

**ASSESSING THE EFFECT OF AGRICULTURAL EXPORT
VALUES ON FOREIGN EXCHANGE RATE IN TANZANIA**

**By
Noel Mlay**

**A Dissertation Submitted in Partial/Fulfilment of the Requirements for Award
of the Degree of Master of Science in Applied Economics and Business of
Mzumbe University**

DECEMBER 2020

CERTIFICATION

We, the undersigned, certify that we have read and hereby recommend for acceptance by the Mzumbe University, a dissertation entitled “*Assessing the Effect of Agricultural Export Values on Foreign Exchange Rate in Tanzania*”, in partial/fulfillment of the Requirements for award of the degree of Master of Science in Applied Economics and Business of Mzumbe University.

Major Supervisor

Internal Examiner

External Examiner

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DEDICATION

I dedicate this work to Mr. Isaac Joseph Masusu (Head, Agribusiness Retail Banking at NMB¹ Bank Plc), who always reminded me to fulfill this dream.

¹ Initially the name was National Microfinance Bank but since 2017 the name has changed to NMB Bank Plc

ABBREVIATIONS AND ACRONYMS

ASDP II	Agricultural Sector Development Strategy-II
BOT	Bank of Tanzania
CBT	Cashew Board of Tanzania
COVID	Corona Virus Disease
DF	Dickey Fuller
ESRF	Economic and Social Research Forum
FAO	Food and Agriculture Organization
GDP	Gross Domestic Product
IFPR	International Food Policy Research Institute
IFPRI	International Food Policy Research Institute
IMF	International Monetary Fund
NBER	Nation Bureau of Economic Research (NBER)
NBER	National Bureau of Economic Research
NBS	National Bureau of Statistics
OECD	Organization for Economic Co-operation and Development
SDR	Special Drawing Right
TADB	Tanzania Agricultural Development Bank
TRA	Tanzania Revenue Authority
UNCTAD	United Nations Conference on Trade and Development
URT	United Republic of Tanzania
US	United States
USD	United States Dollar
VAR	Vector auto regression

ABSTRACT

Agricultural sector in Tanzania employs over 65% of the Tanzania population (NBS, 2017) and contributes to foreign exchange earnings through crops exports. This study aimed at examining the effect of agricultural export values to Tanzanian foreign exchange rate and assessed if there is long-run relationship between agricultural exports value and foreign exchange rate using secondary data on total exports, agricultural exports, imports and foreign exchange data from 1989/1990 to 2018/2019. The Regression analysis, Unit Root Test, Johansen Test, Vector Autoregression and Granger causality test were used for analysis. The study concludes that, both total imports and total exports have significant influence on Tanzania exchange rate. Furthermore, it was observed that, there is a causality between total agricultural exports and foreign exchange rate in Tanzania whereby, foreign exchange rate causes agricultural exports and not otherwise. Also, the causality between total imports and total exchange rate is that total import cause's foreign exchange rate in Tanzania. Regarding the long run relationship between agricultural exports value and foreign exchange rate in Tanzania, it was observed that there is long-run relationship that exists between agricultural export value and foreign exchange rate in Tanzania. The conclusions obtained in this study are very useful for policy making especially on use of foreign exchange rate to stimulate exports. For the Tanzania case, it was observed that devaluation will increase agricultural exports and not total exports. Also, regarding to imports, it was observed that, the total imports have negative impact on Tanzania Shilling hence effort to reduce imports pressure should be implemented to reduce importation.

TABLE OF CONTENTS

	Pages
DECLARATION AND COPYRIGHT	ii
ACKNOWLEDGEMENT	iii
DEDICATION	iv
ABBREVIATIONS AND ACRONYMS	v
ABSTRACT	vi
LIST OF TABLES	xii
LIST OF FIGURES	xiii
CHAPTER ONE.....	1
INTRODUCTION	1
1.2 Statement of the Problem	3
1.3 Research Objectives	4
1.3.1 Main Objective	4
1.3.2 Specific Objectives	4
1.4 Research Questions.....	4
1.5 Significance of the Study	4
1.6 Scope and Limitation.....	5
CHAPTER TWO.....	6
LITERATURE REVIEW	6
2.1 Definition of Key Concepts	6
2.2 Tanzania Agriculture Sector	8
2.2.1 Agriculture Sector Export Performance	9
2.2.2 The Seasonality of Tanzania Agriculture	11
2.3 The Concept of Foreign Exchange Rate	15
2.4 Exchange Rate Regimes in Tanzania	15
2.5 Related Theories on Foreign Exchange Rate	16
2.5.1 The Monetary Approach: Shift in LM Theory	17
2.5.2 Structural and Absorption Factors, Shifts in IS and BP Theory.....	17
2.6 Empirical Framework	18

2.7	The Research Gap Observed	19
2.8	Conceptual Framework.....	20
2.8.1	Terms of Trade	21
2.8.2	Agricultural Exports Value.....	21
2.8.3	Inflation	21
2.8.4	Interest Rate	21
2.8.5	Public Debt	21
2.8.6	Current Account Deficit	22
2.8.7	Political Stability and Economic Performance	22
2.8.8	Recession	22
2.8.9	Speculation	22
2.9	Research Hypothesis.....	22
CHAPTER THREE		24
RESEARCH METHODOLOGY		24
3.1	Introduction	24
3.2	Study Area	24
3.3	Research Design	24
3.4	Target Population and Sample Size.....	24
3.5	Types of Data and Collection Methods	25
3.6	Data Presentation, Analysis and Interpretation	25
3.6.1	Dickey Fuller Test	26
3.6.2	Johansen's Test.....	26
3.6.3	Vector Auto Regression (VAR)	26
3.6.4	Granger Causality Test	26
3.7	Model Specification.....	27
CHAPTER FOUR.....		29
PRESENTATION OF FINDINGS		29
4.1	Introduction	29
4.2	Overview of Tanzania Export Sector	29
4.2.1	The Composition of Tanzania Exports.....	29
4.2.2	Performance of Exports of Non-Traditional Goods	30

4.2.2.1	Fish and Fish Products.....	30
4.2.2.2	Horticultural Products.....	31
4.2.3	The Performance of Service Sector on Total Exports	32
4.2.4	Performance of Traditional Goods Exports.....	32
4.2.4.1	The Share of Major Export Crops on Total Traditional Exports Goods in Tanzania.....	33
4.2.4.2	Overview of the Major Export Crops in Tanzania	34
4.2.4.3	Cashew Sub-sector	34
4.2.4.4	Coffee Sub-sector	35
4.2.4.5	Tobacco Sub-sector	35
4.2.4.6	Cotton Sub-sector	36
4.2.4.7	Tea Sub-sector	36
4.2.4.8	Sisal Sub-sector	36
4.2.4.9	Cloves Sub-sector	37
4.3	Comparison of the Growth Rate of Agricultural Exports to Other Sectors	37
4.4	Overview of Tanzania Foreign Exchange Rate.....	37
4.5	Tanzania Foreign Exchange Rate Trend Compared to Agricultural Exports Growth Trend	38
4.6	Contribution of Agricultural Sector to Foreign Exchange Earnings	39
4.7	Agricultural Exports Seasonality and Fluctuation of Foreign Exchange Rate in Tanzania	40
4.8	Relationship between Foreign Exchange, Agricultural Exports and Total Exports.....	41
4.8.1	Unit Root Test	41
4.8.2	Johansen Test.....	44
4.8.3	Granger Causality	47
4.8.4	Regression Analysis	49
CHAPTER FIVE.....		52
DISCUSSION OF THE FINDINGS.....		52
5.1	Agricultural Exports Performance.....	52

5.2	The Growth Rate of Agricultural Exports in Tanzania	54
5.3	The Growth of Total Exports in Tanzania	54
5.4	Relationship between Exchange Rate and Agricultural Exports	55
5.5	Relationship between Total Exports and Foreign Exchange Rate in Tanzania.....	57
5.6	Relationship between Total Imports and Foreign Exchange Rate in Tanzania.....	58
CHAPTER SIX.....		60
SUMMARY, CONCLUSIONS AND POLICY IMPLICATIONS.....		60
6.1	Introduction	60
6.2	Summary.....	60
6.3	Conclusions	60
6.4	Policy Recommendations	61
6.5	Suggestions for Further Research.....	63
REFERENCES.....		64
APPENDICES		70
Appendix 1:	STATA results	70
Appendix 2:	STATA Results.....	71
Appendix 3:	Summary of Volume Exported and Total Export Value for Major Exports Crops in Tanzania	77
Appendix 4:	The Trend of Agricultural Exports Value as Compared to Other Sectors (USD Millions)	78
Appendix 5:	Cashew Exports Trend Value (USD Millions) and Volume ("000" Tonnes)	79
Appendix 6:	Coffee Exports Trend Value (USD Million) and Volume ("000" Tonnes)	80
Appendix 8:	Tanzania Sisal Exports Trend (USD Million)	82
Appendix 9:	Tanzania Tea Exports Trend Value (USD Millions) and Volume ("000" Tonnes).....	83
Appendix 10:	Tanzania Cotton Exports Trend Value (USD Million) and Volume (Tones).....	84

Appendix 11: Share of Agriculture Exports As Compared with Other Sectors..	85
Appendix 12: Comparison of Tanzania Agricultural Export Value and Foreign Exchange Rate	86
Appendix 13: Tanzania Agricultural Exports Value Share on Total Exports Compared to Its Growth Rates	87
Appendix 14: Fish and Fish Products Exported USD (Million)	88
Appendix 15: The Share of Major Exports Sectors to Total Exports.....	89
Appendix 16: Horticultural Exports Trend (USD Million)	90
Appendix 17: The Trend of Growth of Total Exports Compared to Percentage Share of Its Main Export Sectors.....	91
Appendix 18: The Trend of Exports Receipts from Service Sector (USD million)	92
Appendix 19: Fluctuation of Tanzania Exchange Rate September 2019 to May 2020	93
Appendix 20: The Trend of Agricultural Exports Value as Compared to Other Sectors (USD Millions)	94
Appendix 21: The Trend of Exports Receipts from Service Sector (USD Million)	95

LIST OF TABLES

	Pages
Table 4.1: DF Test Results	42
Table 4.2: DF Results	43
Table 4.3: Johansen Test for Cointegration	44
Table 4.4: Johansen Test	44
Table 4.5: Vector Autoregression Results.....	46
Table 4.6: Granger Causality Wald tests.....	47
Table 4.7: Granger Causality Wald Tests.....	49
Table 4.8: Regression Results	50

LIST OF FIGURES

	Pages
Figure 1.1: Tanzania Food and Food Staffs Imports Trend (Value in USD Million)	2
Figure 2.1: Contribution of Agriculture to Tanzania GDP in Percentage from 1990 to 2017	9
Figure 2.2: Trend of Exports from 1997/98 To 2018/2019 for the Major Export Crops (USD Million)	11
Figure 2.3: Monthly Export Trend for Traditional Exports 2016 to 2019 (USD Million)	12
Figure 2.4: Tanzania Exchange Rate Regimes.....	16
Figure 2.5: Conceptual Framework.....	20
Figure 4.1: The Share of Major Exports Crops on Total Agricultural Exports.....	33

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Agriculture sector in Tanzania plays a major role in provision of employment as it employs over 65% of the Tanzania population based on (National Bureau of Statistics (NBS), 2017). It also contributes to country Gross Domestic Product (GDP) by nearly 30% based on (Bank of Tanzania (BoT), 2018). The sector is also crucial on maintaining food sufficiency in the country since, mainly consumed food crops such as maize and rice are produced locally hence it reduces pressure on food importation. The total yearly imports on food and other consumable goods reached USD 656.6 Million in 2012 (BOT, 2019) however without the agriculture sector in Tanzania the amount would have been substantial due to increase of population in Tanzania which is over 50 million. Furthermore, large portion of cash crops produced in Tanzania are exported while small portion of the crops remains in the country for internal markets. The crops exported bring foreign currency to the economy which further aid on balance of payments and foreign reserves in Tanzania as it accounts about 10% of total country exports from 2000 to 2017 according to BoT (2019). The export receipts from Agriculture sector provide capital for investments for other sectors such as manufacturing which enables to accelerate economic development through the increase of investment.

Also, the foreign exchange rate is one of the paramount macroeconomic indicators used to convert foreign prices into local currency, such that, policy makers monitor the exchange rate movement and implement various policies to in order influence international trade (Fidan, 2008).

The importance of foreign exchange rate and agricultural sector on the economy of the country has raised the attention of several scholars for investigation. The research studies on the role of the agricultural sector on economic growth. Studies on the

effect of fluctuation of exchange rate have been done by some academicians such as Weersink et al. (2008); (International Food Policy Research Institute (IFPRI), 2011); Braun and Tadesse (2012). Despite these studies, the impacts of agricultural export value on exchange rate have not been to a great extent researched. Hence, this study adds knowledge to the existing empirical studies/works. Figure 1.1 bellow illustrates the trend of food and foods staffs imports in Tanzania from 1997 to 2016. As shown in the Figure 1.1, the trend of food importation shown a growth trend from 1997 to 2012 which means that the food imports during this period was increasing. The trend started to decline from 2013 which is a health for the economy.

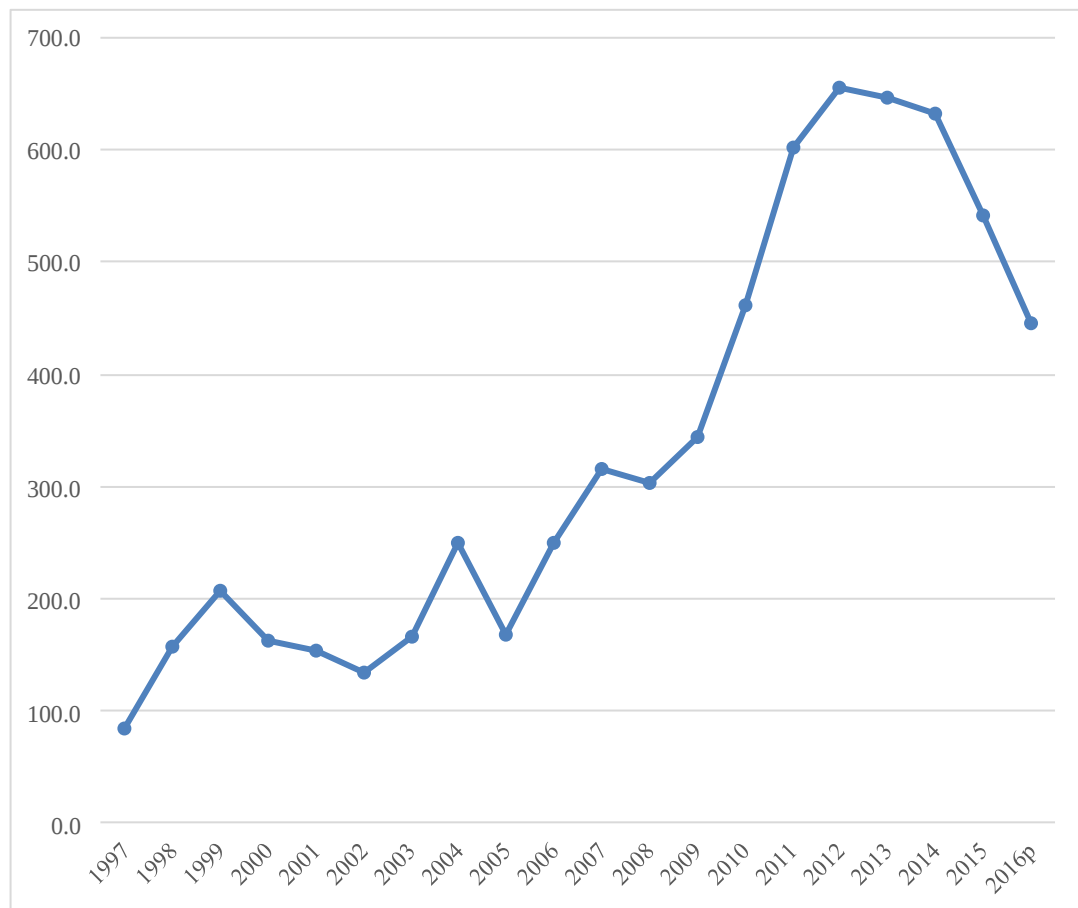


Figure 1.1: Tanzania Food and Food Staffs Imports Trend (Value in USD Million)

Source: (BoT, 2016)

1.2 Statement of the Problem

Tanzania exports from agriculture sector have shown a positive trend from the period of 2000 to 2017 (BOT, 2019). The contribution of agriculture sector on Tanzania's economy is significant as it accounts for about 29.2% of the total GDP (NBS, 2017). The agriculture sector is also a major source of foreign income for the country from crop exports as it accounts about 22.62% of total export for the country based on BOT and Tanzania Revenue Authority (TRA) computations in 2018. Several studies have done to examine the influence of foreign exchange rate on export performance. Oyejide (1986) observed that when the real exchange rate appreciates, it has unfavorable effects to non-oil exports particularly for the period of the oil boom.

Shirazi and Manap's (2014) study on exports and observed that there is a long-run relationship among imports, exports and outputs variables. The existing causality is that exports cause the growth of output but not otherwise. Another study by Mousavi and Leelavathi (2013) assessed causality between quantity of agriculture exports and foreign exchange rate in India on which they concluded that, variables are not co-integrated.² Therefore, there was no long run association of India agricultural exports volume and foreign exchange rate. The need for conducting country specific study on the influence of the agricultural exports on its currency exchange is of paramount importance because of the country's dependency on agricultural exports as its source of foreign income differs and therefore some countries with high dependence on agriculture are more vulnerable on currency fluctuations than those countries with less dependence. Tanzania being a country whose economy depends on agriculture i.e. 29% of the total GDP (Deloitte, 2016), it is expected to have exchange rate fluctuations due to changes on receipts from agricultural exports resulting from agricultural seasonality. Research studies on the association between agriculture and exchange rate has mostly focused on how exchange rate affects agricultural exports. There has been little work exploring how the exchange rate of a nation is influenced i.e. upward or downward by the trend of export value received from agricultural

² Cointegration assist to identify the degree to which two variables are sensitive to the same average price over a specific period.

products exports. This study aims to fill the gap by providing empirical evidence on whether agricultural exports in Tanzania have effect on its exchange rate. This helps to provide policy recommendations on agriculture sector development and other monetary policies.

1.3 Research Objectives

1.3.1 Main Objective

The key objective of the study was to examine whether there is empirical relationship between agricultural export value and exchanges rate in Tanzania.

1.3.2 Specific Objectives

The specific objectives of the study were the following:

- (i.) To examine whether there is effect of agricultural export value on exchange rate in Tanzania.
- (ii.) To examine whether there is long run relationship between agricultural export value and foreign exchange rate in Tanzania

1.4 Research Questions

From the above stated research problem, the following are the research questions formulated to address the problem under investigation.

- (i.) Does the agricultural exports value influence Tanzania foreign exchange rate?
- (ii.) Is there a long-run relationship between agricultural export value and exchange rate in Tanzania?

1.5 Significance of the Study

Agriculture sector in Tanzania is among of the major export sector and have raised attention by both Government and private players through increased expenditure on this sector. For example, the Government of Tanzania has introduced Tanzania Agricultural Development Bank (TADB) in order to push for more investment in agriculture through lending to the sector. This means that, Government has recognized the contribution of the sector on the economy and pushes for more

investments in order to increase productivity, hence more exports. Studies to assess the influence of the Tanzania export values from agriculture to exchange rate are important in order to assist on the insights for policy formulation in order to facilitate the interventions which will further sustain the sector growth and also assist in management of the currency volatility due agricultural seasonality.

1.6 Scope and Limitation

Due to the limited availability of data, the study used time series data from 1989/1990 to 2018/2019 only. There are many factors that influence exchange rate, but this study limited itself to agriculture export value and exchange rate, mainly to establish whether there is a relationship or not.

The study also used foreign exchange rate between United States Dollar and Tanzania Shilling only. Other currency exchange rates were not considered due to availability of data through BOT website and daily newspapers in Tanzania.

CHAPTER TWO

LITERATURE REVIEW

2.1 Definition of Key Concepts

Exchange rate refers to the price which the currency of a nation can be traded for the currency of another nation (Mankiw, 2009)

Exchange rate parity refers to the uniformity in exchange rate level between groups of countries in such a way that, a basket of goods in one of the country in this group have the same value in the currencies of these countries (Mankiw, 2009)

Real exchange rate refers to rate at which the goods of one nation are traded with the goods of another nation (Mankiw, 2009)

Nominal exchange rate refers to relative price of the currencies of two nations. This means that, if the rate of Tanzania shilling per United States dollar is 2,300 it means that, 1 United States dollar can be traded at Tanzanian shilling 2,300 in foreign exchange market (Mankiw, 2009)

Effective Exchange Rate: According International Monetary Fund (IMF,2020), it refers to a measure of one currency against a weighted average of several foreign currencies.

Real Effective Exchange Rate: According to IMF (2020), this refers to effective exchange rate over price deflator i.e. index of costs. This means that, when there is an increase in real effective exchange rate, exports of the respective countries become more expensive and imports become cheaper. In this case the county foreign trade competitive declines.

Fixed exchange rate refers to a system whereby the Central Banks determine and announce a value for the exchange rate and central bank stands ready to buy and sell currency in order to keep the exchange rate at its announced level. (Mankiw, 2009)

Floating exchange rate system refers to the system on which the Central Bank of a Nation allows, the exchange rate to adjust to changing economic fundamentals i.e. economic conditions (Mankiw, 2009)

Crawling peg exchange rate regime, refer to an arrangement whereby the currency of a nation is adjusted periodically (small amount) at a fixed rate based on quantitative indicators, such as past inflation differentials with key trading partners etc. (IMF, 2004)

Devaluation of currency refers to the decrease of the official value of country currency (Mankiw, 2009)

SDR Valuation of the currency: As per IMF (2020), this valuation is obtained by doing the summation of the values in United States dollars, based on market exchange rates, of a basket of major currencies.

Export value refers to the free on board (FOB) value of exports when expressed in United States Dollars and expressed as a percentage of the average for the base period. (United Nations Conference on Trade and Development (UNCTAD, 2018)

Agriculture refers to economic activity which comprises crop production, animal husbandry, hunting, forestry and fishing (UNCTAD, 2018)

Exports refer to the goods and services produced in one country and purchased by residents of another country (Mankiw, 2009)

Gross domestic product (GDP) refers to an aggregate measure of production, income and expenditure of an economy (UNCTAD, 2018)

Seasonality refers to changes of something according to the time of the year (Williams et al., 2017).

Exchange rate volatility refers to the risk related with unanticipated fluctuations in the exchange rate (Ozturk, 2006)

2.2 Tanzania Agriculture Sector

Agriculture sector plays a significantly part in the development of Tanzania economy as it creates employment opportunities and contributes to GDP of the country through income received from various agricultural sub-sectors. 65.74% of Tanzania workforce is engaged in agriculture sector (World Bank, 2019). The agricultural sector contributes substantial amount in Tanzania economy on GDP as well as foreign exchange earnings. Therefore, Tanzania economy can be termed as agrarian economy (Economic and Social Research Forum (ESRF), 2009). For example, from the period of 1987 to 2000 Tanzania agricultural sector contributed between 48.2% and 50 % on GDP while the foreign exchange earnings from agricultural exports were 54% and 56% respectively (URT, 2000). This means that the sector is crucial for stimulation of economic development for the country given its contribution on employment, GDP and foreign exchange earnings. Recognizing the importance of this sector in Tanzania, the Agricultural Sector Development Strategy-II (ASDP II) unveiled in November 2017 as the nation's second five-year roadmap with aims to see the country become a middle-income, semi-industrialized state. Figure 2.1 illustrate the contribution of agricultural sector to Tanzania GDP.

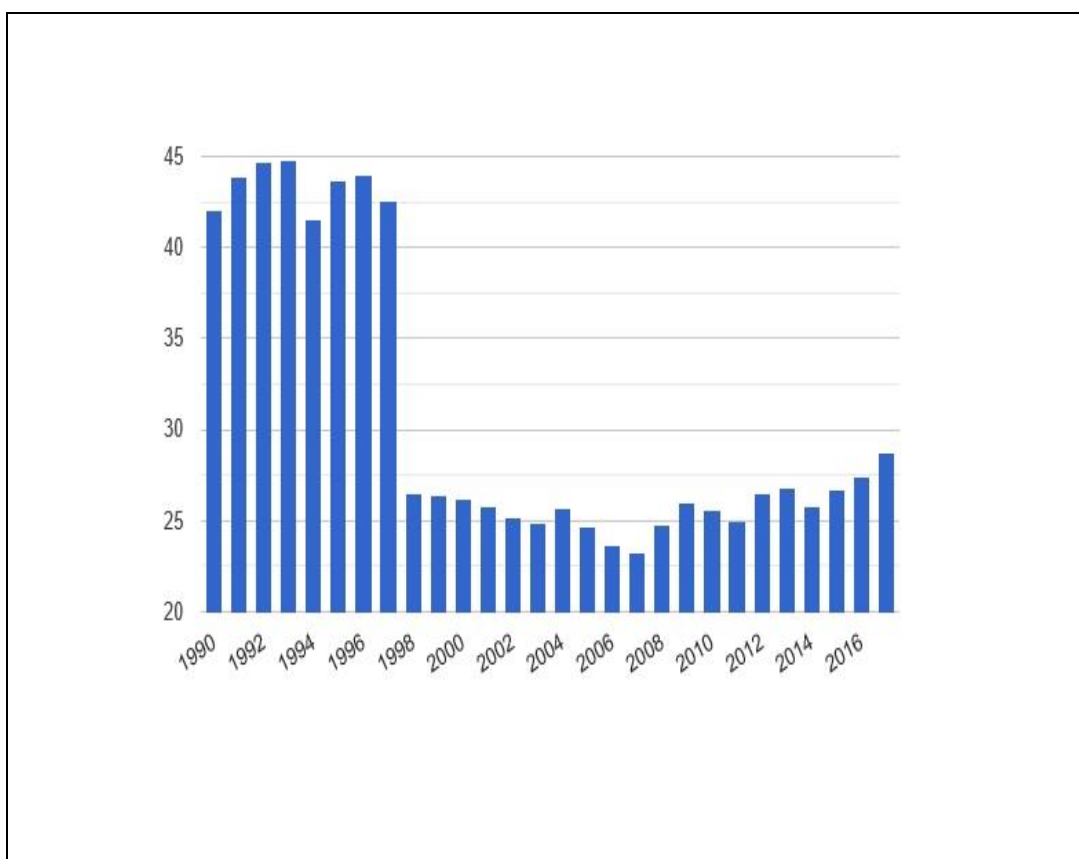


Figure 2.1: Contribution of Agriculture to Tanzania GDP in Percentage from 1990 to 2017

Source: TheGlobalEconomy.com, The World Bank

Figure 2.1 shows that, the contribution of agricultural sector to total GDP in the early 1990's until 1997 was an average 43.4% but for the period from 1998 to 2017 the average contribution was 26% despite the increase in GDP value. The main reason for decline in the contribution to total GDP is due to emergence of other sectors such as manufacturing, mining, services sectors. As shown in Figure 2.1, from 1990 to 1995, the share of agricultural sector to total GDP was above 40% and declined to below 30% for the period between 1996 to 2016. The decline in this share shows that there was growth of other sectors such as mining and manufacturing.

2.2.1 Agriculture Sector Export Performance

The Tanzania Traditional agricultural export in 2006 was 20 per cent of total exports of the country, which is a decline by 55% when compared to 1995/96 (BOT, 2019).

With exception of tea and sisal, most of crops exported are produced by smallholder farmers (URT, 2007). Tanzania agricultural exports have shown a positive trend with some fluctuations mainly caused by seasonality factors and other factors such as poor weather. The increase export value for some crops such as coffee, cashew and cotton were contributed by recovery in world market prices (URT, 2009). The major exports crops are cashew, coffee, tobacco, cotton, sisal and cloves. Appendix 3 shows the performance of these major crops with tobacco leading in terms of total exports with total value of USD 3,273 Million for the period of 22 years followed by cashew with USD 2,661 Million.

The total traditional crops exported for the period of 1997/98 to 2018/19 fetched the average price of USD 2,188 per tonne and total exports amounting USD 11,334 Million. As illustrated in Figure 2.2 seasonal fluctuations in some crops such as cashew, tobacco and coffee have huge impact on total performance of the Tanzania traditional exports.

Between the period between 1997/98 to 2007/8, the average total traditional exports were USD 295 Million while the amount increase to USD 708 Million for the period of 2008/9 to 2018/19. The increase has been influenced by various reasons such as increase in total export volume and good prices in the international market for some crops such as cashew, tobacco and coffee. Also, tea sector has started showing slightly growing trend since 2005/06 season. Table 2.1 and Table 2.2 illustrates the season of major exports crops.

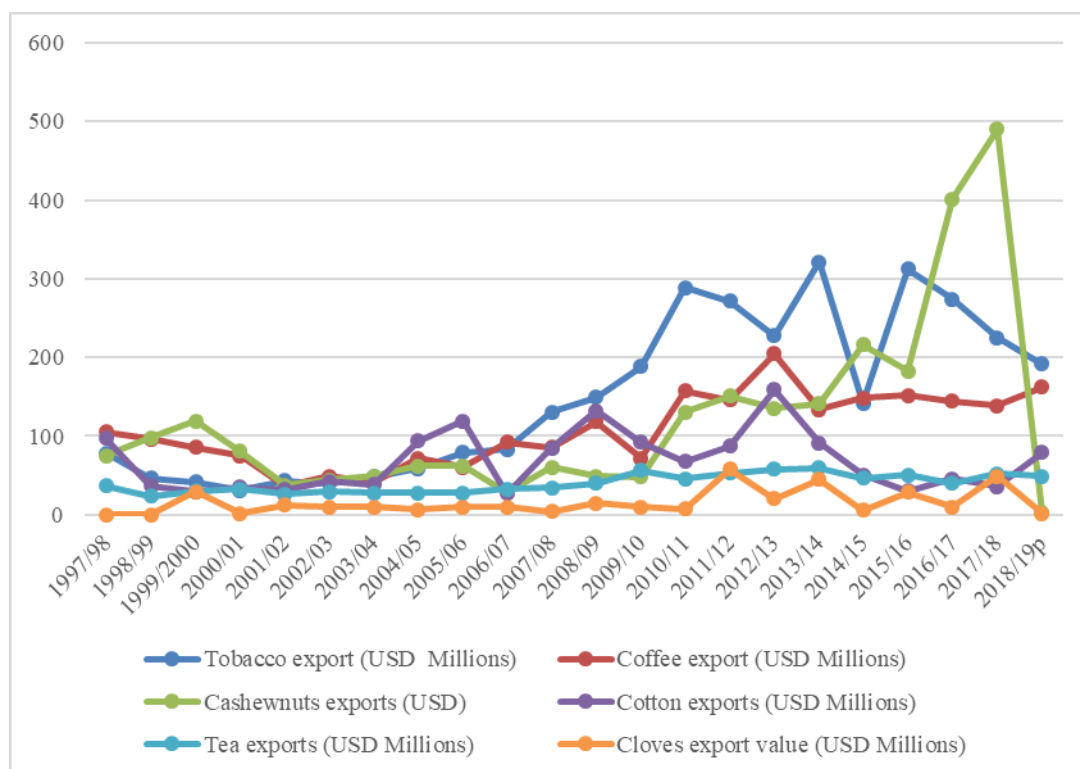


Figure 2.2: Trend of Exports from 1997/98 To 2018/2019 for the Major Export Crops (USD Million)

Source: (BoT, 2019)

Figure 2.2 shows that, from 2010/11 season, cashew, tobacco and cashew have played a major role in non-traditional exports since their contribution per crop was over USD 140Million annually with cashew reached the pick of USD 489.92Million USD in 2017/18 season, coffee reached the pick of 204.58Million USD in 2012/13 and tobacco reached the pick of 320.99Million in 2013/14 season.

2.2.2 The Seasonality of Tanzania Agriculture

Tanzania's agriculture is influenced by the seasonality hence supply of agricultural commodity also influenced by seasonality. During the harvest the volume of crop for sell of the crop is high while the supply is low during the planting/crop maintenance period. We expect, large supply of foreign currency from agricultural commodity

export during the harvest and sell period and low supply of foreign currency during the planting/crop maintenance period.

As illustrated in Figure 2.3, during October to December is the peak month for selling most of traditional export crops. In November 2016 a total of USD 171.3 Million were received on traditional crops exports and October 2017 total of USD 276.9 Million was received. The upward trend for exports receipts on tradition exports starts on July to December because, this is the selling period for majority of the export crops. Table 2.1 and Table 2.2 summarizes the crop calendar for major agricultural exports commodities in Tanzania.

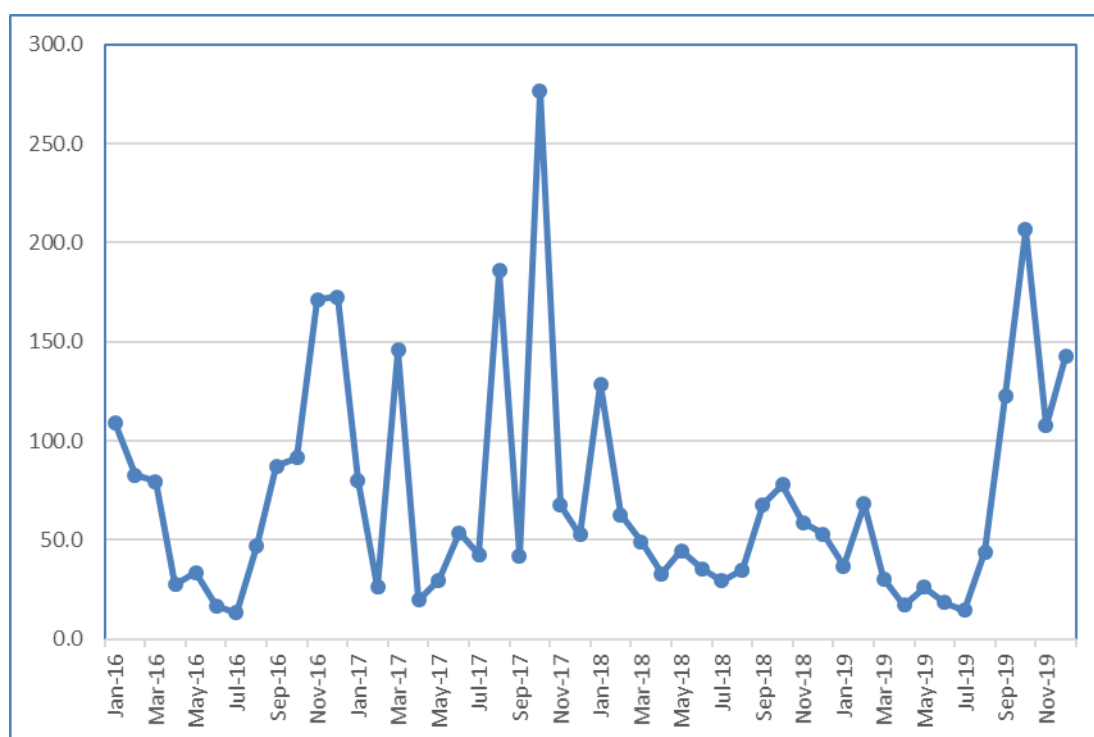


Figure 2.3: Monthly Export Trend for Traditional Exports 2016 to 2019 (USD Million)

Source: (BoT, 2019)

Table 2.1: Tanzania Crop Calendar for Major Agricultural Exports Crops

CROP	OPERATIONS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Sisal	Land preparation												
	Planting												
	Weeding												
	Fertilizer application												
	Harvesting												
	Marketing												
Tea	Land preparation												
	Planting												
	Weeding												
	Pesticides application												
	Fertilizer application												
	Harvesting												
	Marketing												
Coffee	Land preparation												
	Planting												
	Weeding												
	Fertilizer application												
	Pesticides application												
	Harvesting												
	Marketing												
Sugarcane	Land preparation												
	Planting												
	Weeding												
	Fertilizer application												
	Pesticides application												
	Harvesting												
	Marketing												

Note: Land preparation
Planting
Pesticides application
Marketing

Fertilizer application
Weeding
Harvesting



Source: (United Republic of Tanzania (URT), 2017

Table 2.2: Crop Calendar for Major Export Crops in Tanzania

CROP	OPERATIONS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Cashew nut	Land preparation												
	Planting												
	Weeding												
	Fertilizer application												
	Pesticides application												
	Harvesting												
	Marketing												
Pyrethrum	Land preparation												
	Planting												
	First Weeding												
	Fertilizer application												
	Harvesting												
	Marketing												
Tobacco	Land preparation												
	Planting												
	Weeding												
	Fertilizer application												
	Pesticides application												
	Harvesting												
	Grading												
	Marketing												

Note: Land preparation
Planting
Pesticides application
Marketing

Fertilizer application
Weeding
Harvesting



Source: (URT, 2017)

Table 2.1 and Table 2.2 illustrates the seasons of the major export crops in Tanzania whereby the selling of tobacco starts from April to September, Cashew selling starts from September to March, coffee selling starts from May to November. During the selling period of these major crops there is high inflows of foreign currency to Tanzania economy from crop sells.

2.3 The Concept of Foreign Exchange Rate

The foreign exchange rate is an essential factor in a country's economy as it influences trade and financial flows between nations. Exchange rate also influence macro-economic issues such as monetary policies of the economy. The extent of economic health of one country to another is determined by exchange rate. It is from this background, several economists come up with various models to explain the relationship among forces that governs the extents and direction of the foreign exchange rates.

2.4 Exchange Rate Regimes in Tanzania

Tanzania exchange rate systems have involved several changes since 1966 (BOT, 2016). Following commencement of BoT in 1966, exchange rate parity between the shilling and pound sterling was stopped in 1966 but the exchange rate between shilling and pound sterling remain fixed at 20 shillings per 1-pound sterling up to mid-1980 (BOT, 2016). There was also number of policy changes introduced regarding exchange rate system in Tanzania which includes the adoption of crawling peg exchange rate system with the currencies pegged to shillings. This system used until 1992 whereby devaluation was made to bring the official rate parallel market rate. In 1992, there was introduction of Foreign exchange Act which abandoned fixed exchange rate and introduced floating exchange rate on which the exchange rate become market determined (BOT, 2016). All these regimes were introduced due to number of reasons such as overvaluation of the pegged currencies, internal economic instabilities, measures to increase trading competitiveness etc. notable example was on change on foreign exchange regime to push for demand of Tanzania exports since there was considerable appreciation of SDR compared to United States

Dollar which affected the demand for Tanzania exports. Figure 2.4 summarizes the exchange rate regime in Tanzania.

					From 1993 onwards	
				1986	From July 1993 a market determined exchange rate is used. BoT intervene only there is non-market fundamental have cause large swing in exchange rate.	
			1979	The crawling exchange rate introduce by March 1986 in order to manage domestic sources of instabilities		
		1975	The pegging of Tanzania shilling to SDR was retained however the consideration was on basket of currency of major trading partners only.			
	1967	The Tanzania shilling was pegged to SDR mainly due to devaluation of United States Dollar.				
1966	Tanzania Shilling was pegged to United States Dollar due to overvaluation of Sterling pound.					
Tanzania shillings was pegged to Sterling pound. This was done under strict control measures						
Fixed exchange rate					Crawling exchange rate	Floating exchange rate

Figure 2.4: Tanzania Exchange Rate Regimes

Source: (BoT, 2016)

2.5 Related Theories on Foreign Exchange Rate

Several theories have been formulated to explain factors which determine exchange rates. Some of these theories are explained below.

2.5.1 The Monetary Approach: Shift in LM³ Theory

This theory was developed in 1950s to explain terms of trade i.e. imports and exports and was later adapted to explain exchange rates. It was first introduced by the Palok (1957) and further redefined by Hahn (1959) Prais (1961) and others. According to this theory, the exchange rate is described by the variation in demand and supply of money. For example, taking the Tanzania shillings/United States dollar exchange rate, if there is relative increase of the supply of Tanzania shillings relative to its demand at a particular period, then the equilibrium of money is retained in the United States while the price of Tanzania shilling in terms of United States dollars will decrease.

Furthermore, the theory states that, exchange-rate changes which are observed are triggered by the stock imbalances in the monetary sector, despite the fact that, these stock imbalances in short run may be interpreted as a surplus flow demand or flow supply of goods and services. In relation to this study, we expect that when there is high demand of agriculture products from Tanzania by foreign countries the demand of Tanzania shilling will be high, hence it will appreciate and vice-versa is true.

2.5.2 Structural and Absorption Factors, Shifts in IS⁴ and BP⁵ Theory

The absorption approach also emerged in 1950s by researchers like Harberger (1950) and Meade (1958) to explain effect of exchange rate. According to this theory, exchange-rate movements is influenced by the pattern of demand for and supply of goods in different nations which may be due to cost of producing the products,

³ The *LM* curve shows the relationship between the interest rate and the level of income that arises in the market for money balances. (Mankiw, 2009)

⁴ **IS curve** refer to the equilibrium condition in the market for goods on which production (*Y*), is equal to the demand for goods, which is the sum of consumption, investment, public spending and net exports. (Mankiw, 2009)

⁵ The **BP curve** shows at which points the balance of payments is at equilibrium which indicates the combinations of production and interest rates that guarantee that the balance of payments is viably financed. (Mankiw, 2009)

changing of preferences etc. With this theory, the 'real' factors and current-account imbalances are the primary source of exchange-rate variations.

2.6 Empirical Framework

Exports plays important role in influencing economic growth through various ways such as improving balance of payments and employment. The link between country exports and economic growth was examined by various researchers such as Khalafalla and Webb (2001) who investigated to establish if there is a link between growth of economy and exports for Malaysia by using information (quarterly) for the period of 1981 to 1996 on which they concluded that, growth cause export. Exchange rate is key aspect in the economy which can encourage (when depreciate) or discourage (when appreciate) the export volume for various sectors such as agriculture. Huges and Penson (1985) conducted empirical study to investigate the effect of exchange rate on trading of agricultural products on which they concluded that, foreign exchange rate shocks have an impact on agricultural exports.

Another study to support the effect of exchange was done by Oyejide (1986), which analyzed the relationship between trade and exchange rate policy in Nigeria for the period of 1960-1982. The study observed that, increase in exchange rate of adversely impact on non-oil imports in Nigeria. There are some studies on exchange rate volatility with different conclusion such as the study by Mousavi and Leelavathi (2014) which investigated the relationship between the quantity of exports from agriculture and foreign exchange rate by examining the time series information from 1980 to 2010, and observed that, there is no significant relationship between agricultural export volume and real exchange rate in India. Exchange rate volatility results from unexpected movements in the exchange rate and have effect on trade. Various scholars have conducted a study to assess the impact of exchange rate fluctuations on trade. These studies include the study by Byrne, Darby, and MacDonald (2008) which assessed the effect of exchange rate volatility on the trade where they concluded that, there is negative impact on trade from exchange rate fluctuations.

Also, studies conducted by various researchers such as Langley et al. (2002) Pick (1990) and others focused on exchange rate volatilities and agricultural exports. These studies concluded that volatility in exchange rate have negative impact on country exports. Export is influenced by change of exchange rate, which makes exchange rate as one of the determinants of export. The empirical work of Mathew Shane et al. (2008), investigated the relationship between agricultural exports, foreign exchange rates, and foreign income in United States of America. They observed that, there are uneven exchange rate effects whereby negative effects on exchange rate appreciation are occasionally dictates the positive effects of the foreign income.

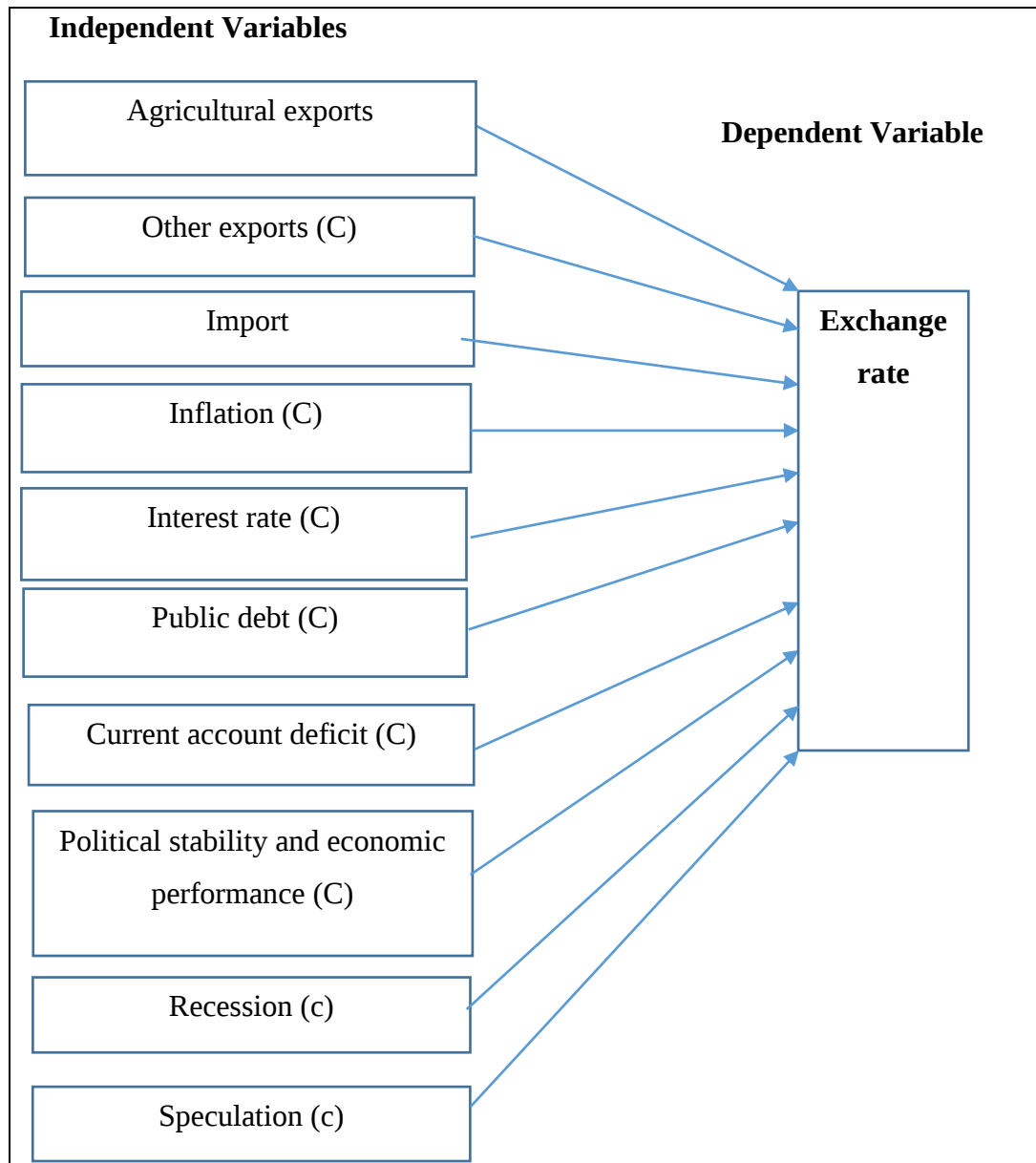
Furthermore, the empirical work by Bradshaw and Orden (1990) which analyzed the role of foreign exchange in agriculture conclude that exchange rate has effect on agricultural trade. Moreover, Kandilov (2015) examined the effect of volatility in exchange rate on the exports of the country and observed that, developing countries are affected more by exchange rate volatility than developed countries.

2.7 The Research Gap Observed

Despite the existence of large numbers of writings regarding the exchange rate, it appears that few existing studies which have investigated the causality between agricultural export value and exchange rate in Tanzania. Based on literature review done, most of the studies have focused on how exchange rate influence trade and whether exchange rate affects exports. This study examined the existence of the long-run relationship between Tanzania agricultural export values and its foreign exchange rate as well as the causality between agricultural exports, total exports, total imports and foreign exchange rate in Tanzania. The results of this study add knowledge to the existing literature and aids policy formulation.

2.8 Conceptual Framework

Factors influencing exchange rate are shown in Figure 2.5. The study explores the effect of agriculture exports value on exchange rate. The such as inflation and public debt were controlled (Figure 2.5)



Note: C represent controlled factor.

Figure 2.5: Conceptual Framework

Source: (Compareremit, 2020)

2.8.1 Terms of Trade

Terms of trade refers to the ratio of country's total exports to its total imports (Organization for Economic Co-operation and Development (OECD), 2020). When country exports are highly demanded, the terms of trade increase. This results to increase of the country's currency value and vice-versa.

This study focuses on agriculture exports value as it contributes to total country exports as part of terms of trade.

2.8.2 Agricultural Exports Value

Chambers and Just (1979) investigated the relationship between agricultural export values and exchange rate and noted that even though some researchers found that, exchange rates play a role in agricultural exports, still there some others researchers noted a relatively small impact on the agriculture sector of the economy. This study focused on Tanzania economy to investigate the influence by exchange rate to Tanzania agricultural sector. Also, the relationship between foreign exchange rate, total imports and total exports was analyzed for the comparison purposes.

2.8.3 Inflation

Inflation refers to increase or decrease in the prices of a basket of goods and services that are normally consumed by specific groups of households (OECD, 2020). A high level of inflation may have negative impact on exchange rate with other nations.

2.8.4 Interest Rate

Interest rate refers to the price that is charged for borrowing money. According to the theorem of interest rate parity when domestic interest rate is different with that of foreign currency then, the forward exchange rate would have to trade away from the sport exchange rate (Stein, 1962; Glahe, 1967).

2.8.5 Public Debt

The public debt refer to national debt i.e. the amount owed by the government to other nations, individuals etc. study by Douglas (1990) showed that there is

significant impact of debt on the country foreign exchange rate while impulse response functions indicated that debt shocks lead to a short-lived decline in the value of the United States dollar rather than to an increase in its value as conventional theory would suggest.

2.8.6 Current Account Deficit

Account deficits occurs when the imports of the country exceed its exports (Kenyanwallstreet, 2020). When country imports are higher than exports it means more demand of the foreign currency hence a depreciation of the local currency.

2.8.7 Political Stability and Economic Performance

When there is stability in the country, the performance of the economy increase hence better exchange rate as more goods for exports are produced. The certainty and government economic policy decisions derived from the political stability, influences the economic growth (Cervantes and Villaseñor, 2015)

2.8.8 Recession

According to National Bureau of Economic Research (NBER) recession refers to the period when there is economic decline which lasts for at least two consecutive quarters. During this period the production of goods declines which also affects the exports hence causing the local currency to depreciate.

2.8.9 Speculation

Speculation refers to the purchase of asset with anticipation that the prices will increase in the future. According to Aliber *“if the forward and spot markets move in the same direction then speculation is said to be **destabilizing rather the movement in different directions**”* (Abhimanuias, 2019)

2.9 Research Hypothesis

The hypotheses which were tested in this study to assess the effect of Tanzania agriculture export values on foreign exchange rate in Tanzania are the following:

- (i.) *Agriculture export value can be used to forecast the movement in exchange rates but not vice versa.*
- (ii.) *Increase in Agriculture export value increases the value of the domestic currency and vice versa.*

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This section provides an overview of the methods that were used to collect the information for data analysis in order to achieve the research objectives i.e. to examine whether there is effect of agricultural export value on exchange rate in Tanzania and assessed whether there is long run relationship between agricultural export value and exchange rate in Tanzania. The rationale of using the selected method is also highlighted in this section.

3.2 Study Area

This study focused on Tanzania as study area. The main reason for selection of this area is due to fact that agriculture accounts about 30% of the country GDP therefore agriculture export value might have significant effect on the exchange rate therefore investigation of its influence is key for policy recommendation.

3.3 Research Design

The study adopted cross section research designs, essentially because the study aims at analyzing what happens at only one point in time using time series data i.e. the period from 1989 to 2019. These data on total exports, imports, foreign exchange and agricultural exports were gathered by BOT for various uses however no study has been done to examine their relationship. This study focused on analyzing them to establish their relationship to assist on policy formulation in Tanzania. In this study the exchange rate was dependent variable while imports, agricultural exports and total export were independent variable.

3.4 Target Population and Sample Size

Agriculture sector, export, import and foreign exchange market in Tanzania was the population of this study. The sample used for analysis on this study is the time series information on total exports, total agricultural export value, total exports, total

imports and foreign exchange rate from the period of 1989/1990 to 2018/2019. The study sample was 30 years annual data on imports, exports, agricultural exports and foreign exchange rate. The main reason for the selection of data from 1989 to 1990 was the fact that, the from 1989 to 2019 there has both crawling and floating exchange rate regimes hence it provides the chance to get representation of data from these 2 regimes.

3.5 Types of Data and Collection Methods

The study used secondary data for analysis. The secondary data usually save cost and time when they are available compared to primary data. This was the main reason for selection of secondary data source. The annual time series data on agricultural exports, nominal foreign exchange rate and total export for Tanzania was gathered from BoT for the period of 1989/90 to 2018/19 for analysis in order to achieve the study objectives which examined whether there is effect of agricultural export value on exchange rate in Tanzania and assess if there is long run relationship between agricultural export value and exchange rate in Tanzania. The reason for using nominal exchange rate and not real exchange rate since, the nominal exchange rate data were readily available.

3.6 Data Presentation, Analysis and Interpretation

The study used Regression, Granger causality test, Dickey Fuller, Johansen Test and Vector cointegration test to analyze the data as they are suitable for the time series data. Unit Root Test was used because, Granger causality test requires testing on whether the data series are stationary while Johansen test was used to test the cointegration of the data. Vector auto regression was done after Johansen Test followed by the Granger causality test. Additionally, Tables, pie charts and graphs are used in this study for further analyses and explanations of the data series obtained.

3.6.1 Dickey Fuller Test

This is statistical formula developed by David Dickey and Wayne Fuller in 1979 to assist in testing if time series data are stationary or not. This is because the use of time series variables to assist in estimating any econometric models requires that a stochastic process obtaining the data series be stationary in order to avoid having substantially different conclusions. Therefore, it is paramount to test the order of integration of each variable in a model, to know if the variables are non-stationary and also to know the number of times, the variables need to be differenced to become stationary series (Johansen *et al.*, 1990).

3.6.2 Johansen's Test

The test to determine co-integration of the variables assist in determined whether there is the long-term relationship which exist between the variables. Johansen's test refers to the statistical method to establish if variables are cointegrated i.e. degree with which the variables are sensitive to each other. There 3 types of cointegration test which are the one which uses trace, the other a maximum eigenvalue approach and maximum likelihood approach. This tool is suitable for testing if time series data are cointegrated that is why it was used in this study.

3.6.3 Vector Auto Regression (VAR)

The vector auto regression is the model which is used for analysis of multivariate time series. The modal is very helpful in forecasting and provision of description of dynamic behavior of time series variable.

3.6.4 Granger Causality Test

To establish if the one time series data is useful in predicting/forecasting another, the granger causality test is used. For example, if you want to test if Y forecasts X, then Granger Causality test is used. This can also give information regarding the short-term and long-run relationship between the variable by using the F-statistic which shows the short-run relationship and the t- statistics which shows the long-run relationship.

3.7 Model Specification

Because the data are time series *Agricultural Export Value*, *Exchange rate* and *Total Export Value* the model used in this study was the following:

$$V_t = \sum_{n=1}^p A_n ER_{(t-p)} + \sum_{n=1}^p B_n V_{(t-p)} + CZ_t + E_t \dots\dots\dots (1)$$

$$ER_t = \sum_{n=1}^p A'_n V_{(t-p)} + \sum_{n=1}^p B'_n ER_{(t-p)} + C'Z_t + E'_t \dots\dots\dots (2)$$

$$TV_t = \sum_{n=1}^p A''_n ER_{(t-p)} + \sum_{n=1}^p B''_n TV_{(t-p)} + C'Z_t + E''_t \dots\dots\dots (3)$$

V_t and ER_t denote agricultural export value in (USD) and exchange rate respectively at time t while TV_t represent total country exports value in (USD).

$V_{(t-p)}$, $ER_{(t-n)}$ and $TV_{(t-p)}$ denote the time series at time $t-p$, p representing the number of lagged time points (order). A_n and A'_n are signed path coefficients. B_n and B'_n are auto regression coefficients. E_t and E'_t are residuals. Chen's (Chen et al., 2009) who extended Vector auto regression model which took the co-variables Z_t at time t was considered, instead of regressing them out before Granger Causality Analysis.

Based on the above estimated equations i.e. equation 1 and 2, the expected relationships which were expected among the variables are explained as follows:

- (i) **Unidirectional Granger-causality from ER to V_t .** In this relationship when exchange rate (ER) varies it also affect the export value (ER) but not vice versa. The assessment of this relationship was done to know whether there was an impact on agriculture export value negatively or positively when there is a variation in exchange rate. This aimed to understand the role foreign exchange volatility on agricultural exports performance either positively or negatively.

- (ii.) **Unidirectional Granger-causality from V_t to ER.** It is expected that when there is an increase of export value (V_t) which also predict exchange rate (ER) but not vice versa. The assessment was done to assess on what happens to exchange rate when the value of agricultural exports of the country increases. The expectation was that the exchange rate decrease when the export value increases due to improved terms of trade.
- (iii.) **Bidirectional causality.** In this aspect, the volume of agricultural export value (V_t) increases the exchange rate ER and vice versa. The assessment of this relationship was done to know whether the two variables influence each other and determine the direction of the movement i.e. negatively or positively.
- (iv.) **Independence causality between ER and V_t .** In this aspect the test is to determine if there is no causality relationship among the variables. The assessment was done to know if the variables have no effect on each other in order to determine if there is no change of variables due to their variations.

The results of equation 3 are obtained to compare the effect of the total exports values i.e. including other exports on exchange rate and compare the results obtained on equation 1 in order to determine how agriculture export value plays the role in exchange rate as compared to total exports value.

Also, the granger causality test on total imports and exchange rate is done to assist on comparison with the above results.

Therefore, by establishing either of the above relationships, it was possible to understand the causality relationship between volume of agricultural export value and the exchange rates of a nation. Also, the results of the equations above helps to understand the direction of the effects, i.e. increase or decrease.

CHAPTER FOUR

PRESENTATION OF FINDINGS

4.1 Introduction

This chapter presents the results of the analysis which was done using the secondary data obtained from BoT for the period of 1989/1990 to 2018/2019. The data was received as a raw data. Therefore, the analysis to understand the trend of the performance and relationship among the variables was done. The overview/results of the data analysis are shown/illustrated in the below sub-sections.

4.2 Overview of Tanzania Export Sector

Tanzania export sector mainly comprises of exports from traditional exports which includes tobacco, coffee, cashew, cotton, cloves, sisal and tea (BOT, 2019). The non-traditional exports include exports from mining, manufacturing, horticultural, fish and fish products. The service exports sector includes exports receipts from tourism, transport and other services. The receipts from these sectors form the total exports for the country. Due to various factors such as weather, outbreaks of pandemic diseases such Corona Virus Disease (COVID-19), their contribution to total exports fluctuates. Below subsections provided an overview of each export subsector and their overall performance.

4.2.1 The Composition of Tanzania Exports

In the early 1990's the traditional exports were dominating Tanzania exports however, in recent years, the structure of Tanzania exports is dominated by other sectors such as mining and manufacturing hence the share of traditional exports is declining. As illustrated on appendix 11; the share of traditional exports on total exports was 36% in 1997/98 which have decline to 6% in 2018/19. The trend of traditional export share on total exports is on decline mainly due to rise of exports from non-traditional sector. For example, as illustrated in Appendix 11 the share of mineral exports has increased from 3% in 1997/98 to 22% in 2018/19.

As shown in Appendix 11, the trend of the share of agricultural exports is on decline when compared to other sectors i.e. from 35% in 1997 to 6% in 2018. Other export sectors such as minerals and manufactured goods are on increasing trend as the amount is 11% on manufacturing compared to 4% in 1997. The mineral exports have increased from 3% in 1997 to 22% in 2018. The decline in share of agricultural sector has affected the position of total exports since in early 1990's agricultural export was the main export sectors.

4.2.2 Performance of Exports of Non-Traditional Goods

The value of non-traditional goods exports increased from USD 218.8 million in 1997/98 to USD 3,662.7 million in 2018/19. Based on computation in this study, the non-traditional exports have average growth rate of 15% for the period of the past 22 years. Also, the increase in export value in this category is due to performance of mining sector which recorded an average growth rate of 29% for the past 22 years and manufacturing which recorded an average growth rate of 20%.

4.2.2.1 Fish and Fish Products

Fish and fish products are the emerging non-traditional exports subsector. The fishing industry contributed about USD 324.21 million on Tanzania GDP as per FAO (2005). The exports value from fish and fish products in Tanzania have shown a positive trend from 1999/2000 since the exports has increased by 196% when compared with 2018/19 (Appendix 14). As per BOT, the value added in fishing grew by 2.7 percent in 2017 compared with 4.2 percent in 2016 mainly contributed by the efforts by Tanzania Government to increase supply of fish by implementing measures which helped to curb illegal fishing. The potential of increasing fish exports in Tanzania is high due to availability of ocean, rivers and lakes with fish products for harvesting. However, investment on modern fishing equipment needs to be implemented to raise supply.

The exports from fish and fish products have enabled Tanzania to diversify its exports structure. This is due the fact that in early 1990's the country was highly dependent on traditional exports crops. Since the exports value from fishing sector has increased significantly, this sector seems as diversification of Tanzania exports. For example, USD 62.6 million received from fish and fish products exports in 1997 and the amount have risen to USD 170.8 million in 2018/19. This means that, this sector has a growth potential to become the leading export sector in Tanzania.

4.2.2.2 Horticultural Products

Horticulture sector is another emerging sector under non-traditional exports sub-sector. The sector has shown a tremendous increase in export value for the past 3 seasons (Appendix 16). The trend of export from 1997/98 was very moderate but there was a sharp increase which started in 2014/15 whereby the growth of export revenue was 269% when compared to 2015/2016. There was slight decline in 2017/2018 but the amount started to increase in 2018/2019. Overall, despite seasonal fluctuations the demand for Tanzania horticultural goods in the word market is increasing with average growth rate of 21% for the past 22 years (Appendix 16). Further analysis of what could be reason for sharp growth of exports in 2015/16 are required in order to replicate the same strategy to sustain the increase in exports from this sector.

The performance of this sector on exports in recent years is high as it is about to exceed some of sectors such as coffee and tobacco. The average growth rate of exports from horticultural sector in Tanzania for the past 22 years is 30% which means that this is the fastest growing sector on export performance under agriculture. Due to availability of enough land for cultivation in Tanzania, it has a potential of increase the production of horticultural products for exports such as vegetables, flowers, fruits, spices and seeds. The demand of organic products in the world is growing due to health concerns therefore with proper traceability on production and chemicals used in production of horticultural products in Tanzania the value received from horticultural products can be increased since the organic produced crops usually

fetches premium prices in the world market. This is another sector which can also help to increase Tanzania exports if the potential is fully utilized.

4.2.3 The Performance of Service Sector on Total Exports

The service receipts from exports in Tanzania amounted to USD 4,117.3 million in 2018/19 when compared to USD 506.5 million in 1997/98. The increase in exports is due to an increase in travel receipts from increased number of tourists. This export subsector has an average growth rate of 11% for the past 22 years (Appendix 21). The potential for growth from this sector is huge due to availability of various tourist sites in Tanzania. Effort to increase number of tourists must be done in order to increase exports receipts from this sub-sector.

4.2.4 Performance of Traditional Goods Exports

Overall the non-traditional exports rose to USD 1,020.3 million in 2017/2018 from USD 937.8 million in 2016/2017 season. The increase in exports from traditional subsector is mainly due to the increase in the export value from coffee, cashew, cotton, sisal and tea. The main drivers of the increase export value are the increase in volume particularly on cashew and cotton. Also, in some crops such as tobacco, the volume is decreasing hence it have negative effect on growth on non-traditional export sector even though tobacco still have overall larger share in traditional exports sector for the past 22 years.

The volume of traditional exports is also influenced by weather and performance of the products in term of prices in the world market. For example, the price of tobacco has increased from USD 1,926.5 per tonne in 1997/98 to USD 3,571.5 per tonne in 2017/18 which is price increase by 85%. Also, the price of cashew has increased from USD 823.7 per tonne in 1997/98 to USD 1,686.9 per tonne in 2017/18 which is price increase by 105%.

There is also seasonal fluctuation in export volume mainly due to weather fluctuations. For example, in 1997/98 season, 254,200 tonnes of traditional exports were exported while in 1998/99 a total of 225,100 tonnes were exported which is drop by 13%. The performance of cashew, coffee and tobacco influence the performance of tradition exports since these sectors contribute large share of exports value as shown in Figure 4.2.

4.2.4.1 The Share of Major Export Crops on Total Traditional Exports Goods in Tanzania

In Tanzania's agricultural exports, tobacco accounts for about 29% of total agricultural exports for the past 22 years, followed by cashew 23% and coffee 21%. The other sectors which are cotton, tea, clove and sisal account for 27% of the total exports. Therefore, the major crops which are source of foreign exchange in Tanzania are tobacco, cashew and coffee (Figure 4.1)

Appendix 17: The trend of growth of total exports compared to percentage share of its main export sectors.

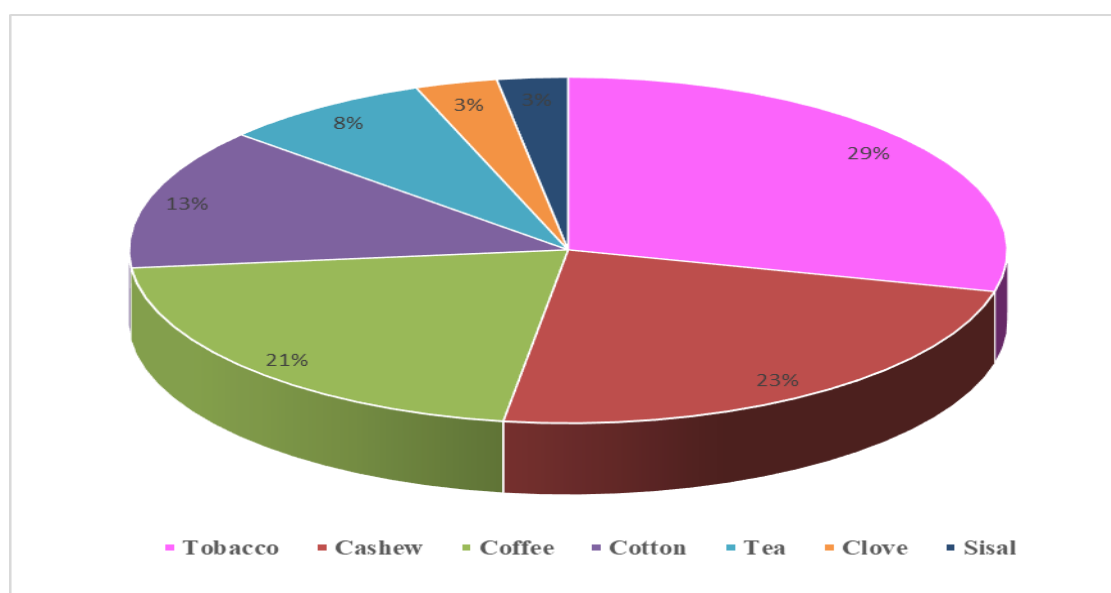


Figure 4.1: The Share of Major Exports Crops on Total Agricultural Exports

Source: (BOT, 2019)

4.2.4.2 Overview of the Major Export Crops in Tanzania

Since the Tanzania agricultural exports is highly influenced by few crops, it is important to have an overview of each sector in order to understand its role on general agricultural exports value trend.

4.2.4.3 Cashew Sub-sector

Based on the analysis of the data collected, cashew is the second sector in Tanzania agricultural exports as cashew accounts for USD 2,661 Million (23%) of crop exports of Tanzania export for period 22 years from 1997 to 2019.

Despite yearly fluctuation, the sector has recorded a growth trend, for the past 22 years. Most of the cashew production in Tanzania is concentrated in the southern coastal regions of Pwani, Lindi and Mtwara which account for 89 percent of total area under production. In the southern zone (Mtwara, Lindi and Ruvuma), over 700,000 households rely on cashew production to meet household income and food security needs (Akyoo and Mpenda, 2014).

According to the Cashew Board of Tanzania (CBT), a total of 313,826.386 tonnes of the crop were produced during the 2017/18 season, of which 93.15 per cent or 292,338.802 tonnes were exported in raw form (The Citizen, 2018).

As per CBT reports, between 1990/91 and 2017/18, Tanzania produced a total of 3 million tonnes of cashew nuts of which 90.55 per cent or 2.7 million tonnes were exported. The cashew board report shows that 2017/18 was the peak production year, as it accounted for ten per cent of total production recorded over the last 28 years.

Over 90% of the raw cashew produced is exported as a raw cashew, the country is losing income from limited value adding which have more income than exporting in raw form.

Furthermore, in order to increase income from cashew, a strategy to boost cashew production is key because most of cashew inflows are highly influenced by volume with exceptions in 2017/2018 where the price per tonne increase by 82% compared to average price of over 22 years. As the cashew trees are getting old the production declines hence, cashew replanting investment is key to boost production in cashew sub-sector. The graph shown in Appendix 5 illustrates the trend of cashew exports performance

4.2.4.4 Coffee Sub-sector

Overall the export value of coffee is on increasing trend since 2001/2002 season mainly attributed by increase in export volume. The export value has increased from USD 36.91 million in 2001/2002 to USD 162.4 million in 2018/2019 season mainly attributed by price and volume exported i.e. 37,600 tonnes in 2001/2012 to 75,170 tonnes in 2018/2019 which is increase by 100%.

Coffee in Tanzania is highly planted in Kilimanjaro, Mbeya, Ruvuma, Kagera and Mara Region. Just like cashew, coffee production has also affected by using of old trees which are very susceptible to disease and pest hence production is low. Replanting of coffee trees investment is key to push for sector productivity.

4.2.4.5 Tobacco Sub-sector

Tobacco is the largest export sector in Tanzania in terms of value. The sector showed steady growth from 2002/2003 to 2010/2011 however, there was a sharp decline in 2012/2013 which is a fall by 20% when compared with 2011/2012 season and 28% decline in 2015/2016 when compared with 2013/2014 season. The main reason for sharp decline in these 2 seasons caused by decrease in volume exported. The trend in tobacco export from 2015/2016 is on decline mainly due to decline in export volume from exported in 2015/2016 to 2018/2019. The county needs to establish the reason for decline and establish strategy to increase exports from the sector. If the trend of decline will continue an alternative crop need to be initiated due to the fact if tobacco export will continue to fall the total traditional exports will be affected massively

since tobacco is the leading sector in traditional export crops. The decline in tobacco exports may be due to international campaigns on health issues on use of tobacco and tobacco related products however, empirical work to confirm this argument is required.

4.2.4.6 Cotton Sub-sector

Cotton is another important sector in Tanzania export after coffee. The sector is affected by seasonal fluctuations with season 2012/13 been the bumper season for the period of 22 years by registering export income amounting USD 159 Million. The sector exports were on decline until 2018/19 where the trend has started increasing. The main challenge for the sector is price since the export values are highly influenced by export volume and prices. When the export volume is high the export values is also high and vice versa.

4.2.4.7 Tea Sub-sector

The volume from Tea have not increase much however, the increase in tea export value is highly influence by prices as in 2013/2014 season, the tea exported was 27,500 tonnes which generated the export value of USD 58.23 Million while in 2008/2009 the volume exported was high i.e. 28,100 tonnes but generated only USD 39.8 Million. To increase export value in this sector it means that area under cultivation must be increased in order to export more volume of tea.

4.2.4.8 Sisal Sub-sector

Tanzania was the largest sisal exporter until 1961 which is not situation currently. Since 1997 Tanzania sisal exports value were fluctuating however, from 2006/2008 it has showing a growing trend in its exports which means that if the production will increase more foreign currency will be received from this sector as demand have started picking (Appendix 8). The potential for increasing exports from this sector is high.

4.2.4.9 Cloves Sub-sector

Clove is major export crop in Zanzibar. Internationally the clove is also supplied by Indonesia. The crop seems as high value crop when you compare the volume exported with the value received i.e. 2011/12 season 4.5 tons of cloves exported which generated an export value amounting USD 58.1 Million. Therefore, the economy of Zanzibar may grow more if they will be able to increase production and able to match the international competition from other global suppliers. The average price of clover per tonne is 5.9% times the average price per tonne of cashew which means that this is high value crop.

4.3 Comparison of the Growth Rate of Agricultural Exports to Other Sectors

As shown in the Appendix 20, the share of agriculture export value in total country export is showing a declining trend. The main reason is the fluctuation of the growth rate of agricultural exports but also there is an emergence of growth in other sectors such as mining and tourism which have increased its exports and reduce the share of agriculture. Appendix 13 illustrates the growth rate for non-traditional exports for the last 22 years to explain the reason for decline in total share of agricultural exports to total country exports. The trend correlate with some of development theories which explains that, as the country develops the share of agricultural sector to total GDP decline. This have evidenced in Tanzania as we have seen exports from mining and manufacturing increasing. Also, other sectors such as service sector have also played a key role on increase of the country total exports. These other sectors such as mining, manufacturing and services have also played a key role for the country to be classified as lower middle economy as recently announced by World Bank.

4.4 Overview of Tanzania Foreign Exchange Rate

Tanzania foreign exchange rate on Tanzania Shilling against United States Dollar has increased from Tanzania Shilling 803.3 per USD in 2000 to 2,275.05 per USD in 2018 which is the depreciation of value of Tanzania shilling by 183.2%.

The exchange rate of Tanzania is floating rate i.e. market determined since 1993. Therefore, there various market fundamentals that have resulted to decrease in value of Tanzania currency including some intervention by BOT when there are non-economic fundamentals that have caused large swing in currency exchange rate.

As shown in Appendix 12, the exchange rate from 1993 to 2006 has shown average 10% increase for the period of 14 years implying that, the was decline in value of local currency. There was slight appreciation of local currency in 2007, whereby the exchange rate declined by 10% from Tanzania Shilling 1,261.64 per USD to Tanzania Shillings 1,132.09 per USD.

From 2007 to 2011, there was average 5% increase in exchange rate for the period of 5 years. From 2012 to 2018; the average increase in exchange rate is 6% i.e. depreciation of Tanzania Shilling. Overall, basing on the trend of exchange rate, the value of shilling is declining over a time because the trend is on increase. This means that Tanzania exports are becoming cheaper compared to imports due to decrease in the value of local currency.

Exchange rate is a fundamental aspect in any nation economy hence it must be monitored to ensure it is does not affect economy negatively. Various policies are usually implemented to ensure that, the foreign exchange rate stay at a competitive level. The fluctuation of exchange rate in Tanzania has its advantages and disadvantages which are explained in other sections of this study.

4.5 Tanzania Foreign Exchange Rate Trend Compared to Agricultural Exports Growth Trend

The foreign exchange rate for Tanzania is favorable during period of marketing of major crops i.e. the value of Tanzania shilling appreciates. As per crop calendar for major crops illustrated in Table 2.1 and Table 2.2, cashew marketing period is between September to March of the next year. Coffee marketing season starts on May to November while Tobacco marketing starts on April to September.

The influence of the dollar inflows into Tanzania economy is shown on the trends of foreign exchange rate during this period.

During the fourth quarter of 2018, the foreign exchange rate increased instead of decline mainly due to Tanzania Government intervention on cashew sector whereby, the Government decided to buy all the cashews, hence there was no significant cashew exports during this period which affected foreign currency inflows to the country.

Looking on the trend of growth of agricultural export and exchange rate shown in Appendix 12, there is a relationship among these variables i.e. exchange rate and agricultural export value. Further analysis in the next sections provides the direction of the relationship between agricultural exports and exchange rate.

The exchange rate is increasing at higher rate compared to total export hence effort to contain the value of shillings are required. This includes increase in total exports for the country and reduction of pressure on food importation since the available land is suitable for production of food crops.

4.6 Contribution of Agricultural Sector to Foreign Exchange Earnings

Based on the analysis of the data received from BOT, for the past 30 years from 1989/1990 to 2018/2019, agricultural sector including emerging sector like horticultural and fishing exports have contributed USD 17,778.68 Million as foreign exchange which is 16% of the total country exports for the period of 30 years i.e. USD 110,654.96 million. This means, agriculture sector in Tanzania has also played a significant role in moving Tanzania into lower middle economic category. Agriculture is very important sector on employment for Tanzanians as it employs majority of residents in rural areas. The foreign exchange value from agriculture sector in Tanzania depends much on export volume which is also influenced by weather performance. During the good weather the export volume is higher than the period when there is poor weather such as drought and floods. For example, in 1997,

Tanzania affected by El Nino rains which affected crops export volume whereby crop export value declined from USD 440 million in 1996 to USD 399.8 Million in 1997.

According to URT (2016), out of 620,227Km² of available land for cultivation only 444,000 km² is under cultivation which means that there is still potential to increase agricultural production by exploiting the available land but also through increase of the productivity for the land in use.

The amount of foreign exchange received from agriculture sector can be increased if the country work on improving productivity, adopting irrigation agriculture as the sector has been affected by seasonal weather fluctuations and also optimal utilization of the available land suitable for production of export crops in Tanzania.

Also, the export value from this sector can be increased by adding value on the crops produced instead of exporting them in raw form which is usually sold at low cost compared to value added products. The value adding activities will increase foreign income through exports but also employment to Tanzanian in the factories to be constructed hence the multiplier effect to economy will be high.

4.7 Agricultural Exports Seasonality and Fluctuation of Foreign Exchange Rate in Tanzania

The figure shown in Appendix 19 are clearly illustrates what happens on Tanzania Shilling during crop selling period and during the period when there is no selling of crops.

From September 2019 to March 2020 it was the season for cashew and coffee sales hence there was inflow of foreign currency to the economy from cashew and coffee exports which causes the increase of value of Tanzania Shillings as the exchange rate of Tanzania Shillings against USD was 2,290 to 2,310. In April 2020 there the Shillings moved to over 2,315 mainly due to low crop exported during these months.

The shilling usually appreciates its value during exports of major crops such as cashew and tobacco due to high demand of exports of local currency to purchase local goods. Also, the exports of major traditional goods increase the country foreign exchange earnings hence improves balance of payments. Since Tanzania have comparative advantage on production of most of agricultural crops it means that, efforts to raise production will increase foreign exchange from exports.

During the period when the demand of agricultural inputs such as fertilizers, agrochemicals and gunny bags there is depreciation of local currency mainly due to high importation of these products to facilitate agricultural productions. This means that investments to facilitate local production of major inputs used in agriculture and increased production of food related products will reduce pressure on importation hence increase value of local currency. For example, based on BoT data, Tanzania has imported fertilizer worth USD 1,585.6 Million, from 1997 to 2019.

Also, importation of food and other consumable goods stood at USD 25,209.1 Million but all these goods can be produced locally given the comparative advantage the country have on agricultural productions.

The downward trend in shown in Appendix 19 means the Tanzania Shilling appreciates while, upward trend means that USD appreciate its value over Tanzania Shillings.

4.8 Relationship between Foreign Exchange, Agricultural Exports and Total Exports

4.8.1 Unit Root Test

This study has used time series data from 1989/90 to 2018/19 to examine the effect of agricultural export value on foreign exchange rate in Tanzanian. The analysis to explore the univariate properties was done using the Dickey Fuller (DF) test. The

Dickey Fuller test was done to establish if data series were stationary in order to proceed with Johansen Test. The result of DF Test is shown in Table 4.1.

As per the results of the data series was observed to be non-stationary hence, the data series transformed into logarithmic form for testing. Table 4.2 with analysis results shows that, both agricultural export values and foreign exchange value had unit root after first differential i.e. stationary.

Table 4.1: DF Test Results

Variable	DF test statistics		Levels
	Test-statistic	Probability	
Foreign exchange value (ER)	0.764	0.7742	-2.473
			-1.703
			-1.314
Agricultural export value (Vt)	-1.603	0.0603	-2.473
			-1.703
			-1.314
Total Exports (TVt)	-0.233	0.4087	-2.473
			-1.703
			-1.314

Source: (BOT, 2019)

As shown in Table 4.1, the probability is above 0.05, which shows that, the series were not stationary hence were differentiated for testing. The results after differentiation is shown in Table 4.2.

Table 4.2: DF Results

Variable	DF test statistics		Levels
	Test-statistic	Probability	
Foreign exchange value (ER)	-5.549	0.000	-3.730* -2.992** -2.626***
Agricultural export value (Vt)	-3.809	0.0028	-3.730* -2.992** -2.626***
Total Exports (TVt)	-2.909	0.0443	-3.730* -2.992** -2.626***
Note: 1. * represents significant at 1% level 2. ** represent significant at 5% level 3. *** represent significant at 10% level			

Source: (BOT, 2019)

For the data series to be stationary, their probability should be significant. The probability on Dickey Fuller results which is shown in Table 4.2 is below 0.05. This means that, the series have become stationary. When data series are stationary it means that the statistical process of generating them does not changes over time. This enable the data series to be useful for analysis. In this case the data series in our study were not stationary hence required to be converted into stationary.

To conduct Johansen test and Granger causality requires data to be stationary that is the reason why it was important to test if data was stationary. Following the confirmation that our data now are stationary after first differentiation, further test which include Johansen test and Granger Causality is shown in the next sections which further explanation on relationship between these variables under considerations as analyzed to meet the study objectives which are to examining the relationship among variables and assessment of long-run relationship among the variables.

4.8.2 Johansen Test

The Johansen Test was done to test cointegration of the data series. The aim of conducting this test was to understand if there is a long-run relationship between agricultural export value and foreign exchange rate. To conduct cointegration test, the variables should be non-stationary in their level form, but they should be integrated of the same order. If both series are integrated of different orders it is possible to conclude that there is no co-integration.

Table 4.3: Johansen Test for Cointegration

Maximum Rank	Johansen Test for Cointegration		5% Critical Value
	Eigenvalue	Trace Statistic	
0	-	63.73	47.21
1	0.62	37.60	29.68
2	0.54	16.71	15.41
3	0.37	4.41	3.76
4	0.15		

Source: (BOT, 2019)

The result of Table 4.3 does not show cointegration because trace static values are higher than critical value. For cointegration to exist, the trace statistics should be lower than critical values. This means that, there is no cointegration using trace statistic which means that considering trace statistics long run relationship does not exist among the variables under considerations.

Table 4.4: Johansen Test

Maximum Rank	Johansen Test for Cointegration		5% Critical Value
	Eigenvalue	Max Statistic	
0	-	26.13	27.07
1	0.62	20.89	20.97
2	0.54	12.30	14.07
3	0.37	4.41	3.76
4	0.15		

Source: (BOT, 2019)

Further analysis using max statistic is shown in Table 4.4. The results indicate the existence of cointegration since the max statistic value which is 20.89 is less than critical value of 20.97. This means that, there is 1 cointegration among the variables means that there is long run relationship which exists between agricultural export value and foreign exchange rate in Tanzania. In this case, the Vector Autoregression test was conducted.

The Vector Autoregressive model is estimated using the lag length 1 and lag length 2. The result of VAR is shown in Table 4.5. L1 and L2 are the coefficients at lag order 1 and lag order 2 respectively.

Table 4.5: Vector Autoregression Results

		Coeff.	Std Err.	Z	P>Z	95% Conf. Interval	
DI Agricultural exports Vt							
	DIForeign exchange rate						
	L1	0.8471	0.3080	275	0.006	0.2433	1.4508
	L2	0.6401	0.2453	261	0.009	0.1594	1.1208
	DITotal exports						
	L1	0.3759	0.1095	3.43	0.001	0.1613	0.5904
	L2	-0.1005	0.1693	-0.59	0.553	-0.4322	0.2312
DITotal exports (TVt)							
	DIForeign exchange (ERt)						
	L1	0.8010	0.7144	1.12	0.262	-0.5992	2.2013
	L2	0.1454	0.5688	0.26	0.798	-0.9695	1.2603
	DI Agricultural Exports (Vt)						
	L1	-0.7746	0.5638	-1.37	0.17	-1.8797	0.3305
	L2	0.1789	0.6332	0.28	0.778	-1.0623	1.4200
DIForeign Exchange (ERt)							
	DI Agricultural Exports (Vt)						
	L1	-0.1590	0.1867	-0.85	0.394	-0.5250	2.2013
	L2	-0.0125	0.2097	-0.06	0.953	-0.4235	0.3986
	DITotal exports (TVt)						
	L1	0.2040	0.0841	2.43	0.015	-0.0392	0.3688
	L2	-0.1612	0.1300	-1.24	0.215	-0.4160	0.0937

Source: (BOT, 2019)

As per the results shown in Table 4.5, its interpretation based on our study is follows: The first lag of foreign exchange rate has an impact 0.8471 on agricultural export values at a significance level of 0.05 other factors remain constant. Also, the second lag of foreign exchange rate has an impact of 0.6401 on agricultural export values at a significance level of 0.05 other factors remain constant.

4.8.3 Granger Causality

After testing the, Unit Root test and Johansen Test, the next stage is assessment of the relationship between agricultural exports value, total exports and foreign exchange value by checking for the direction of causality between the variables.

To investigate the direction of the causality the, Granger causality technique was used. The directions of causality for the variables V_t and ER_t and TV_t are summarized in Table 4.6.

Table 4.6: Granger Causality Wald tests

Null Hypothesis:	Chi2	df	Prob.
D(ER) does not cause D(V_t)	18.648	3	0.000
D(V_t) does not cause D(ER_t)	0.92761	3	0.819
D(TV_t) does not cause D(ER_t)	8.5872	3	0.035
D(ER_t) does not cause D(TV_t)	0.63082	3	0.889

Source: (BOT, 2019)

Based on the results in Table 4.6, the Causality test for ER to V_t is significant as the probability is below 0.05. This means that, foreign exchange rate in Tanzania cause total agricultural exports values while the causality of total agricultural exports to foreign exchange rate is insignificant because the probability is above 0.05 which means that, agricultural export values (V_t) do not cause Foreign exchange rate in Tanzania (ER_t). In this case, based on these results, it means that, there is unidirectional relationship between agricultural exports value and foreign exchange rate, whereby, foreign exchange rate in Tanzania causes agricultural export values.

The causality test of total exports value (TVt) to exchange rate (ERt) is also significant as probability values is below 0.05 i.e. 0.035 while the causality test on exchange rate (ERt) to total exports (TVt) is insignificant since the probability is higher than 0.05 i.e. 0.817

This means that, there is unidirectional causality between total exports and foreign exchange rate in Tanzania whereby total exports causes foreign exchange rate but not vice- versa. Furthermore, the results of this study provide the answers for the hypothesis stated for this study as follows:

Foreign exchange rate in Tanzania forecast agriculture export value but not vice versa.

Also, based on this study there is unidirectional relationship between agriculture export value and foreign exchange rate in Tanzania, whereby exchange rate causes agricultural export value and not otherwise.

In relation to research questions raised in this study, the results of the study have also provided the answers for these questions as follows:

Based on the finding, agricultural exports value in Tanzania does not have long run effect on its foreign exchange rate.

Also, based on the study, there is a long-run relationship between agricultural export value and exchange rate in Tanzania in the sense that, exchange rate causes agricultural exports values.

Additionally, the investigation of the relationship between total imports and foreign exchange rate in Tanzania is examined for comparison purposes and the results are shown the Table 4.7.

Table 4.7: Granger Causality Wald Tests

Null Hypothesis:	Chi²	df	Prob.
D (Total imports) does not cause D (Exchange rate)	8.0006	3	0.046
D (Exchange rate) does not cause D (Total imports)	0.63082	3	0.817

Source: (BOT, 2019)

Based on the results in Table 4.7, the Causality test for Total imports to Exchange rate is significant as the probability is below 0.05% i.e. 0.046 means that, total imports in Tanzania causes foreign exchange rate while the causality of total exchange rate to total imports is insignificant i.e. probability higher than 0.05 i.e. 0.817. This means that, foreign exchange rate in Tanzania does not cause imports. In this case, based on these results it means that, there is unidirectional relationship between total imports and foreign exchange rate, whereby, total imports in Tanzania causes foreign exchange rate.

Therefore, as the pressure on demand of imported goods increases it means that there is high demand of foreign currency which results to decline in value of local currency.

4.8.4 Regression Analysis

Regression results of foreign exchange rate against total imports, total exports and total agricultural export values.

Table 4.8 Regression Results

Explanatory variable	Coef.	St. Err.	t-value	p-value	Significance
Total exports (TVt)	-0.0000018	0.0000006	-3.21	0.00	**
Total imports (TIt)	0.0000006	0.0000003	2.23	0.03	**
Agricultural exports (Vt)	0.0000007	0.0000016	0.46	0.65	
Constant	0.00250000	0.0004073	6.2	0.00	**
Note: Dependent variable is Tanzania foreign exchange rate (ERt) and ** denotes $p < .05$					
Number of observations	30				
Multiple R	0.742965927				
R Square	0.551998369				
Adjusted R Square	0.500305873				
Standard Error	0.000967947				
F	10.67850098				
Significance F	0.0000936				

Source: (BOT, 2019)

Based on the results in Table 4.8, the **Significance F** is less than 0.05 (5%) i.e. 0.00. This shows that, the model variables are fine for explanatory of dependent variable. Also, the R Square is 55% while adjusted R Square is 50% which means that 50% of the variable foreign exchange rate is explained by the independent variables which are total exports, total import and total agricultural exports.

Furthermore, as shown in Table 4.8 both total exports and imports have shown a significant impact on Tanzania foreign exchange rate since their probabilities are lower than 0.05 at 5% level of significance. Their probability of export and imports is 0.00 and 0.03 respectively. Total exports have negative coefficient i.e. -0.0000018 which means that when total exports are increasing the exchange rate decrease by -0.0000018 which means that the value of Tanzania currency have increases i.e. appreciates. Total imports have positive coefficient i.e. 0.0000006 which means that when imports increase by 1-unit, the exchange rate increase by 0.0000006 which means that, the value of Tanzania Shilling has decreases. The total agricultural exports values are insignificant since the probability is greater than 5% i.e. 0.65

which means that total agricultural exports do not influence foreign exchange rate in Tanzania at 5% level of significance.

CHAPTER FIVE

DISCUSSION OF THE FINDINGS

5.1 Agricultural Exports Performance

The analysis of the information in this study shows that, tobacco, cashew, coffee, cotton, tea, clove and sisal are major export crops in Tanzania. The fluctuations of traditional exports are influenced by the performance of these crops. During the period of good prices and good weather, the export receipts are high compared to the period when prices are low or low export volume. The export volume is highly influenced by weather since majority of exports crops with exception of tea and sisal are produced by small holder farmers and depend on rainfall.

Considering the period of the past 22 years, tobacco sector has been the leading sector in exports under traditional exports. However, the sector has shown a decline trend since 2015/2016 mainly due to decrease in export volume. This means that, further research on reasons for decline in export values for tobacco is required. The trend for tobacco exports is not promising as the export volume has declined from 75,800 tonnes in 2015/16 to 48,800 tonnes in 2018/19, which is the decrease by 36%.

Cashew is now a giant sector in traditional exports with average export value of USD 358.1 Million from 2015/17 to 2017/18. The sector has potential to increase the amount of traditional exports if productivity will be increased as the increase in export receipts is highly influenced by volume.

Coffee sector is the third after cashew on export performance. In the early 1997/98 to 2009/10 the sector affected by World prices i.e. average USD 1,784 per tonnes during this period compared to USD 2,946.5 per tonne for the period from 2010/2011 to 2018/19. Furthermore, from 2009/10 season coffee sectors have shown a generally positive growth trend on exports receipts with an average growth of 10% for the

period from 2010/11 to 2018/19 while the average annual foreign exchange receipts from coffee exports from 2009/10 to 2018/19 was USD 154.15 Million.

Tea sector have shown a sign of recovery in terms of exports as the trend is slightly growing. This means the potential for more export receipts from this sector if the exports volume will be increased.

Cotton sector under traditional exports has high fluctuations in export performance compared with other sectors. The seasonal fluctuations are influenced by prices and volume. For example, in 2012/13 there was a bumper harvest on which 132,100 tonnes were exported and pushed the export receipts to USD 159.3Million. This was the highest amount in 22 years i.e. the average is USD 68.4 Million. The sector has a potential to grow due to rising of labor cost in leading global cotton markets as reported by the Tanzania Ministry of Finance and Planning (2017).

Horticultural sector is the future of the Tanzania exports as the sector has shown a tremendous growth in exports i.e. average of 33% for the past 10 years. The sector has varieties of exports products such as vegetables, fruits and flowers the potential for increasing exports receipts from this sector is high. The demand for organic horticultural products is growing due to health concern, such that, Tanzania can use the opportunity due to the availability of fertile land for horticultural products to meet the market demand.

Moreover, the fish and fish products are another fast-growing sector in Tanzania exports with average growth of 6% for the period of 21 years from 1998. There are various reasons for the increase, including the efforts by the Government to curb illegal fishing which need to be strengthened in order to increase the export performance for the sector. This means that, this is another sector that can boot Tanzania exports receipts if the effort to increase the volume exported is increased.

Clove export sector have low contribution to Tanzania traditional exports however the sector have the potential to increase the contribution due to the fact that this is the high value crop i.e. have highest price per tonne when compared to other crops hence if the volume will be increased more exports receipts can be obtained.

Generally, the share of agricultural sector contribution to total exports in Tanzania is declining even though the absolute export value from this sector is increasing (Appendix 15). The reason for the decline in its share is due to the emerging of other sectors such as mining, manufacturing, service receipts which have recently increased export value. The agricultural sector still has the potential for raise its contribution to national economy however private and public investments to sector are required to stimulate more growth and productivity.

5.2 The Growth Rate of Agricultural Exports in Tanzania

The growth rate of Tanzania agricultural sector exports is fluctuating with some period with negative growth and other period with positive growth rate. For example, in 2018/19 there was negative growth rate on agricultural exports by -39% from growth of 2% in the previous year mainly due to Government intervention on cashew whereby Government bought all cashew produced therefore there was no cashew export in 2018/19.

The exports growth in this sector is highly influenced by world market price for major export crops and volume exported. This means that stimulation of local production in order to increase volume for export is key.

5.3 The Growth of Total Exports in Tanzania

The performance of the total exports of Tanzania is influenced by performance of its key sectors i.e. traditional exports, non-traditional and service receipts sector. The sector recorded highest growth of 30% in 2007/2008 from 12% in 2006/2007 mainly due to growth traditional exports by 46%, non-traditional exports by 38% and service receipts sector by 20%.

Also, in 2010/11, the total export growth was 23% from 11% in the previous year mainly due to growth of traditional exports by 49%, non-traditional exports by 27% and service sector by 11%. The decline in growth of total exports was observed in 2015/16 whereby the growth was -5% attributed by decline of growth of non-traditional exports from 5% in 2014/15 to -11% in 2015/16.

Considering the performance of exports from 1998/99 to 2008/2009 total exports grew by average of 14% for the period of 10 years. This growth was attributed by growth of traditional exports by average growth of 5%, non-traditional exports by average growth of 25% and service receipts sector by average growth of 13% during this period i.e. 1998/99 to 2008/2009. The growth declined to an average of 6% for the period from 2009/2010 to 2018/19, mainly due to low growth in export sectors. During this period, the average growth of traditional exports was 4%, average growth of non-traditional exports was 5% while the average growth of service receipts sector was 9%. For the period from 1997/1998 to 2018/2019, non-traditional exports is leading in terms of the contribution to total export with total contribution of USD 48,506.1 Million which is 46% of the total country exports during this period, followed by service receipts sector with USD 44,926.5 Million which is 43% of the total exports during this period. During this period traditional export sector contributed USD 11,333.4 Million which is 11% of the total country exports. (Appendix 17)

5.4 Relationship between Exchange Rate and Agricultural Exports

Comparing the trend between the foreign exchange rate of the Tanzania and Tanzania agricultural exports values, there is association between these variables. From the period of 1989/90 to 1997/98 the Tanzania Shilling depreciated by average of 17% while exports from agriculture increased by average of 10% which means that these 2 variables have influence on each other. Also, from 1998/99 to 2007/08 the Tanzania Shilling depreciated by average of 6% while agricultural exports increased by average of 4%. Furthermore, for the period from 2008/09 to 2018/19

Tanzania Shilling depreciated by average of 7% while agricultural exports increase by average of 6%.

The association between these 2 variables is that, as the value of Tanzania shilling depreciates there is increase in agricultural exports. This association was also verified by vector auto regression shown in Table 4.5 and granger causality test shown in Table 4.6.

The regression of foreign exchange rate against total agricultural exports have shown that, total agricultural exports in Tanzania does not have significant impact on Tanzania exchange rate since its probability was above 0.05 at 5% level of significance. However, the empirical analysis using vector auto-regression has shown that, there is long-run relationship between foreign exchange rate and total agricultural export value on which foreign exchange rate causes agricultural exports in Tanzania and not otherwise. The results of the study is the same with the study conducted by Bradshaw and Orden (1990) which investigated the causality from the exchange Rate to Agricultural Prices and Export Sales and observed that there is the causality from the exchange rate to agricultural export sales.

Also, this study has the same results with the empirical work by Batten and Belongia (1984; 1986), Chambers and Just (1981) and Orden (1986) who posit that, the exchange rates are significant determinants of agricultural prices and export volumes.

Moreover, the results of this study support devaluation of currency as a measure to improve international competitiveness as the export goods become cheaper for foreigners hence more exports other things remained equal.

Additionally, the study supports the empirical work by Paarlberg et al. (1994) which investigated the impact of exchange rates on prices, production, and consumption and observed that exchange rates are an important factor in determining prices, supplies, and demands.

Moreover, based on the finding of this study, for Tanzania case it is agricultural sector which responds to exchange rate fluctuation when compared to total exports. This means that for Tanzania to benefit from exchange rate volatility, more production from agriculture sector are required to ensure that, enough exports are obtained.

5.5 Relationship between Total Exports and Foreign Exchange Rate in Tanzania

The regression results of total exports against foreign exchange rate in Tanzania have shown that, total exports have significant impact on exchange rate at 5% level of significance (Table 4.8). This means, the increase by 1 unit of export causes the value Tanzania Shilling against US Dollar to appreciate since the coefficient on the regression is negative. This means that, as exports increases the value of Tanzania currency will increases.

Further analysis of the relationship between total exports and forcing exchange rate in Tanzania using vector auto regression shows that, that there is no long run relationship between total exports and volatility of foreign exchange rate in Tanzania. Also, the granger causality test shows that, foreign exchange rate does not cause total exports in Tanzania while total exports cause foreign exchange rate in Tanzania. The results of this study is the same as the study which conducted by Sekmen and Saribas (2007) on which they examined the cointegration and causality among exchange rate on export and import in Turkey and observed that that exchange rates cannot determine the variation in exports and imports. This means that the effect of foreign exchange depreciation is not to all sectors of the economy therefore policy formulation on stimulation of exports through devaluation of currency should consider the specific sectors such as agriculture which have shown significance positive impact on exports due to local currency depreciation in value which results from foreign exchange rate fluctuations.

The analysis of relationship between total exports and foreign exchange rate in this study has shown that, there is no causality i.e. between total exports and foreign

exchange rate in Tanzania since the probability was above 0.05. This means that devaluation of currency in Tanzania in order to stimulate the total export will not be a good policy since these 2 variables does not respond to each other at 95% confidence level. This finding is the same as Zakaria (2013) which investigated relationship between exchange rate fluctuation and Malaysia exports to United Kingdom (UK) and Singapore, whose empirical findings do not support the argument that exports have been influenced by exchange rates volatility.

5.6 Relationship between Total Imports and Foreign Exchange Rate in Tanzania

The imports increased at average of 12% for the period of 1997 to 2016. Based on the analysis of the data received from BoT (2019) the capital goods importation have average contribution of 39% of total imports for the period of 1997 to 2016, 33% is intermediate goods which includes fertilizers, oil imports, crude oil, white products and industrial raw materials while food and foods staffs including other consumable goods have an average of 27%. The increase in imports has negative impact on country local currency due to increased demand of foreign currency to purchase imported products. Since the imports have increased by 12% as shown above it means that, it's also plays a role on determination of Tanzania exchange rate.

Furthermore, the regression results in this study of total imports against foreign exchange rate in Tanzania have shown that, total imports have significant impact on exchange rate at 5% level of significance (Table 4.8). This means than increase by 1 unit of import, causes the value Tanzania Shilling against US Dollar to depreciates since the coefficient is positive. This means that, as imports increases the value of Tanzania currency will decrease.

Furthermore, the empirical analysis in this study regarding long-run relationship between exchange rate and total imports by using granger causality test have confirmed that, imports in Tanzania causes exchange rate and not otherwise therefore the increase in imports in Tanzania increases the exchange rate i.e. decrease the

appreciate the Tanzania currency (Table 4.7). The study finds is the same as study conducted by Gondaliya, and Dave (2015) on which they assessed the impact of exports and imports on exchange rate in India and observed that, the India imports will not create the strong value of rupee against the Euro, Dollar, Pound and Yen.

CHAPTER SIX

SUMMARY, CONCLUSIONS AND POLICY IMPLICATIONS

6.1 Introduction

The summary of the major findings based on the analysis of the information analyzed in this study is presented in this section with recommendation, suggestion for policy makers and recommendation for further areas for research.

6.2 Summary

The study examined the effect of agricultural exports value to Tanzanian foreign exchange rate and assessed if there is a long-run relationship between agricultural exports value and foreign exchange rate. The export, imports, foreign exchange and agricultural exports data in Tanzania from the periods of 1989/90 to 2018/19 were examined using, Regression, Unit Root Test, Johansen Test, Vector Autoregression and Granger causality test to examine their empirical relationship.

6.3 Conclusions

Based on this study, the regression analysis of foreign exchange rate against total agricultural exports in Tanzania showed that, total agricultural exports do not significantly influence exchange rate in Tanzania as the probability was above 5%. Further analysis of their relationship using vector auto regression model showed there is long run relationship between agricultural exports value and exchange rate in Tanzania since they observed to be cointegrated. Furthermore, this study assessed the direction of the causality between agricultural export value and exchange rate in Tanzania. The study observed that, there is unidirectional causality on which foreign exchange rate causes agricultural export value in Tanzania.

Moreover, further analysis of the information obtained regarding agricultural exports shows that, under traditional exports, the major exporting sectors which are tobacco, cashew and coffee which account for about 73% of total crop exports.

However, most of these crops are still exported unprocessed. This calls for further investment on processing factories to add value on these crops in order to obtain premium prices.

Also, the analysis observed that, the share of agriculture exports on total exports of Tanzania is declining despite its increase in absolute number. The decline is mainly due to emergence of other export sectors with higher growth rate such minerals, manufacturing and service receipts sector.

The study also investigated the relationship between total exports, total and foreign exchange rate in Tanzania and observed that, total exports and imports in Tanzania have significant impact on foreign exchange volatility whereby total imports cause exchange rate to increase i.e. depreciation of Tanzania Shilling while total exports cause exchange rate decrease i.e. appreciation of Tanzania Shilling. Further assessment of the long-run relationship between total exports, total import and exchange rate concluded that, total export does not have long run relationship with foreign exchange rate while imports have shown long-run relationship with foreign exchange rate. However, the causality test conducted in regarding total exports and foreign exchange rate has shown that, both imports and exports cause foreign exchange rate in Tanzania but not vice versa.

6.4 Policy Recommendations

Based on the findings of this study, various policies are suggested for intervention. Since agriculture exports have shown responding to foreign exchange rate fluctuations in Tanzania, more production is required in order to increase export volume. To attain this, the following policy interventions are required in agricultural sector.

Mechanization of the sector; the sector is still dominated by using of hand holes which means that promotion of the use of improved technology and modern equipment is required to increase efficiency which will also increase production.

Capital investment: agriculture sector requires capital investment in order to attain optimal production hence private public, private partnership is key to raise the required capital for the sector.

Improved infrastructures: the sector requires the rural roads, storage, processing and agricultural markets infrastructures to be improved in order to unlock its potential. Efforts to increase agricultural production; policies to ensure proper agronomical practices are followed as ensuring the optimal utilization of unused land suitable for agriculture in Tanzania are important. Also, investment on replanting of new trees for crops like cashew and coffee is key since, their productions have been affected by having old trees which have low production and susceptible to pests and diseases.

Feasibility studies on establishment of large processing factories for the major exports crops in the country are required to assess our comparative advantage on processing of crops for exports. Investment on value adding activities will increase the value of crops exports which will also increase exports earnings but also stimulate employment in the country.

Also based on the finding of this study regarding the relationship between total exports and foreign exchange rate in Tanzania, the policy makers should not consider devaluation of Tanzania currency as a policy measures to stimulate total exports since foreign exchange rate does not cause export in Tanzania. This policy should be applied only to agricultural sector which have shown evidence of responding to exchange rate volatility i.e. the use of foreign exchange rate as a tool to stimulate total exports will not fit to all export sectors economy.

Furthermore, the study observed that, as the imports and exports causes the foreign exchange rate Tanzania, therefore the import substitutions policies should be implemented in Tanzania to reduce pressure on importation such as to measure to become self-sufficiency in food crops supply which will reduce importation of food.

Also, efforts to increase total exports should be done to increase stabilize the value of Tanzania currency.

6.5 Suggestions for Further Research

The research to investigate the reasons for decline in of export values from tobacco-subsector and strategy to improve its growth trend is required since for the past 22 years, tobacco has contributed more in foreign exchange earnings than other sectors under traditional export but have shown significance decline in export value since 2015/16 season.

The study on horticultural sector which have shown a rapid growth in recently years is important to understand the factors for this growth in order to sustain/improve its growth rate and replicate in other export sectors

The effect of Tanzania agricultural export values on exchange for short run i.e. during a calendar year need to be investigated to examine on whether these two variables influence each other in short run.

Lastly, comparing the trend of total exports for the period between 1998/99 to 2008/2009 the average export growth was 14% but for the last decade i.e. 1999/2000 to 2018/2019 the average growth in exports is 6%. Specific study to investigate what could be the cause of slow growth in total exports need to be done to reverse the trend.

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APPENDICES

Appendix 1: STATA results

(R)

_____/_____/_____/_____
_____/_____/_____/_____/_____/_____
Statistics/Data Analysis

Special Edition

14.2 Copyright 1985-2015 StataCorp LLC
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Notes :

1. Unicode is supported; see [help unicode advice](#).
2. Maximum number of variables is set to 5000; see [help set maxvar](#).

```
. import excel "C:\Users\KAAYA\Desktop\NOEL STATA\DATA FOR ANALYSIS2.xlsx", sheet("Sheet2 (2)") firstrow
```

```

. tsset Year
      time variable:  Year, 1989 to 2018
            delta:    1 unit

```

```
. dfuller Foreignexchange, drift lags(0)
```

Dickey-Fuller test for unit root Number of obs = 29

Test Statistic	$Z(t)$ has t-distribution			
	1% Critical Value	5% Critical Value	10% Critical Value	
$Z(t)$	0.764	-2.473	-1.703	-1.314

p-value for $Z(t) = 0.7742$

```
. g D1Foreignexchange=d.Foreignexchange
(3 missing values generated)
```

```
. dfuller D1Foreignexchange
```

Dickey-Fuller test for unit root Number of obs = 28

	Test Statistic	Interpolated Dickey-Fuller		
		1% Critical Value	5% Critical Value	10% Critical Value
$Z(t)$	-5.549	-3.730	-2.992	-2.626

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

```
. dfuller Totalexports, drift lags(0)
```

Dickey-Fuller test for unit root Number of obs = 29

Test Statistic	$Z(t)$ has t-distribution		
	1% Critical Value	5% Critical Value	10% Critical Value
$Z(t)$	-0.233	-2.473	-1.703

p-value for $Z(t) = 0.4087$

```
. g DITotalexports=d.Totalexports
(3 missing values generated)
```

```
. dfuller D1Totalexports
```

Dickey-Fuller test for unit root Number of obs = 28

	Test Statistic	Interpolated Dickey-Fuller		
		1% Critical Value	5% Critical Value	10% Critical Value
$Z(t)$	-2.909	-3.730	-2.992	-2.626

MacKinnon approximate p-value for $Z(t) = 0.0443$

Appendix 2: STATA Results

```
. vecrank D1Foreignexchange D1Totalexports D1Totalimports D1Agriculturalexports, trend(constant) max
```

Johansen tests for cointegration

Trend: constant Number of obs = 27
Sample: 1992 - 2018 Lags = 2

					5%
maximum	trace				critical
rank	parms	LL	eigenvalue	statistic	value
0	20	-719.33482	.	63.7318	47.21
1	27	-706.26829	0.62012	37.5987	29.68
2	32	-695.82292	0.53871	16.7080	15.41
3	35	-689.67212	0.36594	4.4064	3.76
4	36	-687.46892	0.15058		

					5%
maximum				max	critical
rank	parms	LL	eigenvalue	statistic	value
0	20	-719.33482	.	26.1331	27.07
1	27	-706.26829	0.62012	20.8907	20.97
2	32	-695.82292	0.53871	12.3016	14.07
3	35	-689.67212	0.36594	4.4064	3.76
4	36	-687.46892	0.15058		

MacKinnon approximate p-value for Z(t) = 0.0443

Dickey-Fuller test for unit root Number of obs = 29

		Z(t) has t-distribution		
	Test Statistic	1% Critical Value	5% Critical Value	10% Critical Value
Z(t)	-0.478	-2.473	-1.703	-1.314

```
. g D1Totalimports=d.Totalimports
(3 missing values generated)
```

Dickey-Fuller test for unit root Number of obs = 28

		Interpolated Dickey-Fuller		
	Test Statistic	1% Critical Value	5% Critical Value	10% Critical Value
Z(t)	-3.272	-3.730	-2.992	-2.626

```
. dfuller Agricultureexports, drift lags(0)
```

_____ $Z(t)$ has t-distribution _____

	Statistic	Value	Value	Value
Z(t)	-1.603	-2.473	-1.703	-1.314

```
. g D1Agriculturalexports=d.Agriculturalexports
(3 missing values generated)
```

Dickey-Fuller test for unit root Number of obs = 28

		Interpolated Dickey-Fuller		
	Test Statistic	1% Critical Value	5% Critical Value	10% Critical Value
Z(t)	-3.809	-3.730	-2.992	-2.626

```
. var D1Foreignechange D1Totalexports D1Totalimports D1Agriculturalexports, lags(1/2)
```

Sample: 1992 - 2018	Number of obs	=	27
Log likelihood = -687.4689	AIC	=	53.59029
FPE = 2.46e+18	HQIC	=	54.10405
Det(Sigma_ml) = 1.53e+17	SBIC	=	55.31807

Equation	Parms	RMSE	R-sq	chi2	P>chi2
D1Foreignexcha-e	9	85.2416	0.3326	13.45458	0.0971
D1Totalexports	9	257.381	0.4095	18.72719	0.0164
D1Totalimports	9	651.824	0.5425	32.01905	0.0001
D1Agricultural-s	9	110.974	0.5506	33.07636	0.0001

```
. var D1Foreignexchange D1Totalexports D1Totalimports D1Agriculturalexports, lags(1/3)
```

Vector autoregression

```
Sample: 1993 - 2018
Log likelihood = -646.3557
FPE = 3.73e+18
Det(Sigma_ml) = 4.60e+16

Number of obs = 26
AIC = 53.71967
HQIC = 54.44424
SBIC = 56.23586
```

Equation	Parms	RMSE	R-sq	chi2	P>chi2
D1Foreignexchange	13	94.706	0.4029	17.5467	0.1302
D1Totalexports	13	271.844	0.5219	28.38657	0.0049
D1Totalimports	13	528.435	0.7820	93.28779	0.0000
D1Agriculturalexports	13	106.606	0.7003	60.73897	0.0000

	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
D1Foreignexchange						
D1Foreignexchange						
L1.	-.0215942	.2769784	-0.08	0.938	-.564462	.5212736
L2.	.0587584	.2738778	0.21	0.830	-.4780323	.595549
L3.	-.0157909	.2423212	-0.07	0.948	-.4907318	.4591499
D1Totalexports						
L1.	.1756253	.0961155	1.83	0.068	-.0127575	.3640082
L2.	-.0550949	.1672955	-0.33	0.742	-.382988	.2727983
L3.	-.2152829	.1369622	-1.57	0.116	-.4837239	.0531581
D1Totalimports						
L1.	-.0505114	.0306939	-1.65	0.100	-.1106703	.0096476
L2.	.0641777	.0377728	1.70	0.089	-.0098555	.138211
L3.	.035495	.0384661	0.92	0.356	-.0398971	.1108871
D1Agriculturalexports						
L1.	-.1795972	.2319561	-0.77	0.439	-.6342228	.2750284
L2.	-.0213758	.2212334	-0.10	0.923	-.4549852	.4122337
L3.	.0813157	.2206656	0.37	0.712	-.3511809	.5138124
_cons	76.14062	42.80541	1.78	0.075	-7.756437	160.0377
D1Totalexports						
D1Foreignexchange						
L1.	.538087	.7950401	0.68	0.499	-1.020163	2.096337
L2.	-.1195921	.78614	-0.15	0.879	-1.660398	1.421214
L3.	-.354524	.6955598	-0.51	0.610	-1.717796	1.008748
D1Totalexports						
L1.	.8463726	.2758902	3.07	0.002	.3056377	1.387107
L2.	-.0595746	.4802058	-0.12	0.901	-1.000761	.8816114
L3.	.3796376	.3931369	0.97	0.334	-.3908966	1.150172
D1Totalimports						
L1.	-.1309076	.0881039	-1.49	0.137	-.3035882	.0417729
L2.	-.0451337	.1084231	-0.42	0.677	-.257639	.1673717
L3.	.0464174	.1104132	0.42	0.674	-.1699885	.2628233
D1Agriculturalexports						
L1.	-.6531939	.6658078	-0.98	0.327	-1.958153	.6517654
L2.	.0452785	.6350293	0.07	0.943	-1.199356	1.289913
L3.	-.0521586	.6333995	-0.08	0.934	-1.293599	1.189282
_cons	13.09859	122.8688	0.11	0.915	-227.7199	253.9171
D1Totalimports						
D1Foreignexchange						
L1.	.3167581	1.545468	0.20	0.838	-2.712304	3.34582
L2.	.7122031	1.528167	0.47	0.641	-2.28295	3.707356
L3.	.9599888	1.35209	0.71	0.478	-1.690058	3.610036
D1Totalexports						
L1.	1.95919	.5362994	3.65	0.000	.9080621	3.010317
L2.	.142998	.9334657	0.15	0.878	-1.686561	1.972557
L3.	2.281601	.7642137	2.99	0.003	.7837698	3.779432
D1Totalimports						
L1.	.0250331	.1712641	0.15	0.884	-.3106384	.3607045
L2.	-.5180924	.2107622	-2.46	0.014	-.9311788	-.1050059
L3.	-.1120508	.2146308	-0.52	0.602	-.5327194	.3086178
D1Agriculturalexports						
L1.	-1.246135	1.294255	-0.96	0.336	-3.782829	1.290558
L2.	-1.747995	1.234425	-1.42	0.157	-4.167424	.6714337
L3.	.6729241	1.231257	0.55	0.585	-1.740295	3.086144
_cons	-304.2043	238.8431	-1.27	0.203	-772.3282	163.9195

D1Agriculturalexports							
D1Foreignexchange							
L1.	.5459975	.3117819	1.75	0.080	-.0650837	1.157079	
L2.	.3635147	.3082916	1.18	0.238	-.2407258	.9677552	
L3.	-.7329745	.2727698	-2.69	0.007	-1.267594	-.1983555	
D1Totalexports							
L1.	.2687951	.1081927	2.48	0.013	.0567412	.4808489	
L2.	-.1247349	.1883169	-0.66	0.508	-.4938292	.2443593	
L3.	.0321614	.154172	0.21	0.835	-.2700103	.334333	
D1Totalimports							
L1.	-.0156011	.0345507	-0.45	0.652	-.0833193	.052117	
L2.	.0784498	.0425191	1.85	0.065	-.004886	.1617857	
L3.	-.0077268	.0432995	-0.18	0.858	-.0925922	.0771387	
D1Agriculturalexports							
L1.	-.1606095	.2611023	-0.62	0.538	-.6723606	.3511416	
L2.	-.3044188	.2490322	-1.22	0.222	-.792513	.1836754	
L3.	-.1542758	.2483931	-0.62	0.535	-.6411174	.3325658	
_cons	-31.3666	48.18408	-0.65	0.515	-125.8057	63.07246	

. vargranger

Granger causality Wald tests

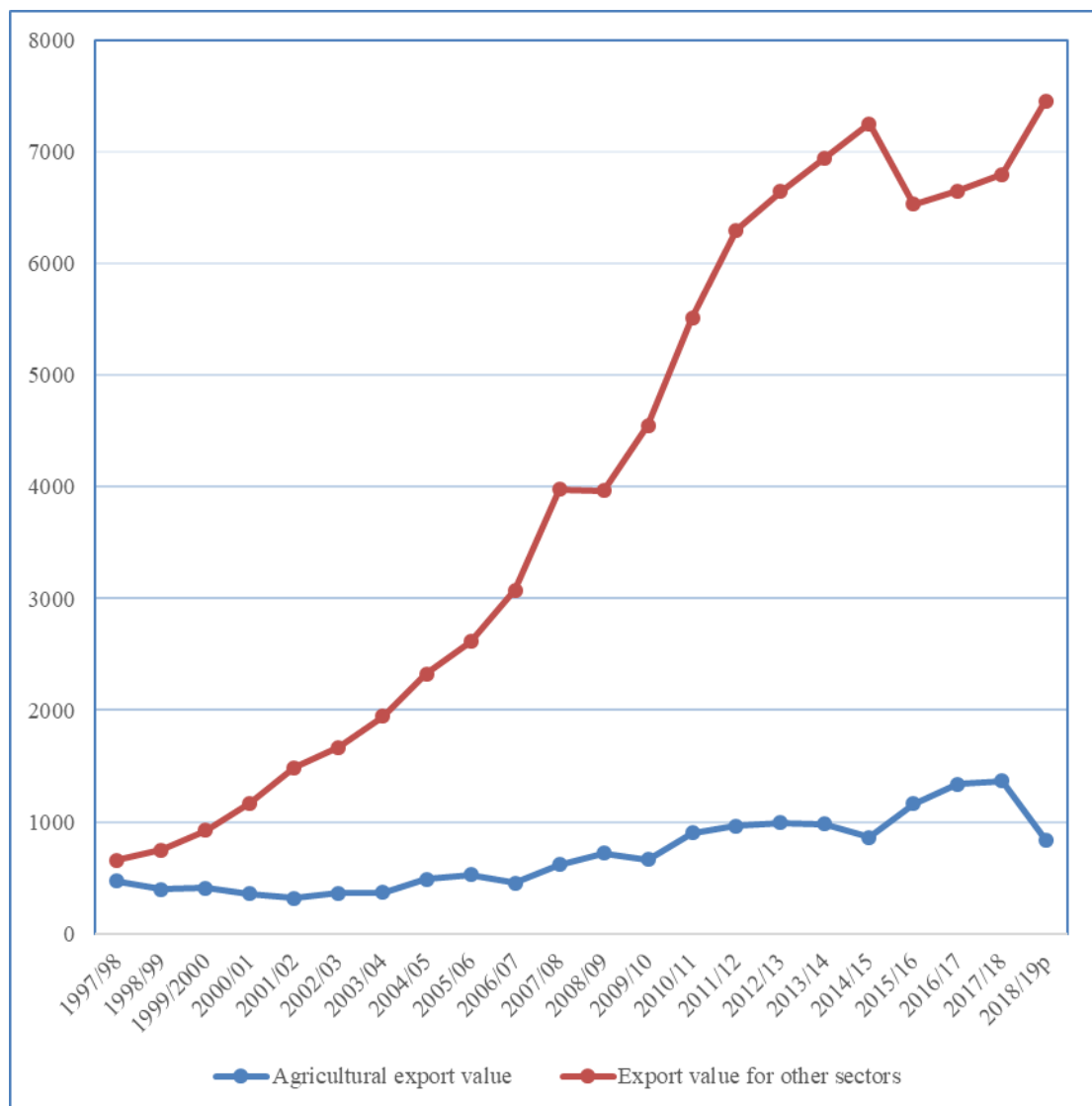
Equation	Excluded	chi2	df	Prob > chi2
D1Foreignexchange	D1Totalexports	8.5872	3	0.035
D1Foreignexchange	D1Totalimports	8.0006	3	0.046
D1Foreignexchange	D1Agriculturale~s	.92761	3	0.819
D1Foreignexchange	ALL	14.507	9	0.105
D1Totalexports	D1Foreignexchange	.93315	3	0.817
D1Totalexports	D1Totalimports	2.4647	3	0.482
D1Totalexports	D1Agriculturale~s	1.1387	3	0.768
D1Totalexports	ALL	9.5031	9	0.392
D1Totalimports	D1Foreignexchange	.63082	3	0.889
D1Totalimports	D1Totalexports	29.245	3	0.000
D1Totalimports	D1Agriculturale~s	3.2143	3	0.360
D1Totalimports	ALL	61.564	9	0.000
D1Agriculturale~s	D1Foreignexchange	18.648	3	0.000
D1Agriculturale~s	D1Totalexports	6.9241	3	0.074
D1Agriculturale~s	D1Totalimports	3.7995	3	0.284
D1Agriculturale~s	ALL	50.367	9	0.000

SUMMARY OUTPUT								
<i>Regression Statistics</i>								
Multiple R	0.742965927							
R Square	0.551998369							
Adjusted R Square	0.500305873							
Standard Error	0.000967947							
Observations	30							
ANOVA								
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>			
Regression	3	0.0000	0.0000	10.6785	0.0001			
Residual	26	0.0000	0.0000					
Total	29	0.0001						
	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	0.0025235	0.0004073	6.1956791	0.0000015	0.0016863	0.0033607	0.0016863	0.0033607
Total exports	-0.0000018	0.0000006	-3.2119538	0.0034975	-0.0000030	-0.0000007	-0.0000030	-0.0000007
Total imports	0.0000006	0.0000003	2.2279854	0.0347454	0.0000000	0.0000011	0.0000000	0.0000011
Agricultural exports	0.0000007	0.0000016	0.4649429	0.6458428	-0.0000026	0.0000041	-0.0000026	0.0000041

Appendix 3: Summary of Volume Exported and Total Export Value for Major Exports Crops in Tanzania

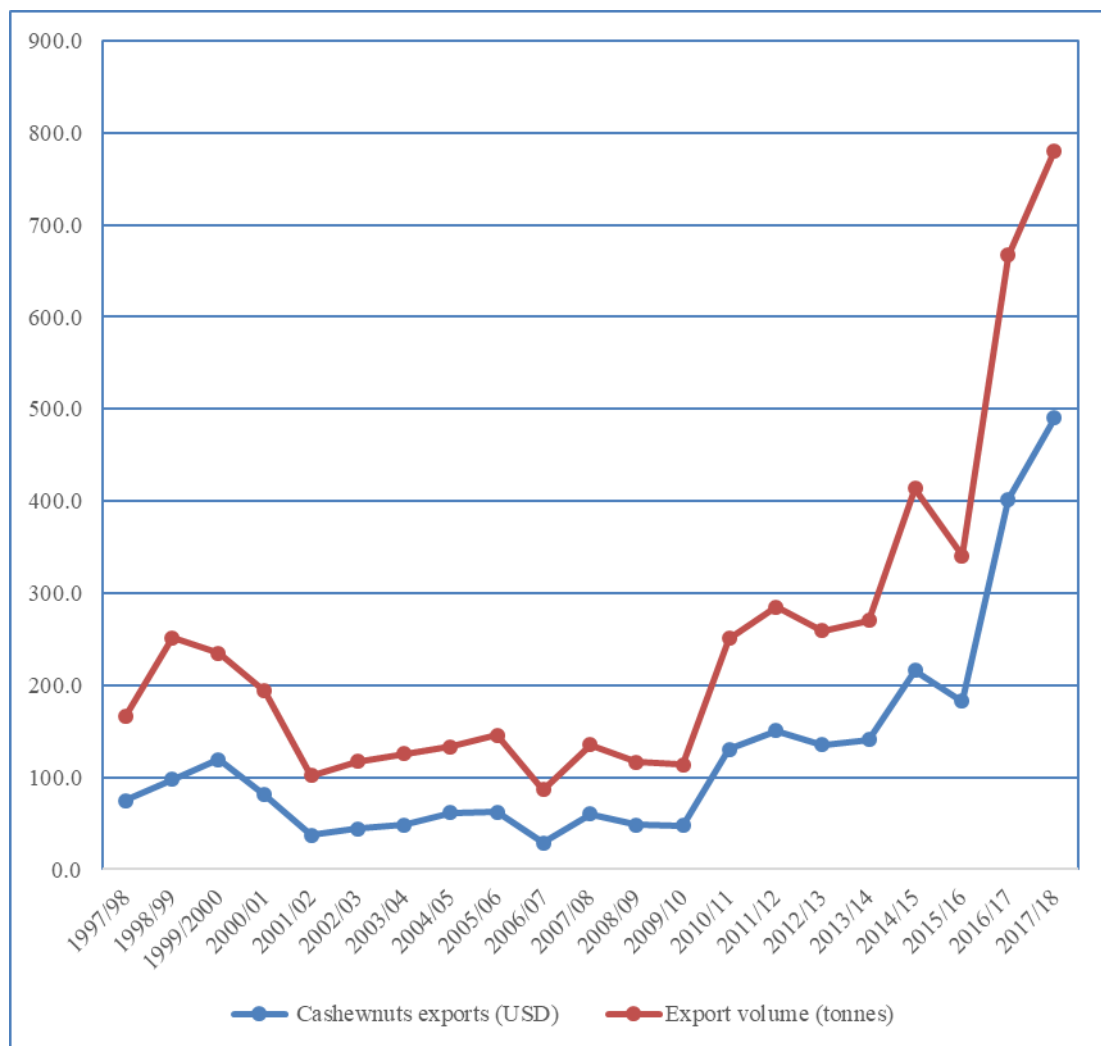
S/N	Crop	Total Tones exported from 1997 to 2019 "000"	Average price per tonnes for 22 years (USD)	Total export in USD millions from 1997 to 2019
1	Tobacco	1,008	2,966	3,273
2	Cashew	2,532	924	2,661
3	Coffee	1,050	2,260	2,377
4	Cotton	1,316	1,155	1,506
5	Tea	566	1,534	880
6	Clove	65	5,450	342
7	Sisal	282	1,027	295
	Total	6,818		11,334

Source: (BOT, 2019)



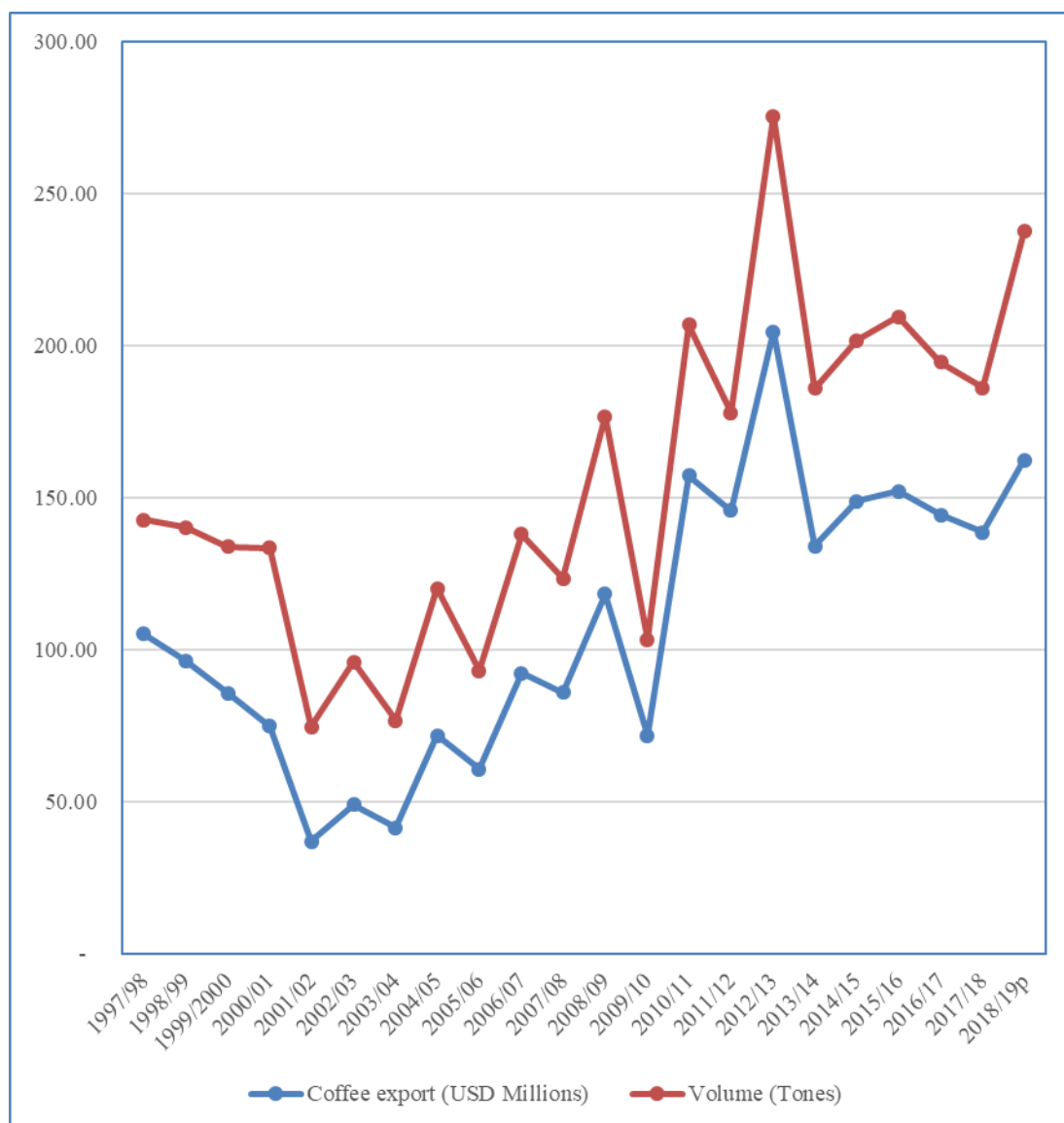
Appendix 4: The Trend of Agricultural Exports Value as Compared to Other Sectors (USD Millions)

Source: (BOT, 2019)



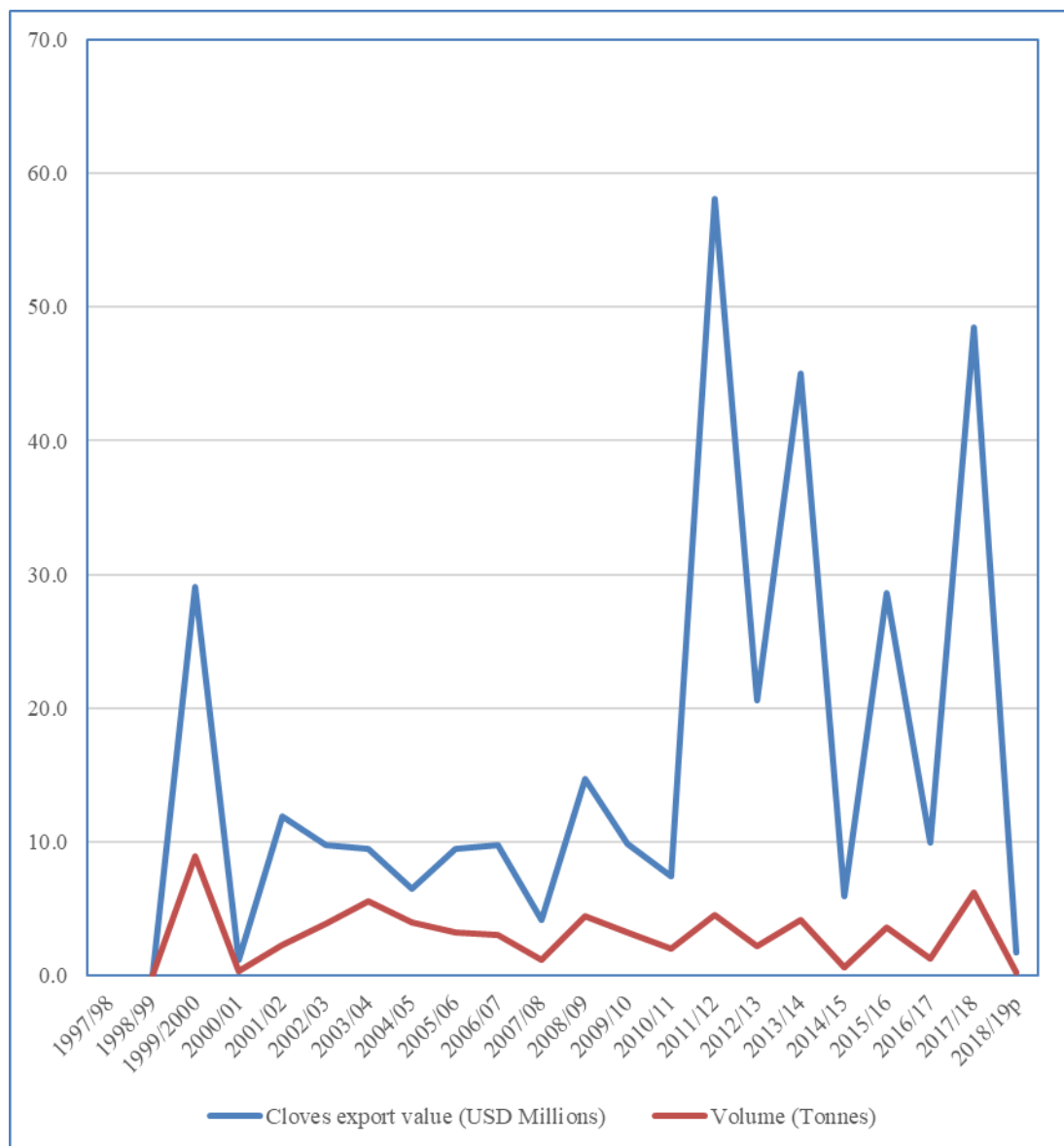
Appendix 5: Cashew Exports Trend Value (USD Millions) and Volume ('000" Tonnes)

Source: (BOT, 2019)



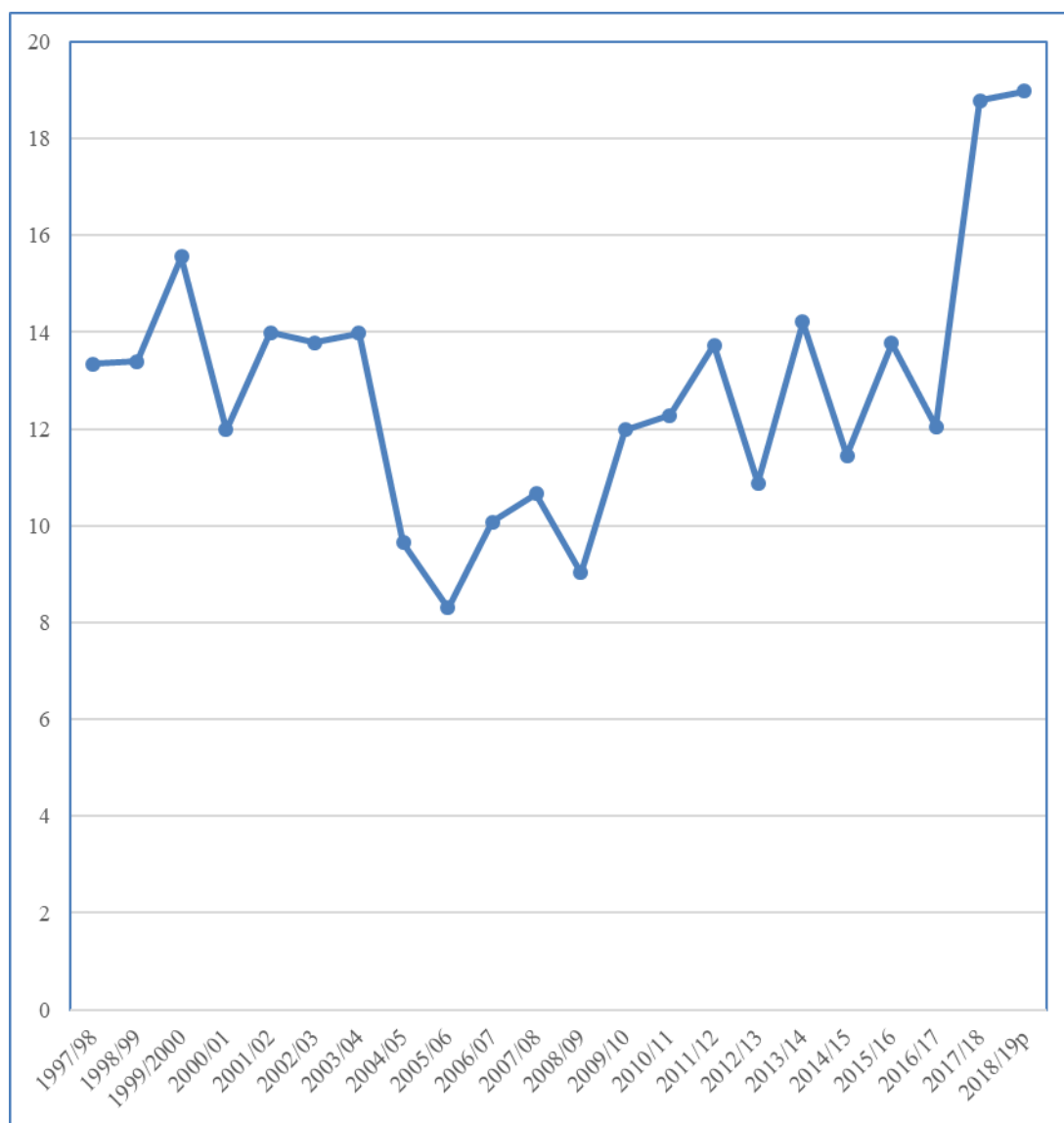
Appendix 6: Coffee Exports Trend Value (USD Million) and Volume ("000" Tonnes)

Source: (BOT, 2019)



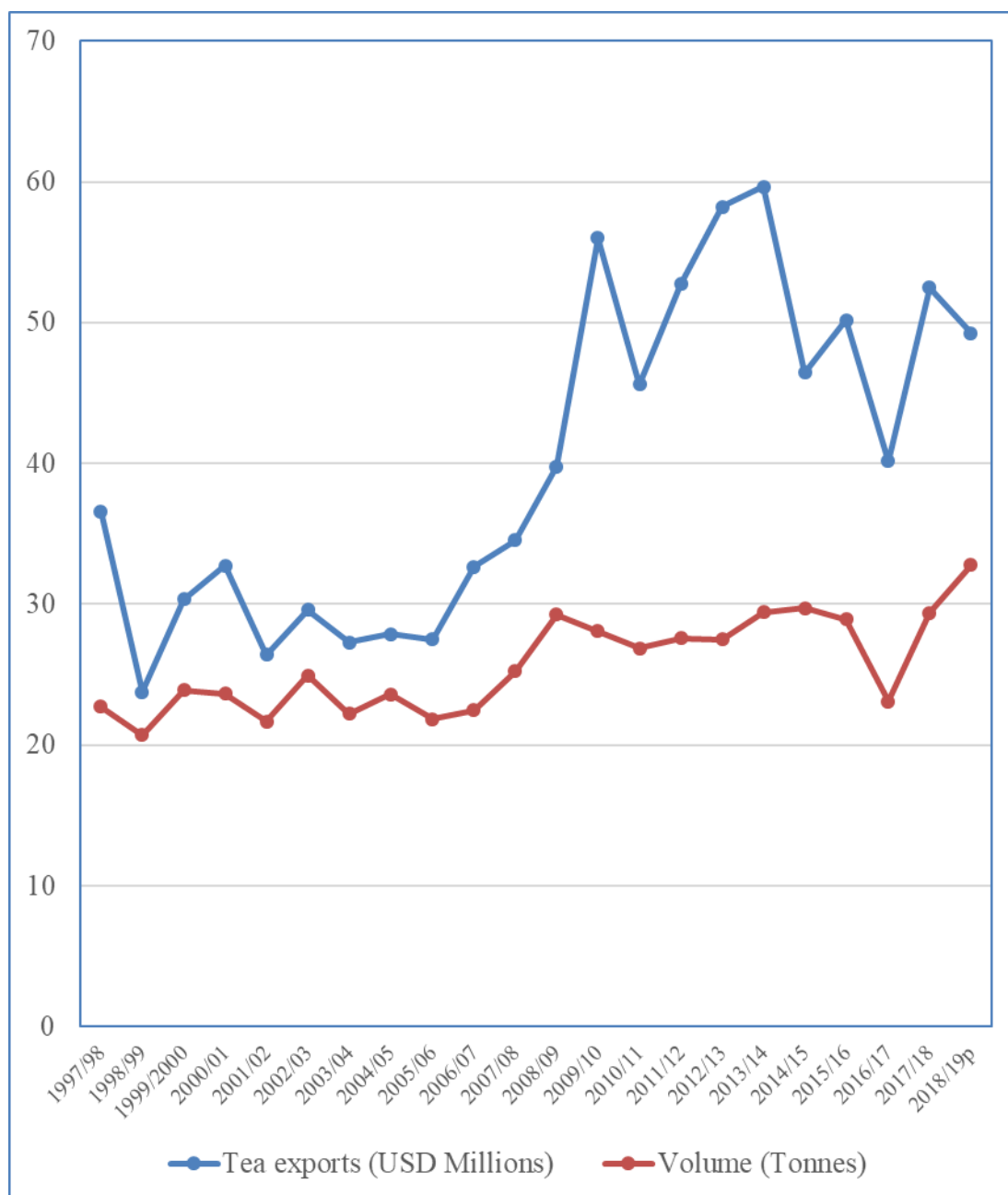
Appendix 7: Cloves Exports Trends USD (Million)

Source: (BOT, 2019)



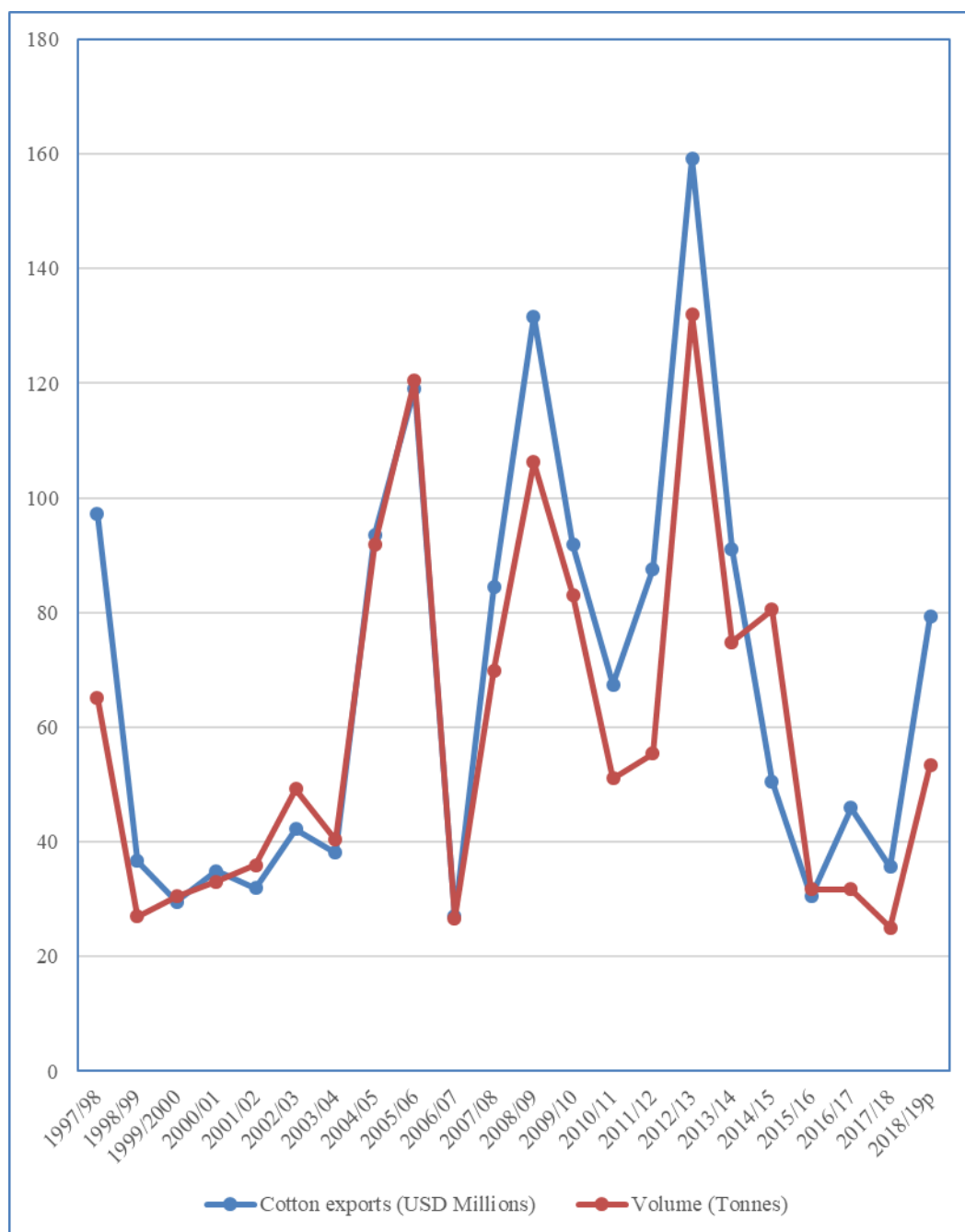
Appendix 8: Tanzania Sisal Exports Trend (USD Million)

Source: (BOT, 2019)



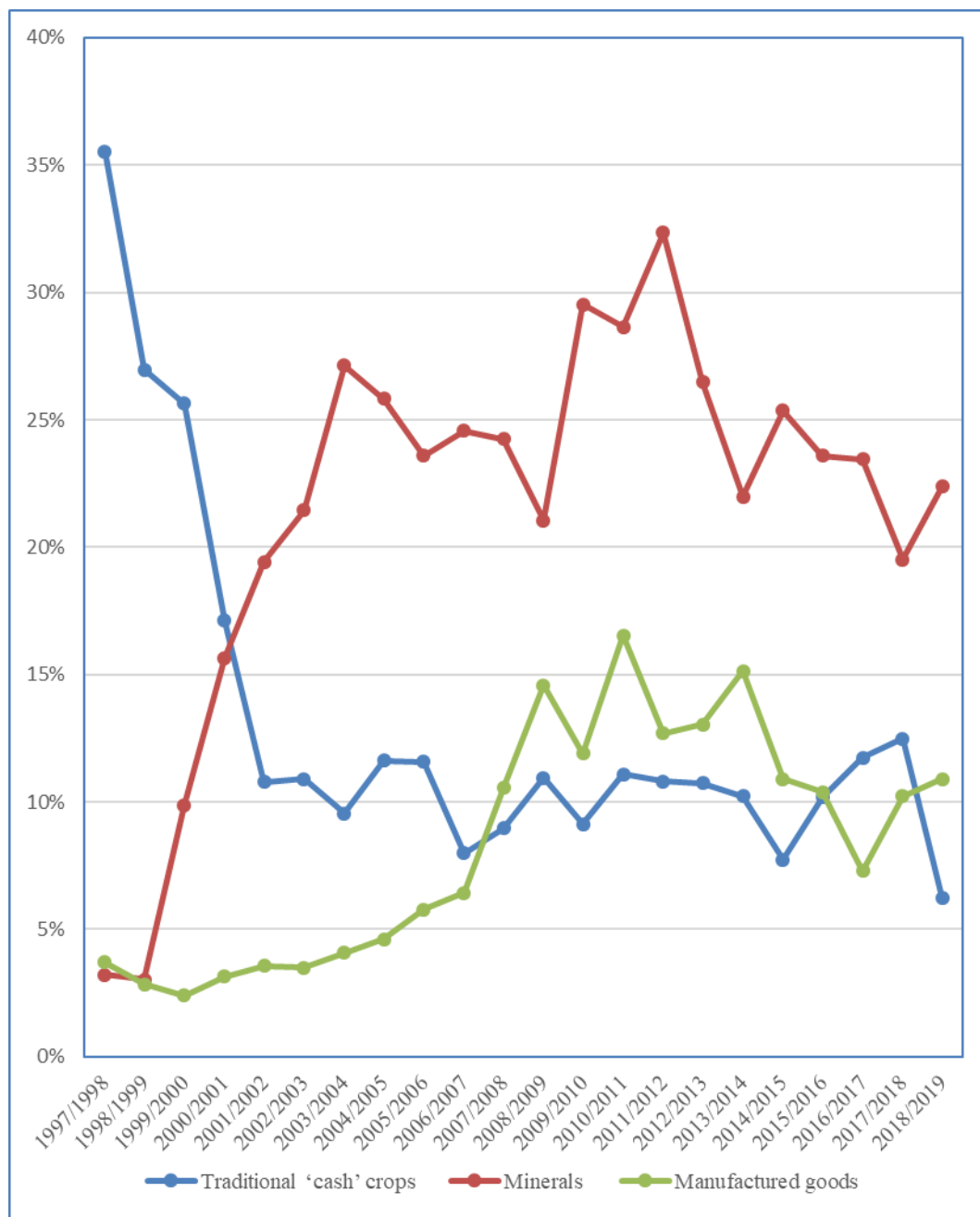
Appendix 9: Tanzania Tea Exports Trend Value (USD Millions) and Volume ('000" Tonnes)

Source: (BOT, 2019)



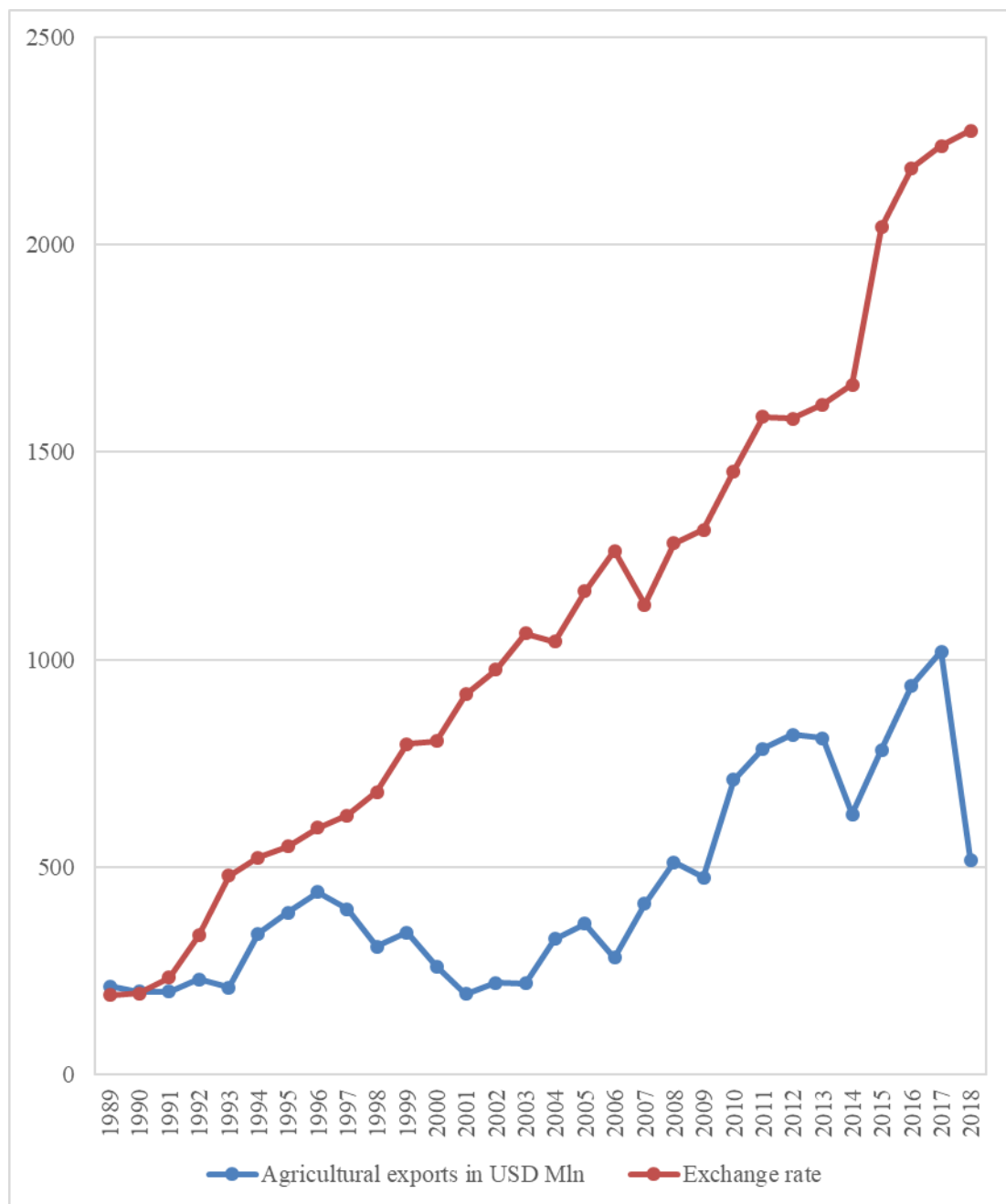
Appendix 10: Tanzania Cotton Exports Trend Value (USD Million) and Volume (Tonnes)

Source: (BOT, 2019)



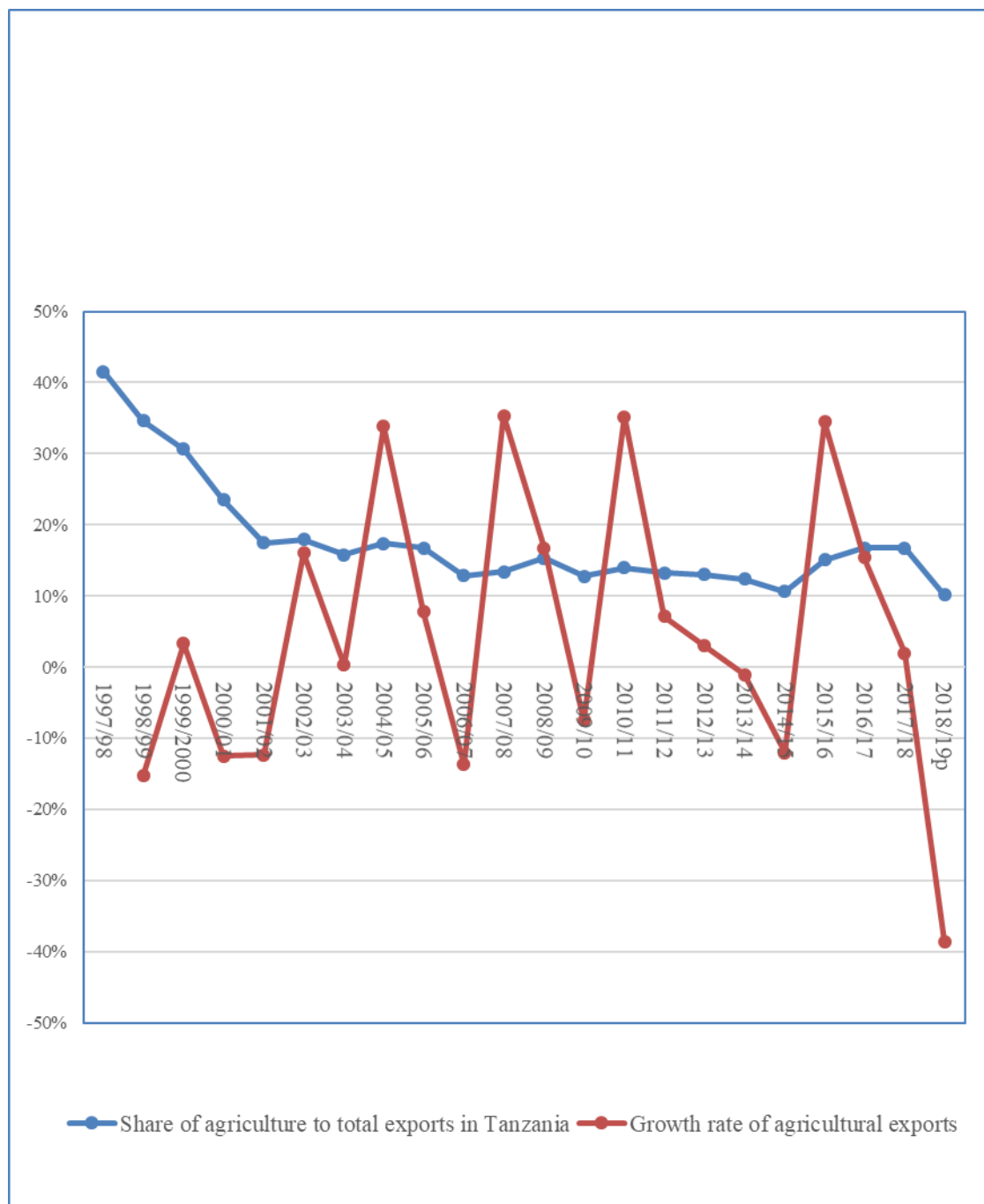
Appendix 11: Share of Agriculture Exports As Compared with Other Sectors

Source: (BOT, 2019)



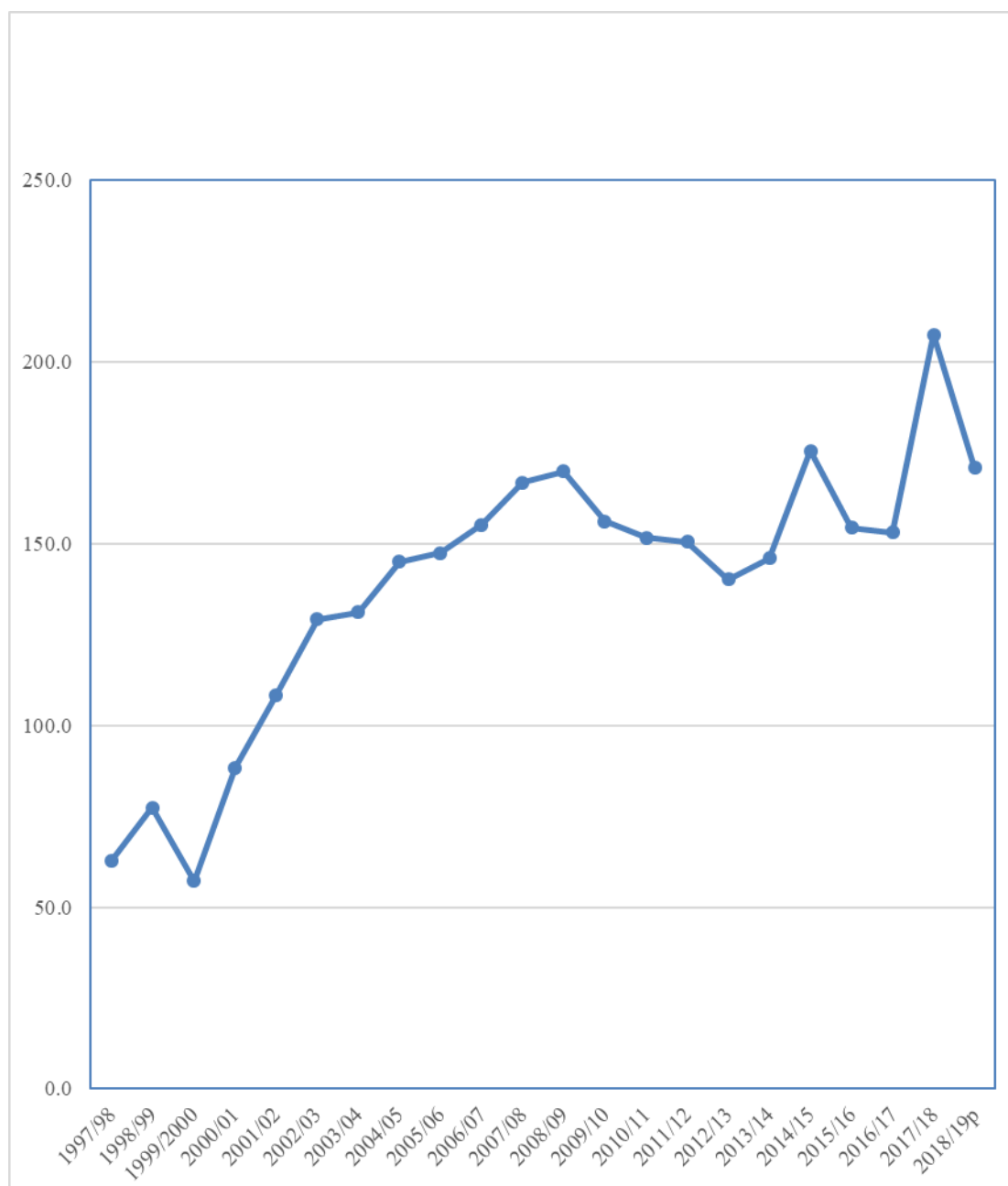
Appendix 12: Comparison of Tanzania Agricultural Export Value and Foreign Exchange Rate

Source: (BOT, 2019)



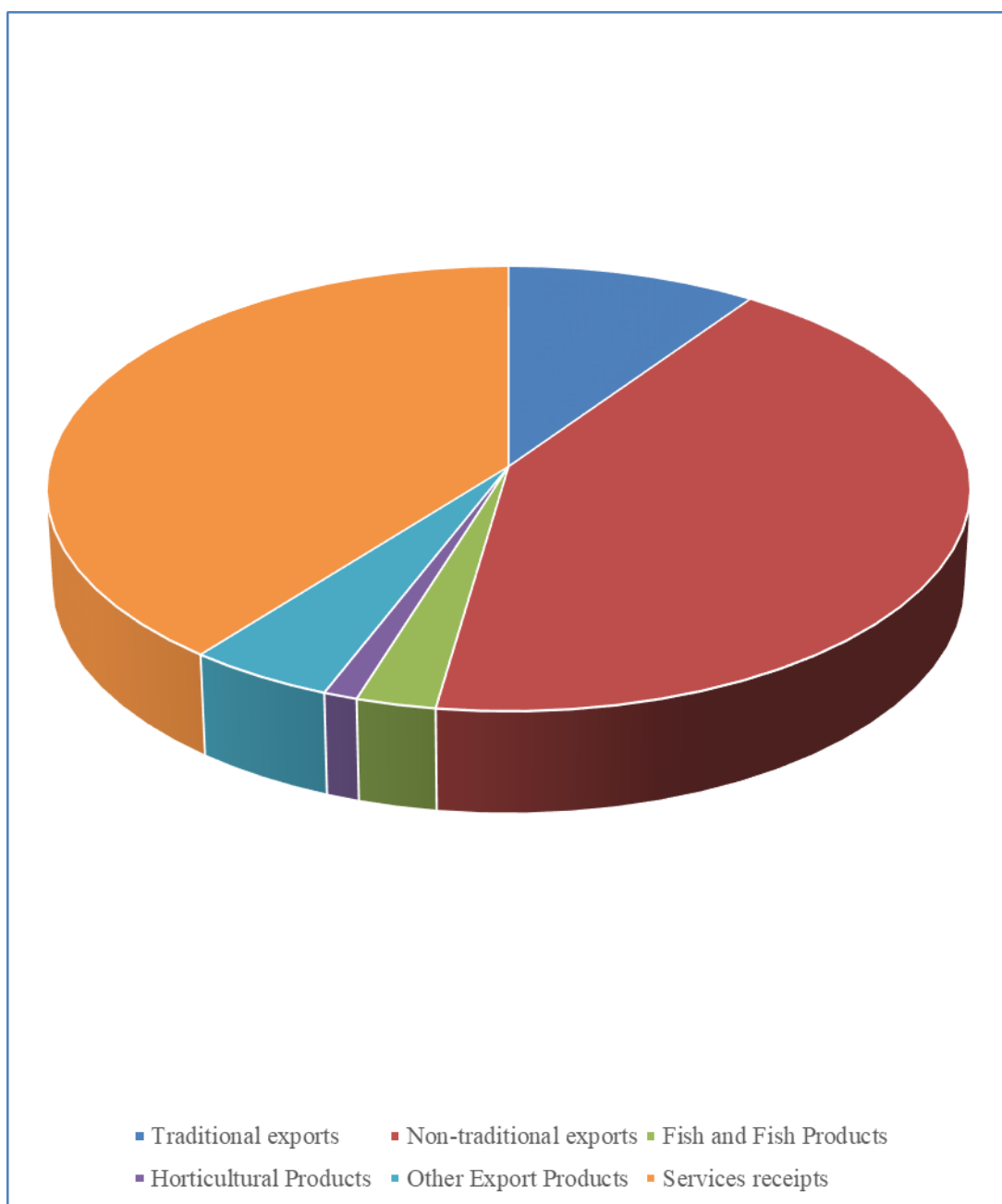
Appendix 13: Tanzania Agricultural Exports Value Share on Total Exports Compared to Its Growth Rates

Source: (BOT, 2019)



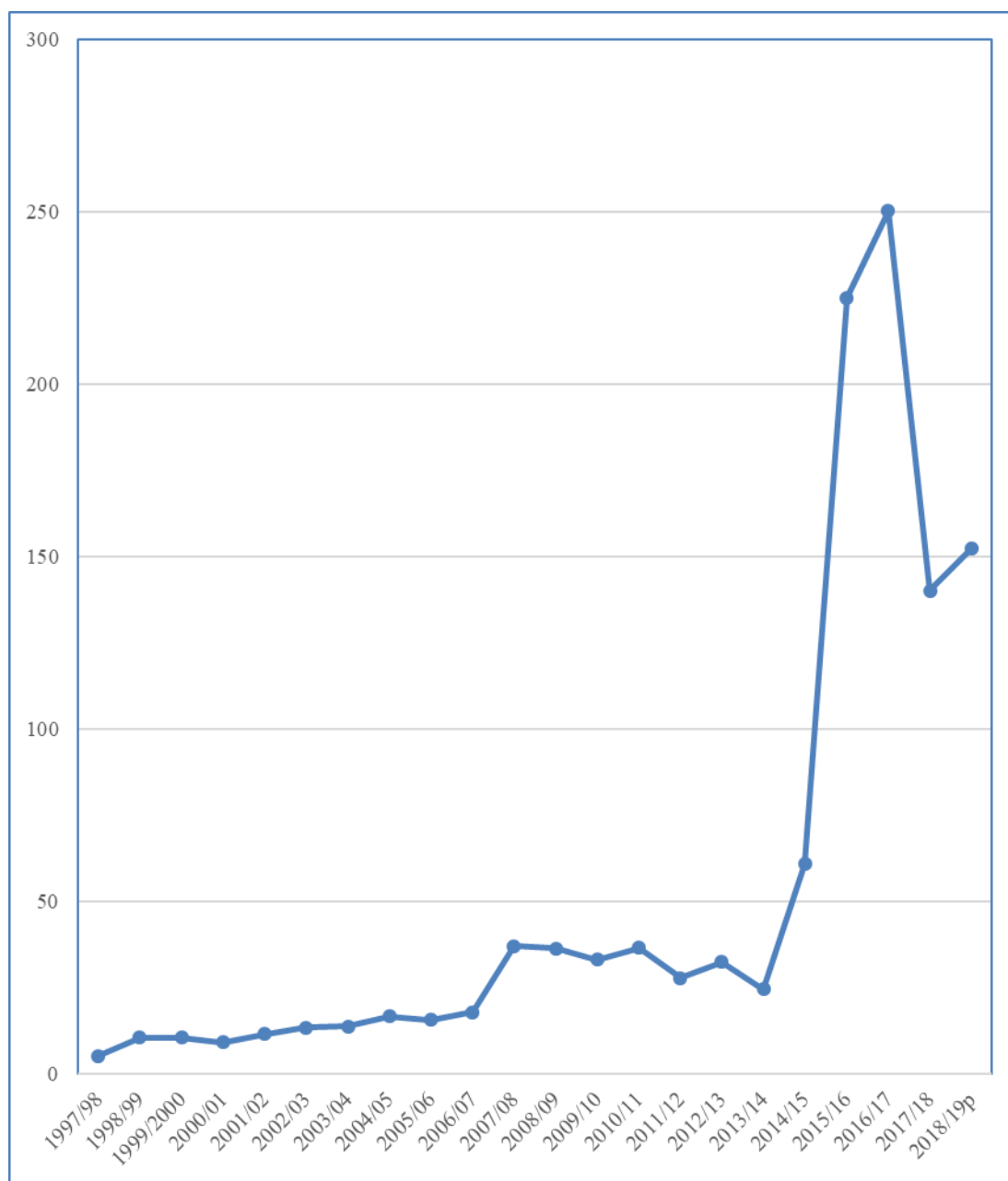
Appendix 14: Fish and Fish Products Exported USD (Million)

Source: (BOT, 2019)



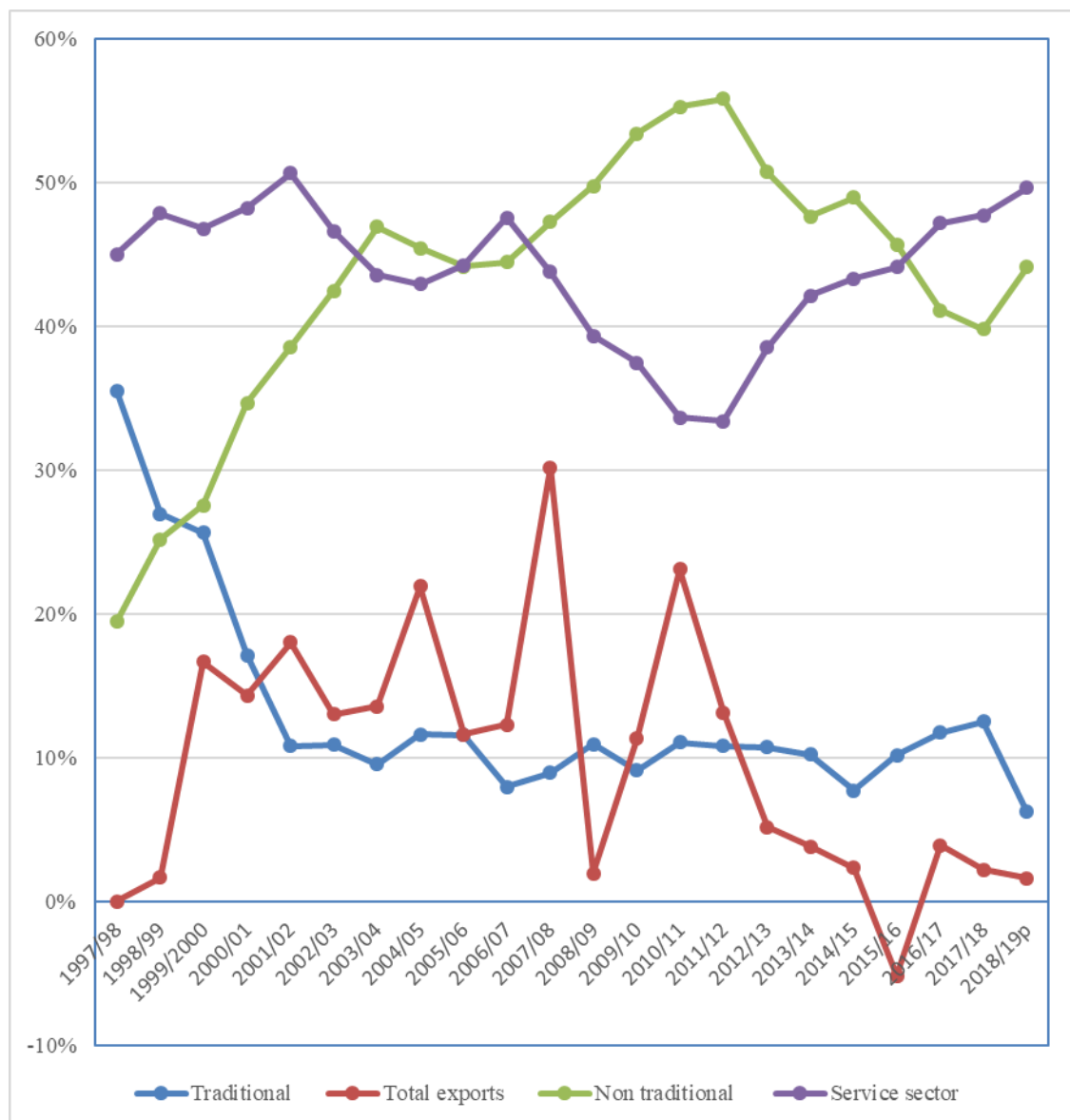
Appendix 15: The Share of Major Exports Sectors to Total Exports

Source: (BOT, 2019)



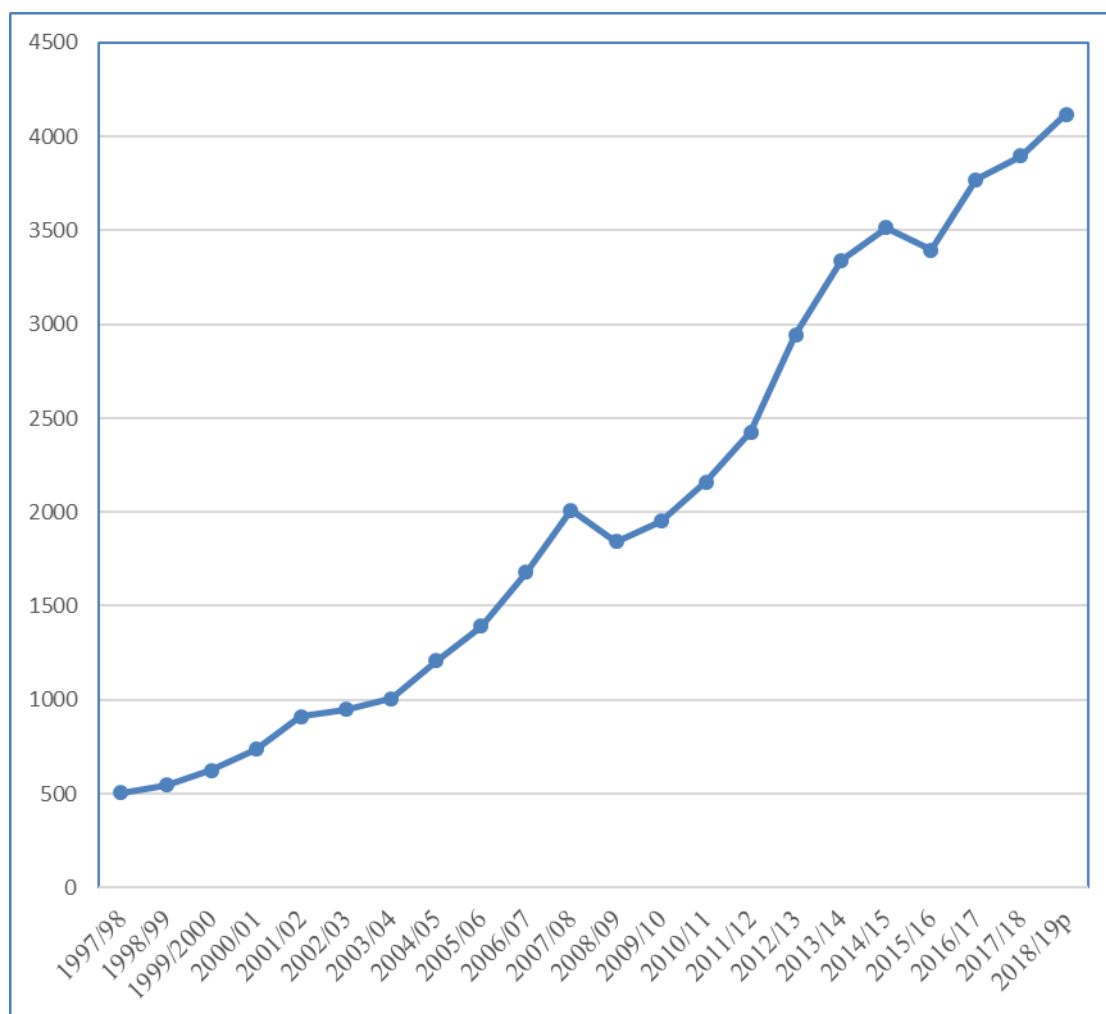
Appendix 16: Horticultural Exports Trend (USD Million)

Source: (BOT, 2019)



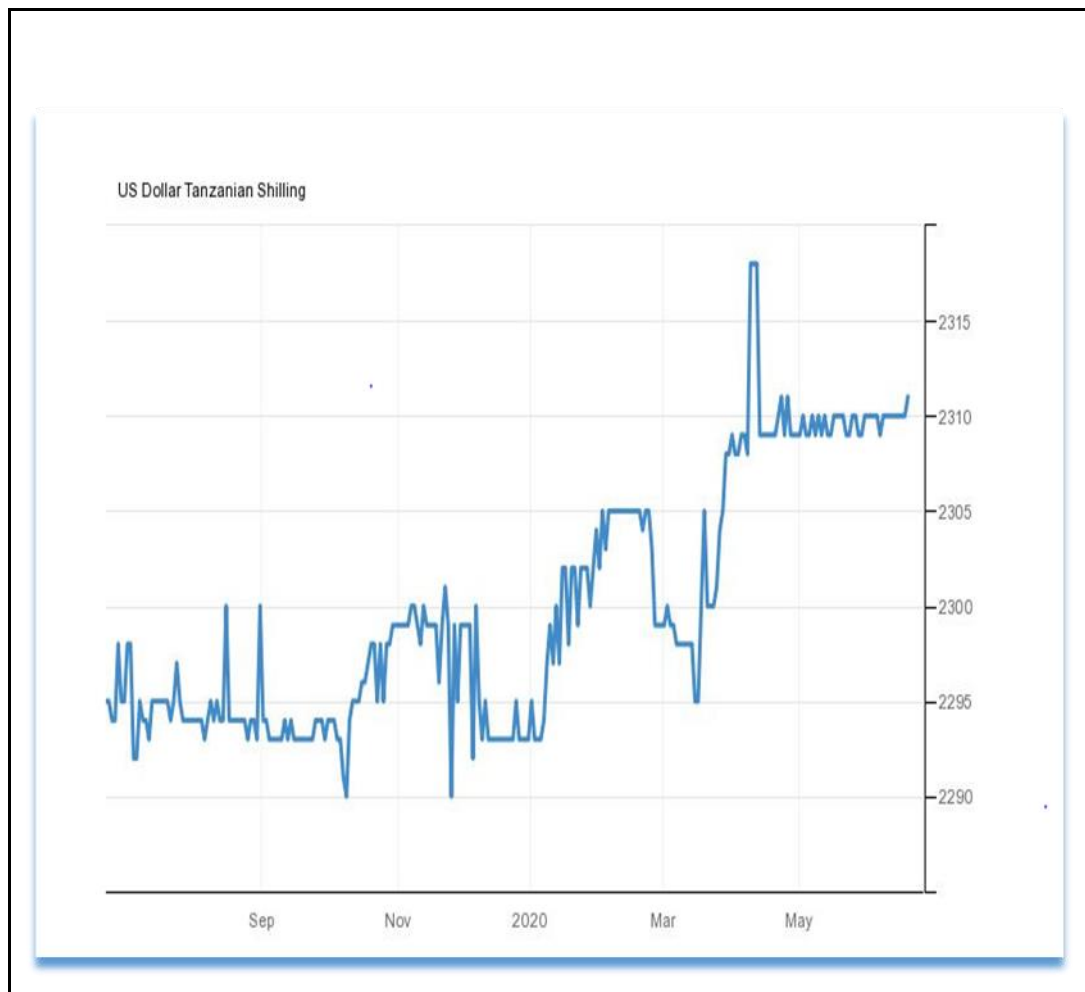
Appendix 17: The Trend of Growth of Total Exports Compared to Percentage Share of Its Main Export Sectors

Source: (BOT, 2019)



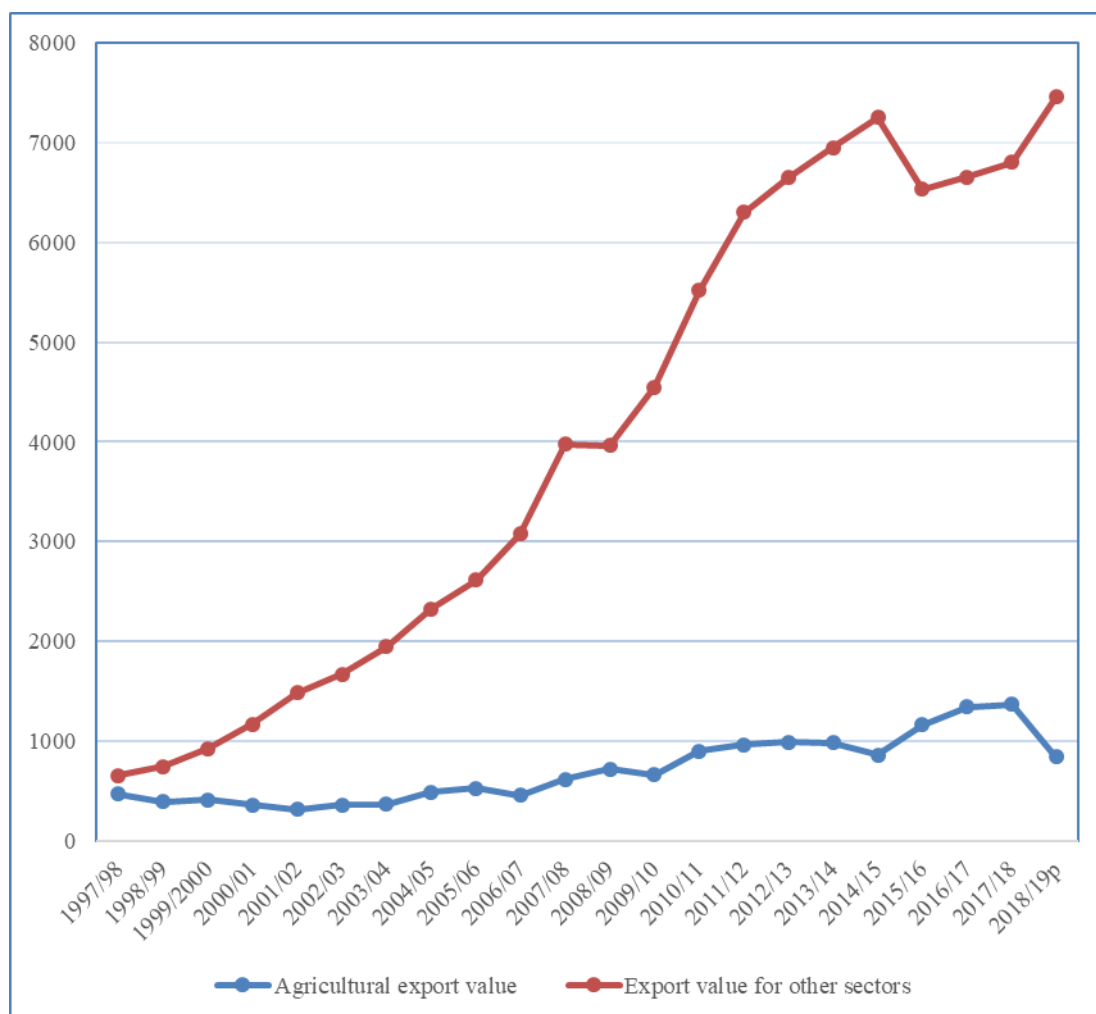
Appendix 18: The Trend of Exports Receipts from Service Sector (USD million)

Source: BOT, 2019



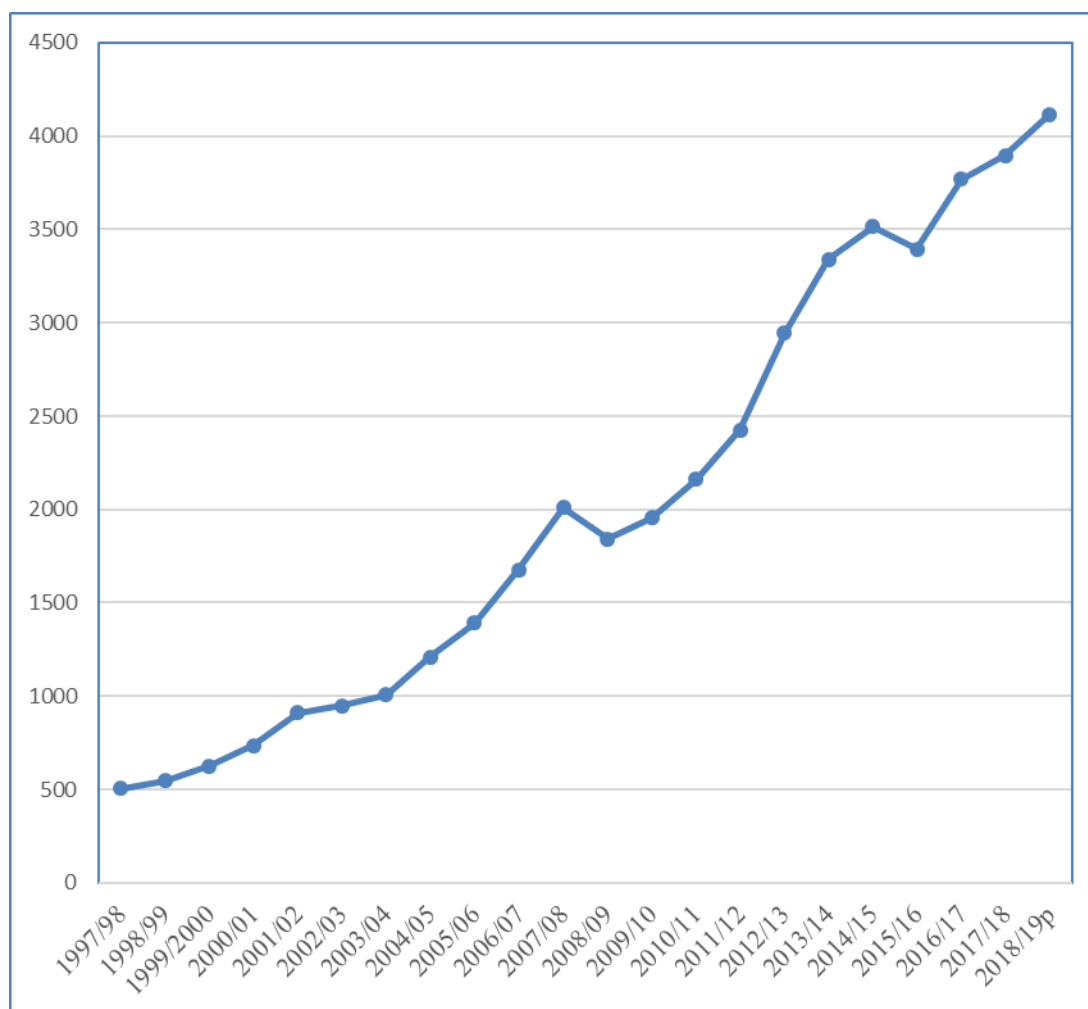
Appendix 19: Fluctuation of Tanzania Exchange Rate September 2019 to May 2020

Source: Tradingeconomics.Com



Appendix 20: The Trend of Agricultural Exports Value as Compared to Other Sectors (USD Millions)

Source: (BOT, 2019)



Appendix 21: The Trend of Exports Receipts from Service Sector (USD Million)

Source: (BOT, 2019)