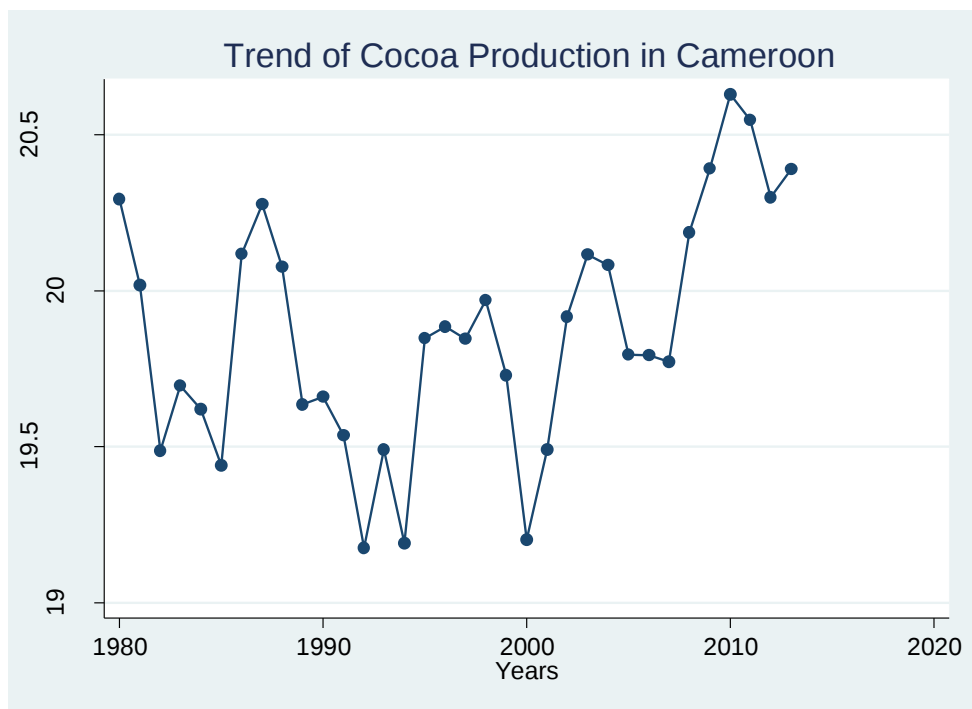
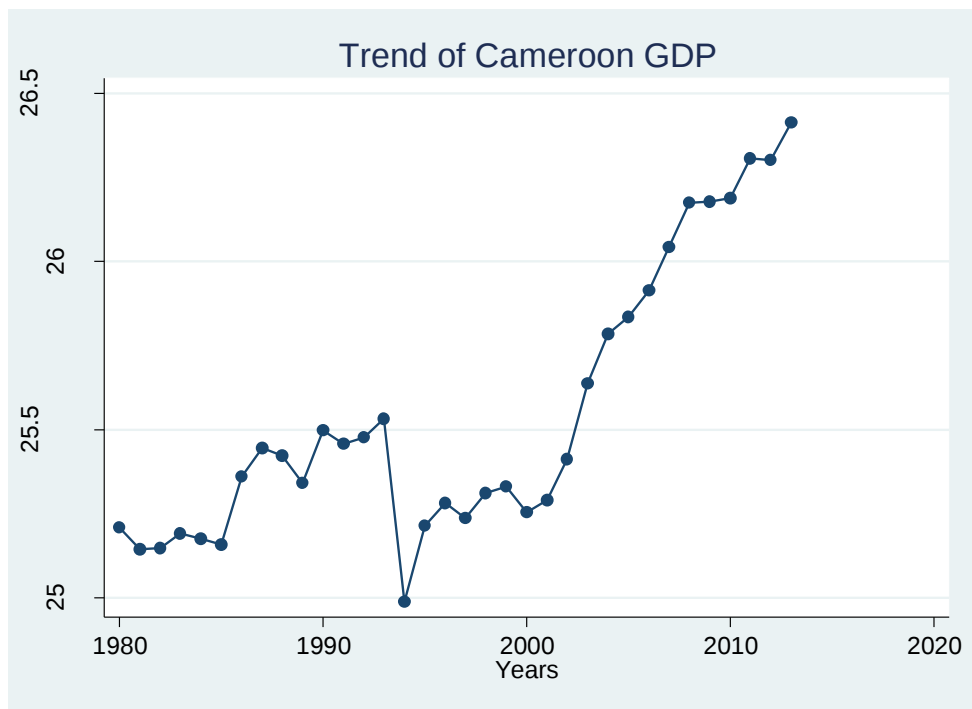
APPENDISES

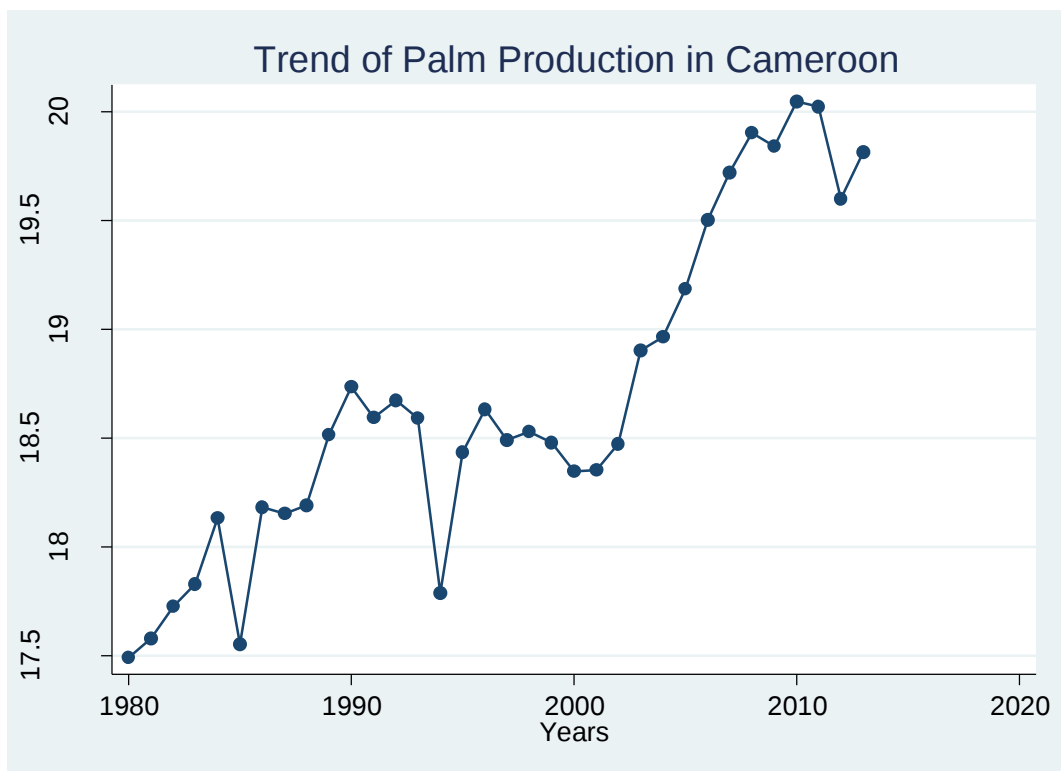
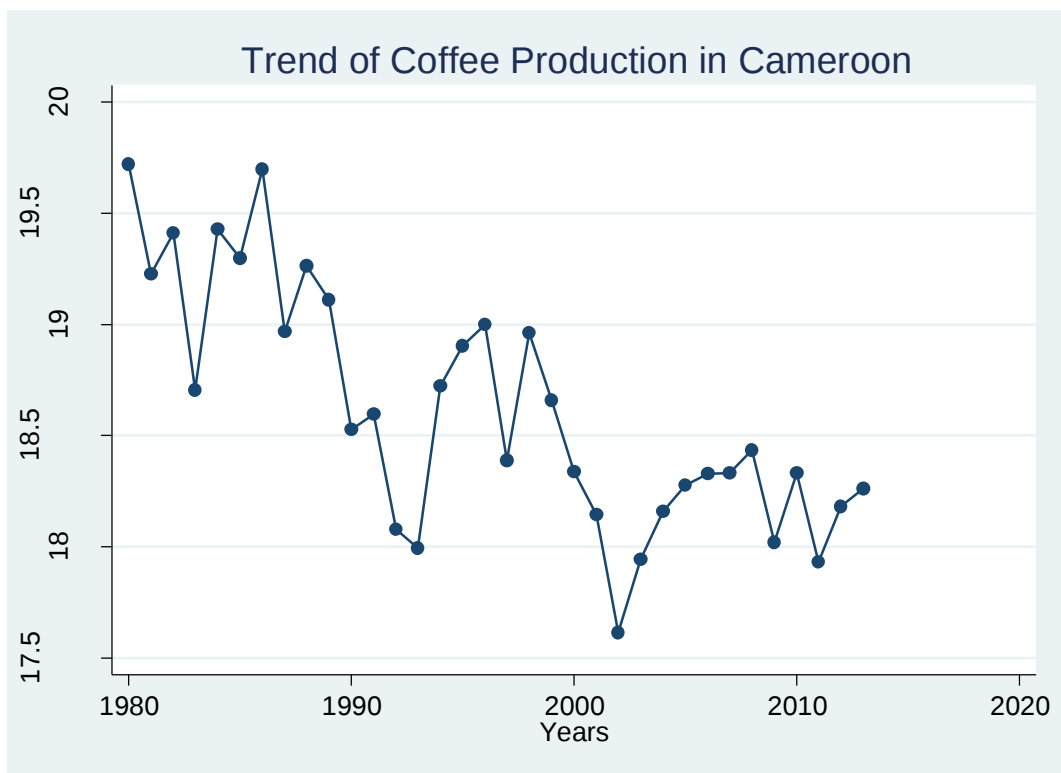
Appendix 1: Data set used in work

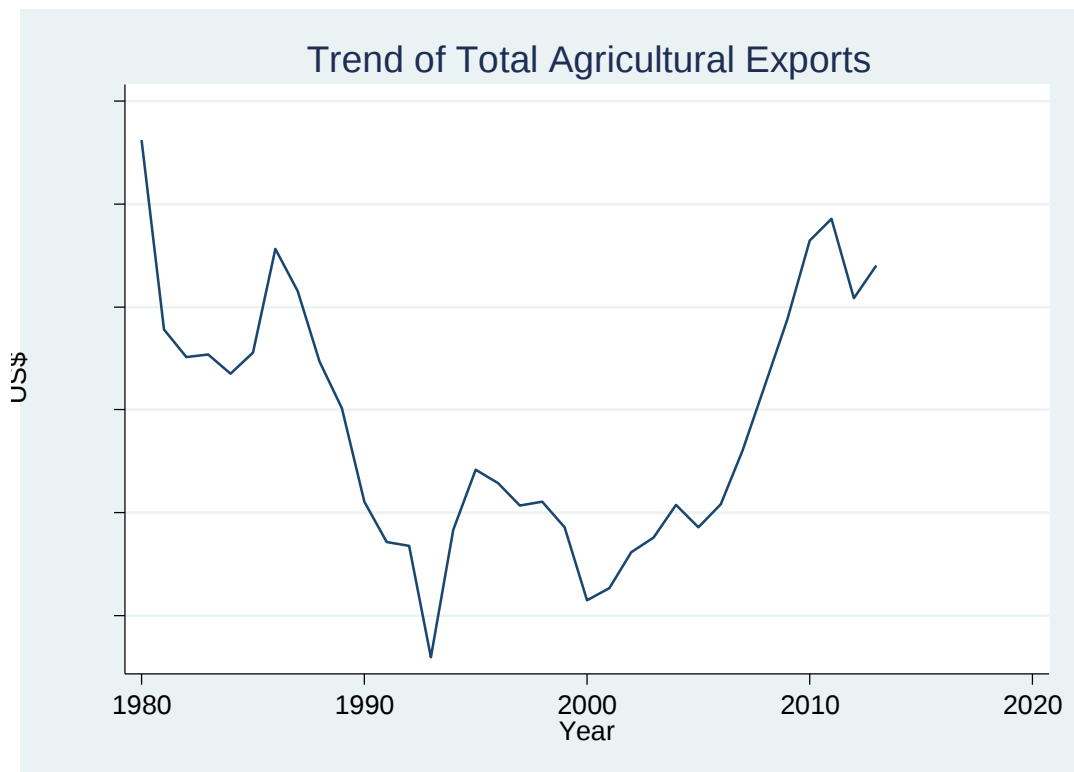
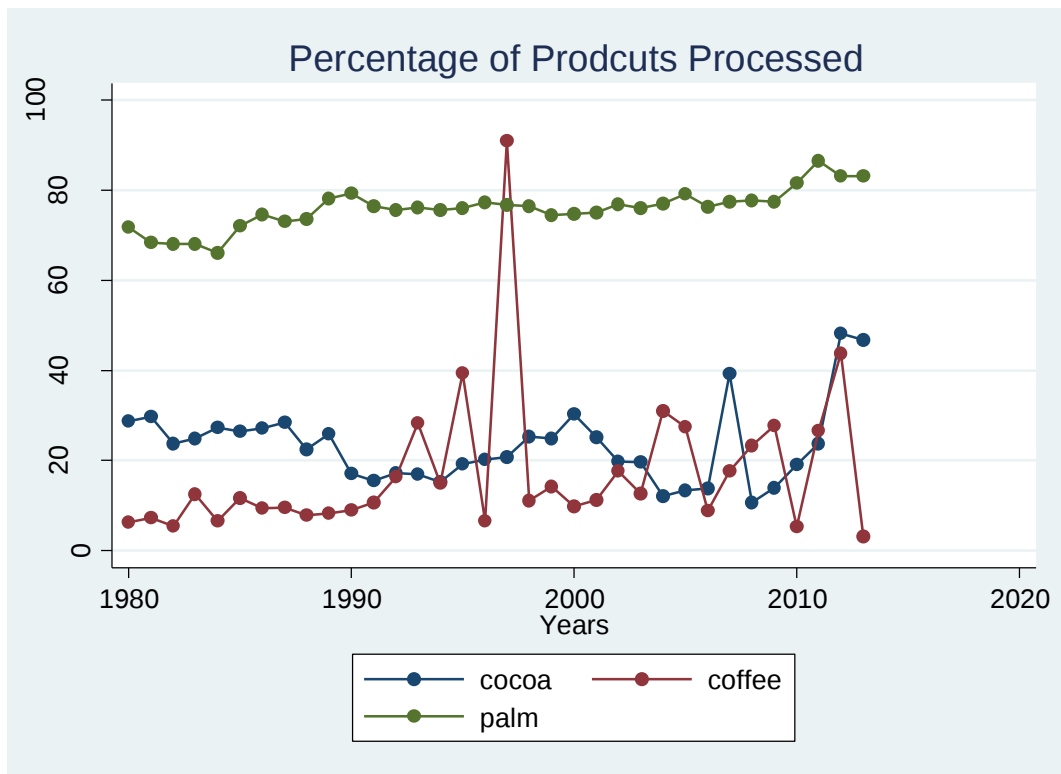
coffee tatot production in 1000usd	cocoa tatot production in million us	palm total producton in million usd	
120550.7	129.3069	10.02859	GDP in million usd
117412.5	130.7331	10.81404	8868.76
137772.7	116.1611	10.24488	8323.282
68436.73	120.3004	9.903379	8351.209
148154.2	133.55	12.74918	8713.916
107457.5	130.7066	11.83852	8583.777
141815.5	135.9759	10.7002	8435.864
88699.16	146.7024	11.3832	10314.47
128278.6	142.9465	11.61086	11242.98

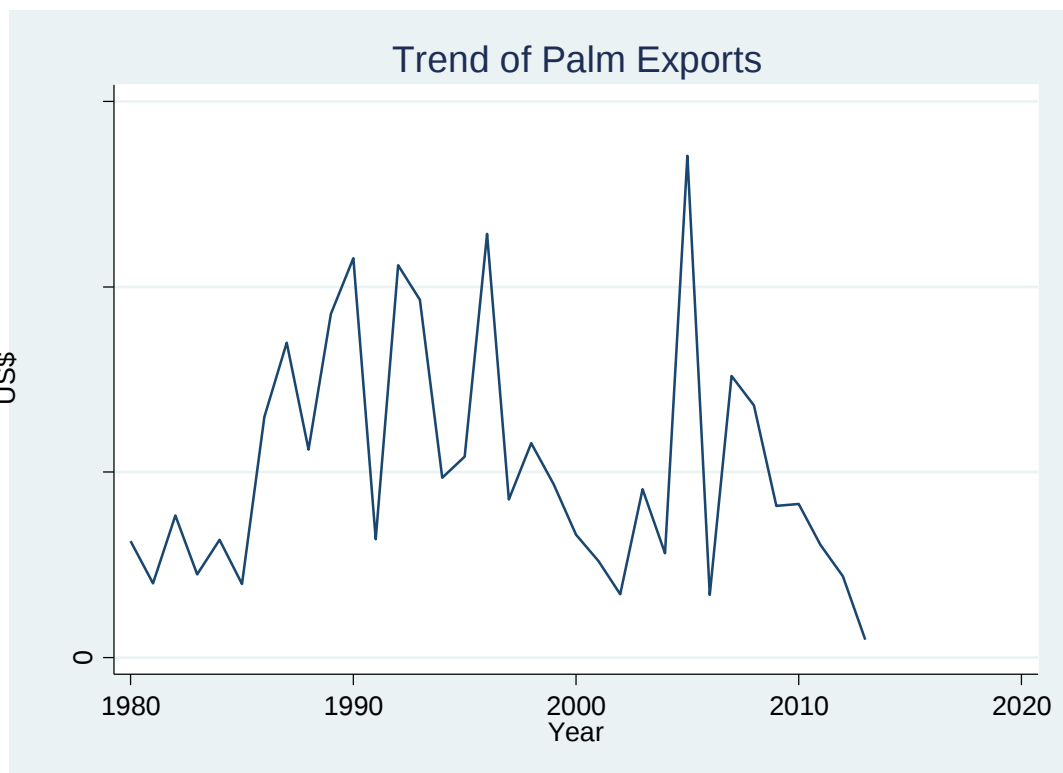
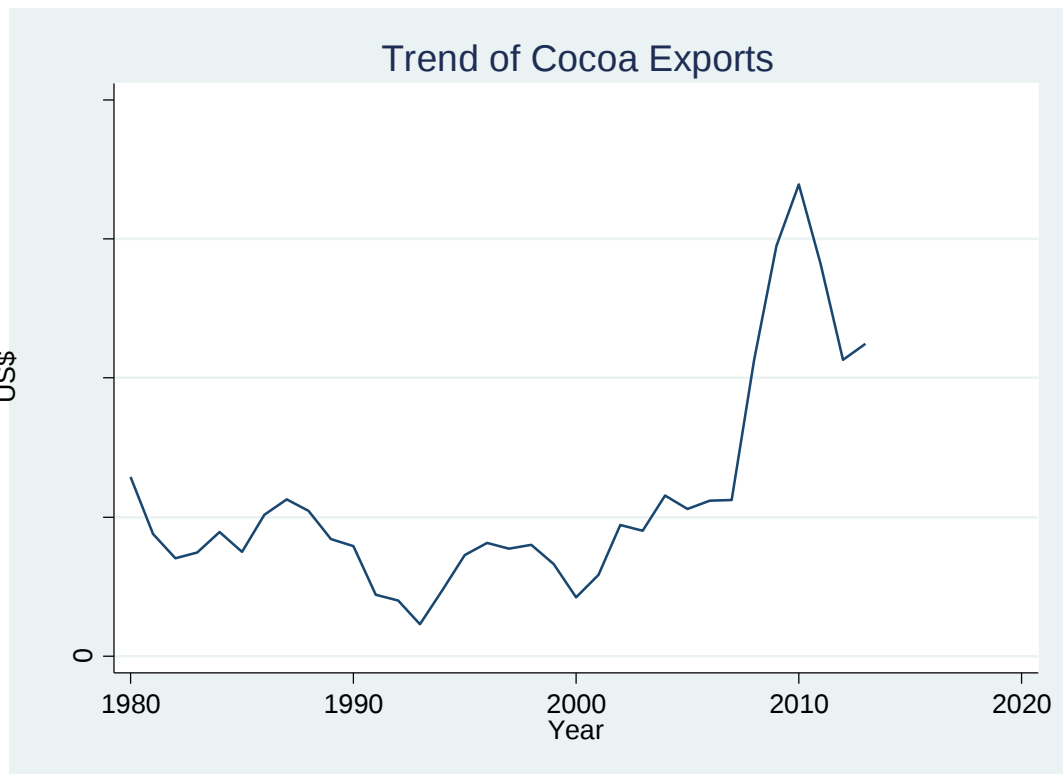
124303.5	138.8591	12.29385	10990.06
108488.9	127.039	12.06619	10128.78
123637.3	115.9921	12.06619	11845.71
81866.23	108.077	12.06619	11381
73504.49	109.364	12.29385	11600.27
79226.53	118.2015	12.52151	12267
79502.64	148.028	12.74918	7113.905
111863.4	138.8879	14.57049	8912.611
68329.3	140.082	13.20451	9547.067
120899.9	138.0859	13.65983	9122.908
105287.3	128.1437	14.79815	9827.794
92609.83	135.4346	15.02582	10022.11
75742.38	134.8823	15.02582	9287.368
44048.76	138.0859	14.57049	9633.109
51569.28	171.1878	15.70881	10879.78
58015.44	184.211	15.93647	13621.74
64461.6	154.6562	15.70881	15775.36
66932.63	181.7795	20.03442	16587.86
51345.81	234.8774	19.80676	17953.07
54456.09	253.1976	20.03442	20431.78
51701.43	260.1538	20.48975	23322.26
71535.19	291.7224	20.48975	23381.14
28279.3	265.1249	14.57049	23622.48
40962.12	297.0956	13.65983	26587.31
44908.25	303.7889	14.11516	26472.05
40947.81	298.1569		29567.5

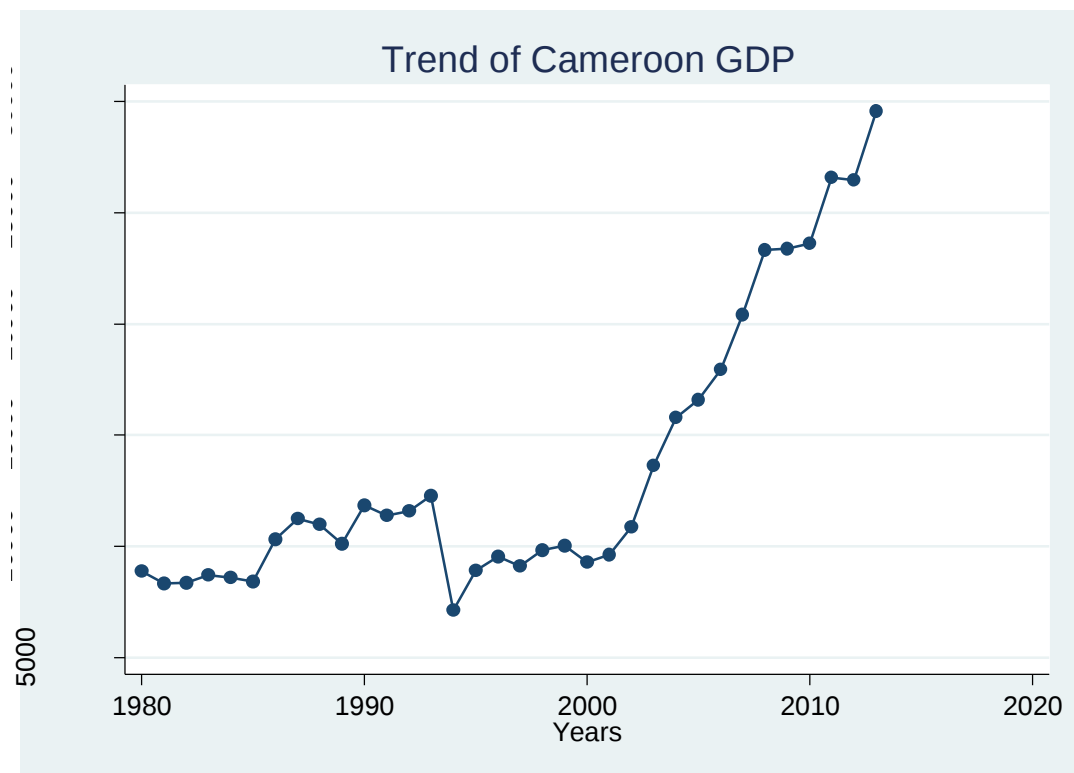
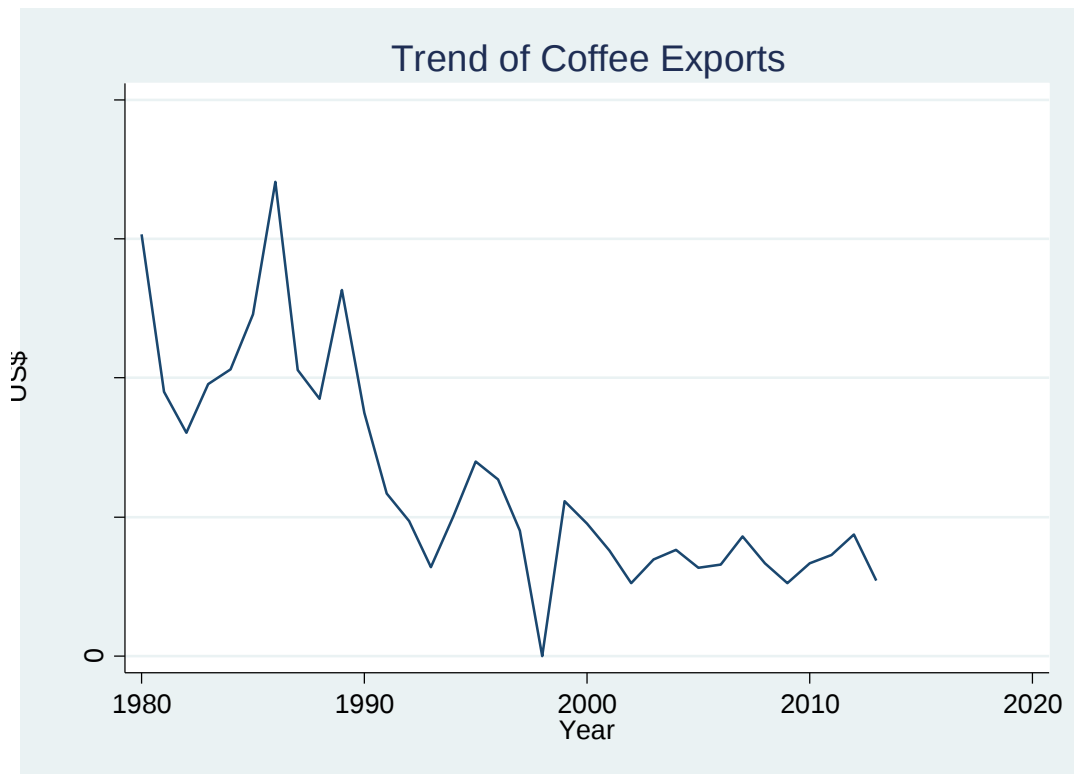
Appendix 2Trend of Variables











Appendix 3: Regression result for Export earnings model

```
Source |    SS    df    MS       Number of obs =   34
-----+-----
Model | 2.32854178   3 .776180593       Prob> F   = 0.0000
Residual | 1.30404753  30 .043468251       R-squared   = 0.6410
-----+-----
Adj R-squared = 0.6051
Total | 3.63258931  33 .110078464       Root MSE   = .20849

-----
logtaexp |   Coef.   Std. Err.   t   P>|t|   [95% Conf. Interval]
-----+-----
logcoexp | .414239   .0638311   6.49  0.000   .2838784   .5445996
logcofexp | .0760558   .0287255   2.65  0.013   .0173904   .1347211
logpalmexp | .0279439   .054265   0.51  0.610   -.08288   .1387677
   _cons | 8.045464   1.370693   5.87  0.000   5.246136   10.84479
-----
```

Appendix 4: Muticollinearity test for export earnings model

```
Variable |    VIF    1/VIF
-----+-----
logcoexp |   1.09   0.914957
logpalmexp |   1.09   0.917424
logcofexp |   1.00   0.997135
-----+-----
Mean VIF |   1.06
```

Appendix 5: OLS-Without test for stationarity

Source	SS	df	MS	Number of obs =	34
-----+-----				F(3, 30) =	105.19
Model	4.98457948	3	1.66152649	Prob> F	= 0.0000
Residual	.473843772	30	.015794792	R-squared	= 0.9132
-----+-----				Adj R-squared =	0.9045
Total	5.45842326	33	.165406765	Root MSE	= .12568

loggdp	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]		
-----+-----							
logcocoa	.2244207	.0735332	3.05	0.005	.0742459	.3745954	
logcoffee	-.0158446	.0576033	-0.28	0.785	-.1334861	.1017969	
logpalm	.4415717	.0490395	9.00	0.000	.3414197	.5417238	
_cons	13.13682	1.610006	8.16	0.000	9.848752	16.42489	

Durbin-Watson d-statistic(4, 34) = .7905923

Appendix 6: OLS-after test for stationarity

```

Source |   SS   df    MS       Number of obs =   33
-----+-----
Model | .362365939   3   .120788646       Prob> F   = 0.0000
Residual | .208472696  29   .007188714       R-squared   = 0.6348
-----+-----
Total | .570838635  32   .017838707       Adj R-squared = 0.5970
Root MSE   = .08479

-----
D.loggdp |   Coef.   Std. Err.      t    P>|t|   [95% Conf. Interval]
-----+-----
logcocoa |
D1. | .1075285   .056074   1.92  0.065   -.0071557   .2222127
|
logcoffee | -.0552602   .0297218  -1.86  0.073   -.1160482   .0055278
|
logpalm |
D1. | .2905378   .0587727   4.94  0.000   .1703341   .4107415
|
_cons | 1.04262    .551703    1.89  0.069   -.085739    2.17098
-----

Durbin-Watson d-statistic( 4, 33) = 2.080891

```

Appendix 7: Summary statistics

```

Variable |   Obs   Mean   Std. Dev.   Min   Max
-----+-----
gdp_musd |   34  13609.3  6350.835  7113.905  29567.5
palm |   34  1.72e+08  1.42e+08  3.95e+07  5.09e+08
coffee |   34  1.42e+08  8.46e+07  4.46e+07  3.67e+08
cocoa |   34  4.57e+08  1.77e+08  2.13e+08  9.11e+08

```

Appendix 8: Test for Heteroskedasticity

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity

Ho: Constant variance

Variables: fitted values of loggdp

chi2(1) = 0.27

Prob>chi2 = 0.6001

Appendix 9: Test for Multicollinearity

Variable	VIF	1/VIF
-----+-----		
logpalm	2.84	0.352183
logcoffee	2.08	0.480316
logcocoa	1.64	0.608134
-----+-----		
Mean VIF	2.19	

APPENDIX 10: PAIRWISE CORRELATION RESULTS

	loggdp	logcocoa	logcoffee	logpalm
-----+-----				
loggdp	1.0000			
logcocoa	0.6369	1.0000		
		0.0001		
logcoffee	-0.5687	-0.0750	1.0000	
		0.0004	0.6732	
logpalm	0.9397	0.5205	-0.6513	1.0000
		0.0000	0.0016	0.0000

Appendix 11: Test for unit root (stationarity)

```
. pperronlogcocoa
```

Phillips-Perron test for unit root Number of obs = 33

Newey-West lags = 3

----- Interpolated Dickey-Fuller -----

Test	1% Critical	5% Critical	10% Critical
Statistic	Value	Value	Value

Z(rho)	-12.331	-17.744	-12.756	-10.360
--------	---------	---------	---------	---------

Z(t)	-2.565	-3.696	-2.978	-2.620
------	--------	--------	--------	--------

MacKinnon approximate p-value for $Z(t) = 0.1005$

```
. pperrond.logcocoa
```

Phillips-Perron test for unit root Number of obs = 32

Newey-West lags = 3

----- Interpolated Dickey-Fuller -----

Test	1% Critical	5% Critical	10% Critical
Statistic	Value	Value	Value

Z(rho)	-27.863	-17.676	-12.724	-10.340
--------	---------	---------	---------	---------

Z(t)	-5.656	-3.702	-2.980	-2.622
------	--------	--------	--------	--------

MacKinnon approximate p-value for Z(t) = 0.0000

```
. pperronlogcoffee
```

Phillips-Perron test for unit root Number of obs = 33

Newey-West lags = 3

----- Interpolated Dickey-Fuller -----

Test	1% Critical	5% Critical	10% Critical
Statistic	Value	Value	Value

Z(rho)	-9.752	-17.744	-12.756	-10.360
--------	--------	---------	---------	---------

Z(t)	-2.686	-3.696	-2.978	-2.620
------	--------	--------	--------	--------

MacKinnon approximate p-value for $Z(t) = 0.0764$

. pperronlogpalm

Number of obs = 33

Newey-West lags = 3

----- Interpolated Dickey-Fuller -----

Test	1% Critical	5% Critical	10% Critical
Statistic	Value	Value	Value

Z(rho)	-2.026	-17.744	-12.756	-10.360
--------	--------	---------	---------	---------

Z(t)	-1.021	-3.696	-2.978	-2.620
------	--------	--------	--------	--------

MacKinnon approximate p-value for $Z(t) = 0.7454$

```
. pperrond.logpalm
```

Number of obs = 32

Newey-West lags = 3

----- Interpolated Dickey-Fuller -----

Test	1% Critical	5% Critical	10% Critical
Statistic	Value	Value	Value

Z(rho)	-40.223	-17.676	-12.724	-10.340
--------	---------	---------	---------	---------

Z(t)	-7.499	-3.702	-2.980	-2.622
------	--------	--------	--------	--------

MacKinnon approximate p-value for Z(t) = 0.0000

```
. pperronloggdp
```

Number of obs = 33

Newey-West lags = 3

----- Interpolated Dickey-Fuller -----

Test	1% Critical	5% Critical	10% Critical
Statistic	Value	Value	Value

Z(rho)	0.753	-17.744	-12.756	-10.360
--------	-------	---------	---------	---------

Z(t)	0.425	-3.696	-2.978	-2.620
------	-------	--------	--------	--------

MacKinnon approximate p-value for Z(t) = 0.9824

```
. pperrond.loggdp
```

Number of obs = 32

Newey-West lags = 3

----- Interpolated Dickey-Fuller -----				
Test	1% Critical	5% Critical	10% Critical	
Statistic	Value	Value	Value	

Z(rho)	-36.840	-17.676	-12.724	-10.340
Z(t)	-6.491	-3.702	-2.980	-2.622

MacKinnon approximate p-value for Z(t) = 0.0000				

Appendix 12: map of Cameroon

