

EXCHANGE RATE VOLATILITY AND EXPORT OF COFFEE IN UGANDA
(1992-2016)

BY

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DECLARATION

I declare that this research thesis entitled Exchange Rate Volatility and Export of Coffee in Uganda (1992-2016) was the result of my own research except as cited in the references. The research dissertation has not been accepted for any degree and is not concurrently submitted in candidate of any other degree.

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APPROVAL

I confirm that the work in this thesis research thesis was carried out by the candidate under my supervision and submitted for examination with my approval.

Signed_____

Date_____

Prof. Dezi Ngambeki

DEDICATION

I dedicate this research dissertation to my parents my dear mom Halimo Ali Mohamed and my father Osman Shire for their support and patience during the entire period of my study.

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All praise is to Allah Almighty, the most Compassionate/sympathetic and the Merciful, Who bestowed and granted on me the potential and ability to complete this research work. I would also like to send and pay my homage, honor and sweet sensation of respect to my loving and caring parents whose love, prayers and encouragement kept me steadfast, dedicated and enabled me to attain this target and complete my studies successfully. Words are unlimited to pay special thanks to my father Osman shire mohamed who helped me financially during my studies.

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Needless to say that for any errors and omissions which might still be there in this thesis, the researcher is solely responsible for the same.

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ABSTRACT

The main purpose of this study was to establish the influence of exchange rate volatility on export of coffee in Uganda from 1992-2016. It was driven by five major objectives, to examine the significant influence of exchange rate volatility on export of coffee in Uganda, To examine the effect of inflation rates on export of Coffee (1992-2016), To establish the effect of interest rates on export of Coffee To examine the effect of foreign direct investments on export of Coffee, To examine the effect of price on export of coffee. Using time series data from the world bank and bank of Uganda and Uganda coffee development authority, both regression analysis were applied to investigate and build a model for explaining the variation in export of coffee. Augmented Dickey Fuller (ADF) unit root test for stationarity was employed in this study to test the stationarity the export of coffee in Uganda representing Uganda's export volume and value of coffee is considered as the dependent variables in this study. Exchange rate volatility (independent variable) is divided into four different attributes, for instance, inflation, interests rate FID and price. The exchange rate volatility was calculated by using stander deviation of the variance of nominal effect of exchange rate. The data shows all the variables after taking the first difference become stationary. The results further show that all the variables are stationary at the 5% level of significance. This is evident in the computed ADF coefficients being greater than the absolute critical tau value. The diagnostic tests for the regression model show that there is no exist of collinearity as the VIF statistics associated with each of the independent variables in the model were within the acceptable range. The results of the analysis indicate that exchange rate volatility and FDI have not statistically significant effect to the export coffee in Uganda, (1992-2016), The non significance of exchange rate volatility on export of coffee is not surprise this is because coffee is trades on the international commodity market. The data also reveals that Regression results inflation and interest rate have positive statistical significant effect on export of coffee while price have statistically significant effect on export value of coffee but not in export volume of coffee. Since the exchange rate volatility has no significant effect on export of coffee the government should undertake other studies e.g firm level research effect by coffee exporters in Uganda. The study thus recommends that Government should subsidies the local farmer to be able to, more competitive in international market. Although exporters and policy makers have been preoccupied with recent steep exchange rate appreciation, focus needs to shift to production level and support towards reforms of trade agreements, since the exchange rate have no effect on export of coffee .This will enable exporters to hedge against low quality export. Government of Uganda should also promote policy of devaluate the local currency which helps the local exporters to increase their export of coffee; this would help international buyers to buy Uganda's coffee at cheaper price. The researcher also recommends that government should help the local exports to be more accessible to the loans by lower the interest rate on loans. The researcher contributes that inflation, interest rate and price has considerable consequence on Uganda's export of coffee while the exchange rate volatility and FDI have no significance effect on Uganda's export of coffee.

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LIST OF ACRONYMS

| | |
|------|-------------------------------------|
| FDI | Foreign direct investment |
| EAC | East African Community |
| RER | Real Exchange Rate |
| NEER | nominal effective of exchange rate |
| PPP | Purchasing Power Parity Theorem |
| UCDA | Uganda coffee development authority |

CHAPTER ONE

1.0 Introduction

This chapter covered the background of the study, problem statement, purpose of the study, objectives of the study, research questions, and scope of the study and significance of the study.

1.1 Background of the study

This section covered historical perspective, theoretical perspective, conceptual perspective and contextual perspective.

1.1.1. Historical perspective

Globally, most developing countries since 18th century have attempted to moderate their domestic currency fluctuations by imposing regulatory restrictions on exchange rate movements either through monetary measures or through direct intervention in the foreign exchange market and also by restricting the flows of capital from their countries (Afza, and Alam, (2014). Since the collapse of the Bretton-Woods system, the volatility of real and nominal exchange rates has increased among countries that adopted a new regime of floating exchange rates. Moreover, the extent of exchange rate volatility among countries has been amplified by the free movement of capital between cross-border. So far, a number of literatures on the relationship between exchange rates and trade focused on the effect of increased volatility of exchange rates on trade primarily (Altintas, Cetin, and Oz, 2011).

In Africa throughout history, there has been a considerable debate on the effect of exchange rate volatility on economic performance of developing countries within the continent. Some scholars contend that exchange rate volatility decreases trade flows between countries (Prasad, Rogoff, Wei and Ayham (2003). Thus suggesting that unanticipated variation in the exchange rate adversely affects export competitiveness. Exchange rate fluctuations therefore may create uncertainty in macroeconomic policy, investment decision and may as well affect exports depending on the role played by agents in the market (Baak, 2004). Thus, exchange rate volatility has consequently remained a major concern of most African countries. This is because the values

of foreign currencies partially determine prices paid out or received from output produced and sold out in the market as well as profitability of producers (Akhtar and Spence, 2013). Exchange rate volatility thus affects the volumes of goods traded in the market. It may mean significant fluctuations in the values of exchange rate that may considerably affect performance of imports as well as exports in Africa. Although there are exist a growing body of literature explaining the effect of exchange rate volatility on export performance in Africa during the 1990s, empirical evidence in this area however, has been ambiguous both within and across countries (Cote, 1994). Much empirical evidence indicated above suggest that increase in exchange rate volatility leads to decrease in trade flows. This is because goods are denominated in terms of currency of either exporting or importing countries in most international transactions. Thus the above argument implies that exchange rate volatility affects exports in African countries.

In Uganda over the past years, exchange rates between the Uganda shilling and other hard currencies especially the US dollar have fluctuated enormously. This has brought forth a concern that trade and investment in Uganda is likely to be impacted by the happenings in the foreign exchange market. Traditionally, volatility of exchange rates has influenced the majority of all market participants either in a positive or negative way. Based on the assumption that exporters and importers are likely to exhibit some degree of risk aversion associated with the trade uncertainty, exchange rate fluctuations represent a potential concern. The consequences of exchange rate volatility on real exports have long been at the center of debate among researchers (Afza & Alam, 2014). Furthermore, agricultural exports constitute the majority of Uganda's exports. In 2010, agricultural exports accounted for 24 percent of value of all goods and other market services provided to the rest of the world. Uganda's main agricultural exports continue to be coffee, tea, and cotton however, there has been increased diversification into such areas as; flowers vanilla and coca. (republic of Uganda, ministry of tourism trade and industry, national export strategy 2008-2012). Uganda was the 20th largest coffee exporter in 2010 in terms of value. Uganda's coffee export amounted to 1.2 per cent of the world's total coffee exports by value. Uganda exported US\$446 million worth of coffee in 2011 (ITC calculations based on UN COMTRADE statistics)

Uganda's exports to the EAC countries from the period 2010-2014 have been declining particularly to Kenya and Tanzania. The situation is made worse by the fact that exports to Burundi have not experienced any growth in the past four years and that exports to Rwanda have also started to indicate a declining trend. The decline and stagnation shows inverse expectation of Ugandan exports despite the depreciation of the Ugandan shilling (KIPPRA, 2013). Additionally, in recent years, growth in imports has outstripped exports, thus leading to deterioration in external trade balance and current account. Given Uganda's size, geographical location and diversity of its commodity trade flows, it is the EAC's leading trading hub.

1.1.2. Theoretical perspectives

This study was based on the Purchasing Power Parity Theorem (PPP) and the Flow Oriented Model. Purchasing Power Parity Theorem (PPP) theory was developed by Cassel in 1918. The theory is founded on the law of one price which posits that in the absence of transaction costs, identical goods should have the same price in different markets. The PPP theory, measures the purchasing power of one currency against another after taking into account their exchange rate.

Under this theory, parity between the purchasing powers of different currencies establishes the rate of exchange between the two currencies. When the inflation rate differential between two currencies change, the exchange rate adjusts to correspond to the relative Purchasing Power of the currencies. The relationship under this theory is derived from the basic idea that in the absence of trade restrictions, changes in the exchange rate mirror changes in the relative price levels in the two countries (Engel, 1996).

The Flow Oriented Model claims that changes in exchange rates alter the international competitiveness of a firm as well as the balance of trade position, and thus exchange rate changes affect real income and output in a country (Joseph, 2012).

1.1.3. Conceptual Perspective

Exchange rate can be defined as the price at which one country's currency trades for another typically on the exchange market (economic dictionary). Exchange rate volatility can be defined as exchange rate movements that emanate from currency fluctuations. Such volatility affects both the cash flow of a firm's operations and the value of a firm. From a theoretical perspective, it is a generally held view that exchange rate fluctuations are an important source of macroeconomic uncertainty. They should thus have a significant impact on firm value, regardless of whether the firm is domestically or internationally oriented (Afza and Alam, 2014).

Export refers to sending of goods or services produced in one country to another country. The seller of such goods and services is referred to as an exporter; the foreign buyer is referred to as an importer.

Coffee is a brewed drink prepared from roasted coffee beans, which are the seeds of berries from the *Coffea* plant. The genus *Coffea* is native to tropical Africa (specifically having its origin in Ethiopia and Sudan) and Madagascar, the Comoros, Mauritius, and Réunion in the Indian Ocean. The plant was exported from Africa to countries around the world.

1.1.4. Contextual perspectives

The economic structure of Uganda, just as other East African economies, is dominated by the agricultural sector. Agriculture is the key determinant in the country's efforts to reduce poverty and hunger as well as foreign earning. Given that over 50% of Ugandans engaged in the sector and as a major source of government income, the growth and development of the country is closely linked to its production and exports. Chuhan-Pole and Angwafo (2011) stress that agrarian sector in the country still characterizes by low productivity, partly as a result of inadequate modern farm inputs, low public and private investment and undeveloped value chains.

Uganda is one of the world's major coffee producers. The commodity is grown in different highland areas of the country. Notably, on the slopes of Mount Elgon on the border with Kenya and the slopes of the Mount Rwenzori, also known as the 'mountains of the moon' on the border with the DR Congo. Some coffee is also cultivated in the West Nile region in the north western

part of the country. Uganda produces excellent wet-processed Arabica, mainly grown by smallholder farmers. Coffees marketed as 'Wugar' (Washed Uganda Arabica) or 'Drugar' (Dry Uganda Arabica) are grown on mountains which border the Democratic Republic of Congo, along the Uganda's western border. Coffee is mainly cultivated in the central and southern districts (57%), Eastern Uganda (23%) and Western Kassese (10%) and to a lesser extent, in non-traditional areas like Mpigi, Wakiso, and Rakai (10%). Coffee if well developed, it may improve smallholders' productivity and regional development in the producing countries (Bradford et al., 2011; Dicum and Luttinger, 1999).

More so, the coffee production plays a crucial role in the socioeconomic development of Uganda. The Ugandan coffee sub-sector employs over 5 million people, both in the farms and post-harvesting processes. It remains a primary source of income for the poor rural inhabitants in over 30 Districts. The commodity plays a leading role in the economy, contributing a substantial foreign exchange earnings over the decades. Coffee production began increasing in the 1980s through the 1990s. However, annual production remained below the 4.2 million bags recorded in 1972. The coffee wilt disease that affected coffee production in the past two decades, lack of adequate supplies of affordable farm inputs such as fertilizers, poor nursery capacity for the production of coffee seedlings, the fall in coffee prices following the suspension of International Coffee Agreement (ICA) export quota system in 1989 that seriously affected Robusta coffee earnings, among others, partly explain the low levels of coffee production

A wide range of measures have been instituted with a view to increasing coffee production. These include; liberalization of the coffee industry, abolition of 25 percent export tax levied on coffee, licensing of foreign exchange bureaus, establishing the Uganda Coffee Development Authority (UCDA) as a regulatory and development agency for the industry, which promotes and oversees the coffee industry by developing research, controlling quality and improving the marketing of coffee and participating in regional integration in order to gain access to regional markets.

From 1991 to 1998, coffee exports increased mainly due to fair prices on the international market. Thereafter, coffee exports declined almost every subsequent year. This is mainly due to adverse

prices on the international market, and there exists a huge value gap between the global revenues generated from coffee and what producing countries earn, due to a long supply chain with very many participants. For instance, in the year 2006/2007, the global coffee revenues were US\$90 billion but farmers in producing countries all combined including Brazil earned only US\$9 billion which is 10 percent of the global value share (UCDA, 2009).

According to statistics from Bank of Uganda and Uganda Bureau of Statistics (UBOS) the country in 2011 the country only earned \$2.8 billion (Shs10 trillion) worth of exports, this rose to about \$3.6 billion (Shs13 trillion) in 2012. Then declined to \$3.14 billion (Shs11 trillion) and more seriously went down to \$3 billion (Shs10.8 trillion) at the end of 2015. Yet when you look at the country's imports statistics in the same period five years ago, they show that Uganda's trade deficit is widening every year.

According to statistics from the ministry of Trade and International Trade Centre, Uganda imported goods worth \$6 billion (Shs21.7 trillion) in 2015. Experts say if this deficit is not closed through doubling the exports, efforts of attaining a middle income status will not be achieved. Furthermore, Uganda's exchange rate against the US dollar, in common with those of many other countries around the world, has come under strong pressure in recent weeks. This is mainly for two reasons. First the dollar has itself strengthened dramatically on global markets, for example by 13 percent against the Euro since the start of 2015. Second, in Uganda demand for dollars has increased strongly, mainly from the corporate sector, to fund imports and dividend payments to foreign shareholders following improved corporate profits in 2015. Unfortunately export earnings have declined mainly because of problems in regional markets, hence the current account deficit has widened

1.2. Problem Statement

The government has put-up a policy of increasing Uganda export of coffee with the target of 20 million bags by 2020, but as of present and past the highest quantity exported has been 4.2 which was achieved in 1997 and 2016 it went down 3.3m. Walusimbi,(2016). the UCDA communications manager, said: "This is the highest export volume that Uganda has recorded and it's because of the massive planting campaigns UCDA and other stakeholders have been implementing." despite

this growth, The hope to meet the presidential directive of achieving the 20 million bags by 2020 is unlikely to be achieved due to a number of factors “We are not likely to achieve the 20 million bags target but we are seeing progress,” (Dr. Suruma,(2016) the Head of the Delivery Unit in the Office of Prime Minister, said during a Cabinet retreat organized to analyse performance of government ministries and departments in the financial year 2016/17.despite the measures undertaken by the government to boost the sector. It is not clear what the major factors behind this trend in Uganda’s coffee exports are. It is therefore imperative to investigate the effect of exchange rate fluctuation on coffee exports in Uganda. Uganda, government adopted a floating exchange rate regime in November 1993, partly to improve the incentives to the exporters by removing the implicit taxation to exporters and related rent-seeking activities (Reinikka, and Collier, 2001). Since then, the exchange rate for the shilling to the United States Dollar (*Shs/US\$*) has been flexible and at times very volatile

The US\$ is the major currency used by Export firms in Uganda in their export transactions. The exchange rate between the US\$ and the Uganda shilling has been fluctuating (Background to the Budget, 2012/2013, 2013/2014, 2014/2015& 2015/2016), this is a source of foreign exchange risk for the export firms the extend of these fluctuation was inflation 18.6% 2011 to 5.5% 2016 ,interest ret 19.6% 2016 from 3.8% 2012, and FDI 522.6m 2016 from 737.6m 2014.(appendix I). These fluctuations have affected export firms differently depending on the direction of the exchange rate. It is therefore imperative to investigate the effect of exchange rate fluctuation on coffee exports in Uganda.

A study conducted by MacDonald (2008) analyzed the impact of exchange rate volatility on the volume of bilateral U.S. trade flows. The study finding provides evidence of a negative effect on trade from exchange rate volatility. Williams (2005) analyze the relationship between exchange rate uncertainties, trade volumes; the authors came to the conclusion that an unexpected fluctuation in exchange rates is usually accompanied by increasing export prices and decreasing trade volumes. Choudhry (2005) investigates the influence of exchange rate volatility on real exports of the U.S. The study finds negative effects of the exchange rate volatility on real exports. Despite the contributions of these studies no studies have been done to examine how exchange rate fluctuations affect Uganda’s export of coffee.

1.3. Purpose of the study

The main purpose of the study was to establish the influence of exchange rate volatility on Uganda's export of coffee from 1992-2016

1.4. Specific Objectives

The specific objectives of the study are to:

- i. examine the significant influence of exchange rate volatility on export of coffee in Uganda
- ii. find out the effect of inflation rates on export of Coffee
- iii. determine the effect of interest rates on export of Coffee
- iv. observe the effect of foreign direct investments on export of Coffee
- v. study the effect of price on export of coffee

1.5. Research Questions

The study seeks to answer the following research questions

- i. Is there a significant influence of exchange rate volatility on export of coffee in Uganda?
- ii. What is the effect of inflation rates on export of Coffee (1992-2016)?
- iii. What is the effect of interest rates on export of Coffee (1992-2016)?
- iv. What is the effect of foreign direct investments on export of Coffee (1992-2016)?
- v. What is the effect of price on export of coffee (1992-2016)

1.6. Hypotheses

- i. HO₁: There is no significant influence of exchange rate volatility on export of coffee in Uganda
- ii. HO₂: There is no significant effect of inflation on export of coffee in Uganda
- iii. HO₃: There is no significant effect of interest rate on export of coffee in Uganda
- iv. HO₄: There is no significant effect of FDI on export of coffee in Uganda
- v. HO₅: There is no significant effect of price on export of coffee in Uganda

1.7. Scope of the study

1.7.1. Geographical scope

The study was conducted in Uganda. Uganda is located in eastern Africa, west of Kenya, south of South Sudan, east of the Democratic Republic of the Congo, and north of Rwanda and Uganda. It is in the heart of the Great Lakes region, and is surrounded by three of them, Lake Edward, Lake Albert, and Lake Victoria.

1.7.2. Content scope

This study examined exchange rate volatility as an independent variable and exports of coffee the dependent variable since the two are interlinked. This study was conducted in Uganda using time series data exchange rate volatility and export of coffee in Uganda from 1992-2016

1.7.3. Time Scope

This study used time series data from 1992-2016.

1.8. Significance of the Study

The study will help exporting companies to have a clear understanding of how foreign exchange rate fluctuations affect their financial performance.

The study will make multiple contributions to the literature on foreign exchange volatility through investigation of optimal investment decisions in continuous-time downside risk-based foreign exchange system.

In addition, study paves the road for further research on continuous-time downside risk in foreign exchange investment decisions.

Researcher interested in finance as a subject will find it useful and build on the existing body of knowledge

Finally, the study will come in handy to support the government as a regulator in its quest to streamline operations in the exporting sector putting in mind that the economy as whole inches on how the exporting sector performs. Inappropriate resource allocation can hinder growth in the economy.

1.9 Definition of Operational key terms

Exchange rate volatility can be defined as exchange rate movements that emanate from currency fluctuations (Afza and Alam, 2014).

Export refers to sending of goods or services produced in one country to another country

Coffee is a brewed drink prepared from roasted coffee beans, which are the seeds of berries from the Coffee plant.

Interest rate is the percent of principal charged by the lender for the use of its money.

Inflation is the rising price of goods and services over time

Foreign direct investment (FDI) is an investment made by a firm or individual in one country into business interests located in another country

Price is the quantity of payment or compensation given by one party to another in return for one unit of goods or services.

Export volume is the quantity of coffee exported by the country

Export value is the revenue generated from coffee been exported

CHAPTER TWO

LITERATURE REVIEW

2.0. Introduction

This chapter showed theoretical review, conceptual review, and empirical review. This chapter reviewed the related literature pertinent to this study with respect to the objectives of the study and research gap.

2.1. Theoretical review

This part explores the theoretical literature applicable to this study, with considerations being made to the Purchasing Power Parity Theorem and the Flow oriented model.

2.1.1. Purchasing Power Parity Theorem

The Purchasing Power Parity Theorem. This theory was developed by Cassel in 1918. The theory is founded on the law of one price which posits that in the absence of transaction costs, identical goods should have the same price in different markets. The PPP theory, measures the purchasing power of one currency against another after taking into account their exchange rate.

Under this theory, parity between the purchasing powers of different currencies establishes the rate of exchange between the two currencies. When the inflation rate differential between two currencies change, the exchange rate adjusts to correspond to the relative Purchasing Power of the currencies. The relationship under this theory is derived from the basic idea that in the absence of trade restrictions, changes in the exchange rate mirror changes in the relative price levels in the two countries (Engel, 1996).

At the same time under conditions of free trade, prices of similar commodities cannot differ between the two countries because arbitrageurs will take advantage of such conditions until price differences are eliminated. This leads to the law of one price which is to the effect that what is true of one commodity should be true of the economy as a whole. The price level in the two countries should be linked through the exchange rate and hence the notion that exchange rate changes are tied to inflation rate differences. If the theory doesn't hold, a conclusion is made that

purchase parity doesn't exist between the two currencies (Madura, 2007). The purchasing power parity theorem as Expressed by Madura (2007) states that the percentage change is the difference in the inflation rate in home market less the inflation rate in the foreign market multiplied by the direct quote

2.1.2. Flow Oriented Model

This model was developed by Dornbusch and Fisher in 1980. This model claims that changes in exchange rates alter the international competitiveness of a firm as well as the balance of trade position, and thus exchange rate changes affect real income and output in a country. Share prices of companies are influenced by exchange rate changes and future cash flows of firms. This implies that exchange rate changes lead to stock price returns, and that they are positively correlated. The flow oriented model maintains that a causal relationship, which runs from the exchange rate to the stock prices simply means that exchange rate changes affect the competitiveness of firms as a result of its effect on input and output prices (Dornbusch and Fisher, 1980).

It follows therefore that if exchange rate appreciates, exporters are likely to be affected negatively. In the same regard an appreciation of the currency is likely to cause goods and services to be dearer on the international market. This will therefore bring about a decline in exports, as they will be seen as expensive by buyers on the international market. It means therefore that such goods will lose their competitiveness internationally.

2.2 Related Literature

2.2.1. Effect of inflation rates on export of Coffee (1992-2016)

A difficulty in determining the impact of exchange rates movements on export earnings is that most of the important macroeconomic effects are indirect. The interactions between the exchange rate, inflation and export earnings are especially important. A typical problem is created by high and rising inflation within the context of a sluggishly adjusting nominal exchange rate, which is managed by the central bank in order to maintain price stability. The resulting real over-valuation of the exchange rate impedes export growth and creates uncertainty about potential future movements in the exchange rate (Malcolm et al., 2000).

Schnitzer (1991) argued that inflation has an influence on the economy. When there is inflation, domestic products become expensive than the imported commodities and people find it easier to purchase foreign goods than domestic goods. Consequently, exports decrease since they become more expensive to importers.

(Zhang, 2000) says that inflation occurs in the end due to devaluation of the currency. (Virgil, 2002) investigated that the long run relationship between Turkey's real exports and its exchange rate instability is negative but statistically significant for Germany, France and the United states. (Smith, 1999) stated that the analysis shows that an increase in exchange rate volatility is set out along with a decline in international correlations between bond and stock market.

When the inflation rate differential between two currencies change, the exchange rate adjusts to correspond to the relative Purchasing Power of the currencies. The relationship under this theory is derived from the basic idea that in the absence of trade restrictions, changes in the exchange rate mirror changes in the relative price levels in the two countries (Engel, 1996).

2.2.2. Effect of interest rates on export of Coffee (1992-2016)

From the results, it is concluded that an increase in international coffee price and gross domestic product increase coffee export volumes while real effective exchange rate depreciation and increase in real interest rate reduce the coffee export volumes. The study recommends the establishment of agreements with international coffee buyers to increase prices, prevent exchange rate depreciation, expansion in gross domestic product and reduction in interest rate on loans to producers and exporters thereby encouraging coffee production and increase in coffee exports.

The International Fisher Effect is an exchange rate model developed by Fisher in 1930. The theory is based on the present and future risk free nominal interest rates rather than pure inflation. It states that differences in interest rates in different markets can cause a flow of funds from markets with low interest rates to markets with high interest rates. This theory is to the effect that interest rate differential will only exist if the exchange rate is expected to change in such a way that the advantage of the higher interest rate is offset by the loss of the exchange rate transactions. In an efficient market with no transaction costs, the interest rate differential should be approximately equal to the forward differential. When this holds, the forward rate is said to be at interest rate

parity and equilibrium prevails in the money market. Interest parity ensures that the return on a hedged foreign investment will just equal the domestic interest rate on investments of identical risk which means the covered interest differential (Madura, 2007)

It is difficult for coffee exporting firms to raise financial requirements by themselves. However, borrowing from Ugandan banks is almost difficult with interest rates of over 20 percent per annum. Because of this, Ugandan exporting companies like BCU depend upon pre-financed contracts or deals with overseas importers (traders and roasters) for cash to buy the coffee. These include Select Services (Switzerland), Louis Dreyfus, Drucafé, Teo UK, Utaka and Bumei from Japan, Iconacafé from Spain and Remixl from Russia. On the other hand, the big international exporters have ready access to cheap capital from their parent companies at home (Sayer, 2002).

2.2.3 Effect of foreign direct investments on export of Coffee (1992-2016)

From the study by UNCTAD (2002b) FDI is likely to affect export earnings positively. This is true for most levels of export earnings and for every period under consideration. The experience in a number of countries suggests that FDI strongly contributes to the transformation of the composition of exports. For instance, it has been well documented that FDI inflows into Singapore or, more recently China, have helped to increase significantly the technological content of exports by supporting strongly the development of export supply capacity, including knowledge based industries thereby improving the export earnings. FDI contributes to the technological upgrading and structural evolution of the export sector, the structure of the sector is an important ingredient of export performance both at an early stage of development of the export sector and at a later stage. Overall, the analysis points to the conclusion that supply capacity constraints could also be addressed by improving the technological content of the export sector as indicated by the positive influence of FDI contribution to capital formation on export earnings (Fugazza, 2004).

2.2.4 Effect of price on export of Coffee (1992-2016)

The price of the commodity that influences the producers' decision to increase or decrease their supply is the real price they receive, that is the purchasing power that can be obtained by the sale of one unit of coffee (World Bank, 1994).

According to Ackah and Morrissey (2005), factors external to an individual country, such as world prices are typically more important determinants of the volume and value of exports than a country's own trade policies. This is because small country producers have no capacity to determine these prices on their own. From 1991 to 1998, coffee exports increased mainly due to fair prices on the international market. Thereafter, coffee exports declined almost every subsequent year. This is mainly due to adverse prices on the international market, and there exists a huge value gap between the global revenues generated from coffee and what producing countries earn, due to a long supply chain with very many participants. For instance, in the year 2006/2007, the global coffee revenues were US\$90 billion but farmers in producing countries all combined including Brazil earned only US\$9 billion which is 10 percent of the global value share (UCDA, 2009). Coffee farmers can now earn more money since global prices have gone up by 4.4 per cent. According to the International Coffee Organisation (ICO) monthly report, the composite-a bench mark price of coffee increased from 127.05 cents of a dollar per pound in June to 132.98 cents of a dollar per pound. ICO report attributes the price increase to the second frost scare in Brazil and the recovery of the Brazilian Real. Global exports in the first nine months (October-June) of the coffee year 2015/16 were 85.1 million bags, up by 0.2 per cent compared to last year.

2.3 Exchange rate volatility

In the theory of exchange rate there are majorly two types of exchange rate; the nominal exchange rate and the effective exchange rate. The former refers to the official exchange rate set by countrys central banks officially while the latter refers to the actual exchange rate where foreign currency traders trade each other. One reason for the deviation of effective exchange rate from the official exchange rate can be high degree of governments' intervention in foreign trade through tariffs, quotas, excise taxes or charges which make this discrepancy much wider.

For instance, exporters face devaluated exchange rate in real terms when export tariffs are raised despite of the official exchange rate unchanged.

In addition there is another type of exchange rate known as real exchange rate. Conceptually this type of exchange rate refers the nominal exchange rate divided by the partner country's price index and multiplied by country's price index (Krueger, 1990). Alternatively, Roderik, D., 2008, defined real exchange rate to be the relative price of tradables to non tradables. However, in the real

economy, countries are have more than one trading partners. Hence, another vital type of exchange rate is the real effective exchange rate (REER) which is defined as the nominal effective exchange rate (NEER) multiplied by the home country's price index and divided by the partner country's price index. The nominal effective exchange rate is computed as the weighted nominal value of considered basket of currencies depending on the countries weighted trade share. Hence the REER is an important tool in analysis of an open macro economy debate of exchange rate and trade balance.

According to Featherson, Littlefield & Mwangi (2006), foreign exchange risk arises when fluctuation in the relative values of currencies affects the competitive position or viability of an organization. Firms are exposed to foreign exchange risk if the results of their projects depend on future exchange rates and if exchange rate changes cannot be fully anticipated. Generally, companies are exposed to, Transaction exposure, Economic exposure and Translation exposure (El-Masry, 2006; Salifu *et al*, 2007).

Transaction risk occurs where the value of the existing obligations are worsened by movements in the foreign exchange rates. Transactional exposure arises from future cash flows such as trade contracts and also occurs where the value of existing obligations are affected by changes in foreign exchange rates. Economic risk relates to adverse impact on entity /income for both domestic and foreign operations because of sharp, unexpected change in exchange rate. Operational exposure occurs where the market position of a firm changes as a result of the effect of exchange rate changes on competition, prices and demand (El-Masry, 2006). Translation risk is also related to assets or income derived from offshore enterprise. Translation exposure occurs through currency mismatch and it is related to assets or income derived from offshore enterprise (Madura, 2003).

The literature surveyed suggests that the traditional and risk portfolio paradigms best explains the relationship between real exchange rate volatility and commodity exports since it is based on the exporter's risk attitude. The other theories like; Absolute advantage, Hecksher-Ohlin and gravity model among others do not provide a good account of the hypothesized relationship because they don't consider the risk element in international trade.

Quite a number of studies were conducted using panel data while majority used time series analysis. The common factor between all these studies was the frequency of the data. The use of disaggregated data on a monthly basis has been widely used to bring out both the short and long run effects of exchange rate volatility on commodity exports. This suggests that the concept of exchange rate volatility is best captured by monthly data. Other studies however used annual data in the analysis.

Chege et al (2014) considered how real exchange rate volatility affected French bean exports from Kenya to the EU, this study investigated the effect of exchange rate volatility on exports of coffee in Uganda.

The year,2015, Bank of Uganda has had to intervene by selling \$200m of its foreign reserves in order to reduce the rate at which the shilling is depreciating against the dollar and meet demand in forex (especially for the US dollar). The US dollar is demanded by importers as well as big businesses which conduct their businesses in US dollars. To the importer, a depreciated shilling means that they will import their goods expensively. As for the big business whose inputs are imported, a strong dollar would increase operational and production costs. If the shilling continues to depreciate against the dollar, the prices of goods are generally expected to gradually increase. At the moment inflation is still below five percent. However, Stanbic bank predicted that the inflation rate could go as high as eight percent by the end of 2017. In his speech to manufacturers, the governor of Bank of Uganda, Emmanuel Mutebile, said that it wasn't sustainable to prop up the exchange rate at levels not consistent with supply and demand in foreign exchange markets. A reduction in foreign direct investment and low export in flows are responsible for the widening current account deficient

2.4. Export sector in general

Uganda's export sector is one of the chief factors that boost Uganda's economy. The Uganda export sector forms an integral part of the economic infrastructure of the country. The main items of Uganda exports come from the agricultural produce of the country. Some of these include; coffee, cotton, tea, tobacco, maize, cocoa, vanilla, live animals, animal hides and skins, flowers,

oil seeds, among others. The estimated export value for Uganda was US\$812.9 million F.O.B in 2005, US\$962.2 million in 2006 and US\$1.34 billion in 2007.

The traditional export items of Uganda are coffee, tea, cotton, and tobacco. These items were part of Uganda's export sector from quite an earlier period of time. However, these items have been overtaken as the main exports of the country. The list of export items of Uganda which have overtaken the traditional export items in the recent past constitute the non-traditional ones exported by Uganda. These include; fish and fish products, gold and gold compounds, animal/vegetable fats and oils, iron and steel, petroleum and petroleum products, sugar and sugar confectionery, maize and roses and cut flowers.

The non-traditional export sector has continued to register robust growth and its contribution to total export revenue was estimated to be over 67 percent in 2005, slightly over 70 percent in 2006 and over 70 percent in 2007 of the total export earnings in Uganda. This is partly attributed to Uganda Export Promotion Board (UEPB) product development programs and aggressive Export promotion efforts. On the other hand, traditional exports as a share of total exports have Charles Ocici, the Executive Director of Enterprise Uganda, suspects Ugandan coffee growers may soon change tack: "Given bitter experiences, many farmers are shifting acreage to alternative export commodities especially for export within the region." While he believes the crop will remain profitable in the years ahead, he expects a decrease in the total volumes traded. However, Ben Naturinda, the Ag. Executive Director of the Uganda Export Promotion Board (UEPB), counters that coffee's main problems are "internal," relating to crop-wilt and poor production volumes. These, he says, are being met through government interventions in quality improvement, organising producers and growers, improving warehouse receipting and post-harvest collection and seeking Fairtrade certification for out-growers. However, the "Most fundamental challenge is to tackle issues that affect the supply side."

Regarding other traditional exports, UEPB statistics reveal that tobacco exports totaled 29,042 tons, earning US\$66.5 million in 2008; with cotton struggling to earn US\$ 13.2 million (7,960 tons exported). Tobacco earnings peaked at \$7.5 million in February 2009, but slumped to just \$3.7 million in October. Cotton revenues plummeted from highs of \$4.8 million in February-March 2009 to just \$0.28 million in October. Currently, Uganda imports more than she exports, creating

a negative trade balance. Dorothy Nakaweesi explains why Uganda is not exporting enough products despite their availability and what government is doing to boost the country's export volumes.

2.5 Uganda's coffee sector

Coffee continues to be Uganda's most important cash crop. It accounts for the largest individual share of export earnings. Two types of coffee are produced in the country, namely, Robusta and Arabica in the ratio of 4:1. Robusta coffee is the predominant type constituting about 80 percent of the total coffee production. Unlike Robusta whose native habitat is the Lake Victoria Crescent, Arabica coffee is an introduced crop originating from Ethiopia. Being astride the equator, Uganda has two distinct harvesting seasons; October/December and May/July, north and south of the equator respectively: the two hemispheres alternate in harvest. Coffee is mostly grown in mixed stand where it is intercropped with food crops such as bananas and beans which ensure households' food security. It is also grown among shade trees that result into sustainable coffee production, (social, economic and environment), with minimal use of agro-chemicals (fertilizers, pesticides and fungicides). Coffee farmers in Uganda use the low input system and households strongly rely on family labor (UCDA, 2009).

At the household level, coffee is seen to contribute greatly. This contribution is in terms of household income, employment and other rural livelihoods. Coffee continues to provide essential income in Robusta and Arabica growing areas. There seem to be a balanced participation in coffee production and export processes by gender. For instance, in June 2008 to 2009, over 1,000 coffee farmers were reached and on average the participation of women was found to be 43 percent and 57 percent for men (Seaman, et al. 2004)

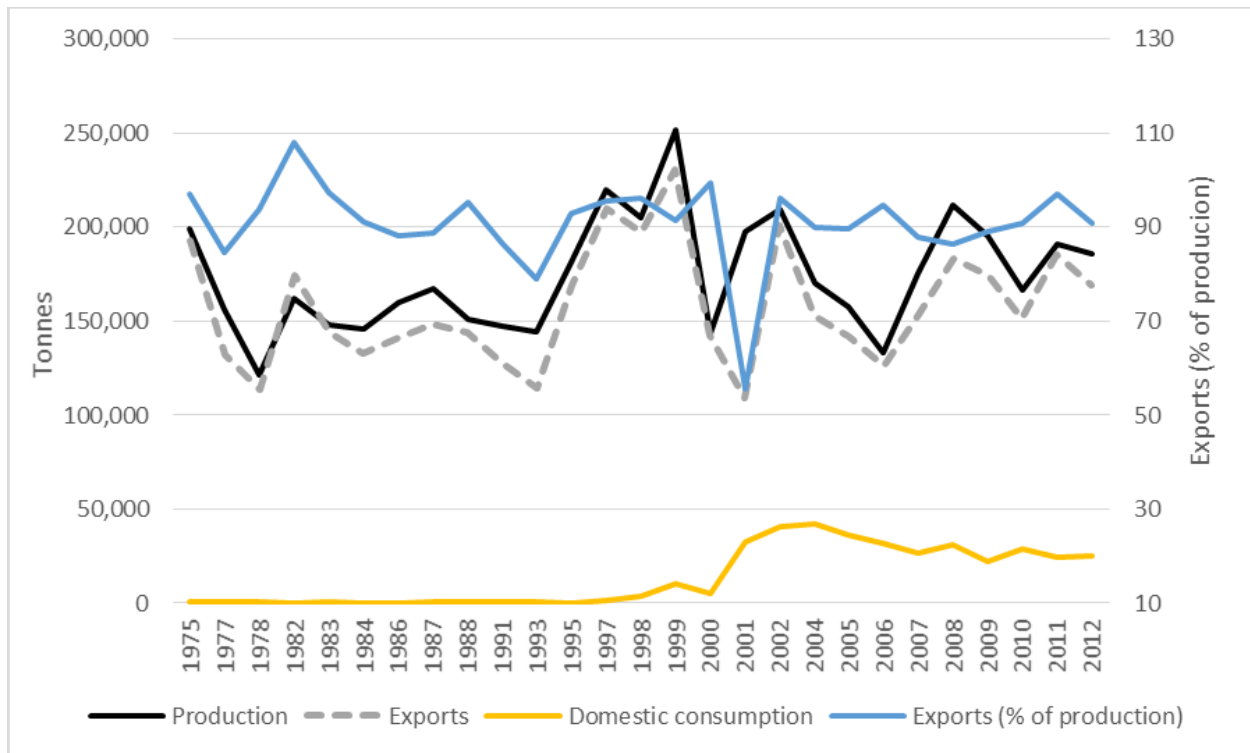


Figure 1: Coffee production, exports and domestic consumption in Uganda (1975-2012)

Source: FAO, 2015

Uganda is among top major coffee producers in the world. Coffee production in Africa increased by 16 % from 15.7 million bags during crop year 2011/12 to 16.7 million in 2012/13, accounting 11.5 % of the total world production. The major producing nations in the region showed increases in production. For instance, the largest producing country in Africa remains Ethiopia with 6.4 million bags in 2012/13, followed by Uganda (3.7 million) and Côte D'Ivoire with 2 million (International Coffee Organization, 2014). Uganda produced, on average, 2% of total world production in 2012.

Figure 1 shows the trend of coffee production, consumption and exports in Uganda. The shows a fluctuating quantity of coffee output and export in Uganda for the period between 1975 and 2012. The country recorded highest output with 252 thousand tonnes in 1999 and lowest with 121 thousand tonnes in 1978. Coffee output fluctuation is attributed to the dictatorial regime of 1972-1979 and partly due to climate change and prolonged droughts, shortage of labour force, low production due to inadequate farm inputs, domestic and world price shocks.

Similarly, Uganda also recorded the highest export with 231 thousand tonnes valued at \$288 million in 1999 and lowest with 114 thousand tonnes valued at \$313 million in 1978. The country recorded highest exports of coffee in value in 2011 with \$460 million (191 thousand metric tonnes) and then decline to \$371 million (186 thousand metric tonnes) in 2012. This to some extent, implies that the more the production, the more the exports and vice versa.

At the household level, coffee is seen to contribute greatly. This contribution is in terms of household income, employment and other rural livelihoods. Coffee continues to provide essential income in Robusta and Arabica growing areas. There seem to be a balanced participation in coffee production and export processes by gender. For instance, in June 2008 to 2009, over 1,000 coffee farmers were reached and on average the participation of women was found to be 43 percent and 57 percent for men (Seaman, et al. 2004).

2.6. Exchange Rate Volatility and Export of coffee

Several international studies on the effect of exchange rate volatility on export earnings have been undertaken. A study conducted by MacDonald (2008) to analyze the impact of exchange rate volatility on the volume of bilateral U.S. trade flows provides evidence of a negative effect on trade from exchange rate volatility. Williams (2005) analyzed the relationship between exchange rate uncertainty, trade volumes, and price competitiveness. Using data on UK manufacturing exports, the author came to the conclusion that unexpected fluctuation in exchange rates is usually accompanied by increasing export prices and decreasing trade volumes.

Choudhry (2005) investigates the influence of exchange rate volatility on real exports of the U.S. to Canada and Japan using aggregate monthly data ranging from January 1974 to December 1998. The study finds significant and mostly negative effects of the exchange rate volatility on real exports. Sukar and Hassan (2001) investigate the relationship between the U.S. The study finds evidence for a significantly negative relationship between U.S. export volume and exchange rate volatility. However, the short-run dynamics of the relationship shows that the effect of exchange rate volatility is insignificant. Chou (2000) Although there exist a growing body of literature explaining the effect of exchange rate volatility on export performance of developing countries during the 1990s, empirical evidence in this area however, has been ambiguous both within and across countries (Cote, 1994). Many empirical evidence indicated above suggest that increase in

exchange rate volatility leads to decrease in trade flows. This is because goods are denominated in terms of currency of either exporting or importing countries in most international transactions. Thus the above argument implies that exchange rate volatility affects exports of developing countries. Given the above background, the response of Uganda's traditional export crops to exchange rate volatility may not be an exceptional case. The performance of Uganda's export of coffee with respect to Real Effective Exchange Rate (REER) movements in the country in the period between 1997 and 2013 is indicated in table 1.

Table 2. 1: Uganda's Export of coffee and REER (1997 – 2013)

| Years | Export (millions of kilogram) | REER |
|-------|-------------------------------|--------|
| 1997 | 326.08 | 75.41 |
| 1998 | 363.10 | 83.02 |
| 1999 | 263.68 | 89.49 |
| 2000 | 187.30 | 95.58 |
| 2001 | 162.38 | 97.55 |
| 2002 | 191.70 | 100.47 |
| 2003 | 232.38 | 116.17 |
| 2004 | 252.99 | 113.32 |
| 2005 | 244.68 | 110.94 |
| 2006 | 340.87 | 114.84 |
| 2007 | 479.78 | 112.41 |
| 2008 | 469.56 | 111.52 |
| 2009 | 426.71 | 112.74 |
| 2010 | 575.72 | 124.06 |
| 2011 | 650.62 | 130.93 |
| 2012 | 618.06 | 117.36 |
| 2013 | 602.39 | 114.92 |

Source: Bank of Uganda

As indicated in table 2.1 above, export of Uganda's coffee increased significantly, from 326.08 million kilograms in 1997 to 602.39 million kilograms in 2013. REER on the other hand, depreciated from 75.41 per United States Dollars (USD) in 1997 to 114.92 per USD in 2013.

The trend of export of Uganda's coffee during this period fell sharply in the period between 1998 and 2005. Although it attempted to rise in the period between 2005 and 2007, it again fell sharply

in the period between 2007 and 2009. The performance of export of Uganda's export of coffee and its corresponding exchange rate movements in the country in the period between 1997 and 2013 is indicated in figure 1 below.

Thus, observing from the table above, despite unfavorable performance in the trend of Uganda's traditional export crops in the period between 1997 and 2013, the trend of REER in the country during this period has surprisingly been rising in most of the years. The performance of Uganda's export of coffee with respect to the performance of REER in the country in the period between 1997 and 2013 therefore indicates that the trend exports of Uganda's coffee in the period between 1997 and 2013 is inconsistent with the trend of REER in the country. The above performance therefore motivates this study to investigate empirically, the response of Uganda's export coffee to exchange rate volatility in the period between 1997 and 2013.

The empirical evidence has continued to be ambiguous and developed two schools of thoughts. The first argue that exchange rate volatility adversely affect international trade and production (Adubi and Okunmadewa, 1999; Kihangire, 2004; Vergil, 2005; Musonda, 2008; Hayakawa and Kimura, 2008; etc). The second argue that trade depends on exchange rate volatility and that there is a two ways causality either way (McKenzie, 1999; Kikuchiy, T. 2004; Broda and Romalis, 2011; etc). The later is based on the claim that higher volatility increases potential gain from trade (Udo, B. and Eckwert, B. 1999). Thus, the debate on exchange rate risk on international trade remains unresolved.

Greater exchange rate volatility places significant adjustment cost on international trade flows and also sends conflicting signals to investors as it creates uncertainty. On the other hand lower volatility of the real exchange rate implies greater certainty about these important relative macroeconomic prices (McKenzie, 1999). This study reviews the theoretical arguments and the empirical evidence of the impact of exchange rate volatility on international trade.

There exist a lot of literatures on the impact of exchange rate volatility on international trade however, empirical evidence of the effects of exchange rate volatility on trade flows are mixed. A large number of studies have found a negative effect of exchange rate volatility on trade flows,

however a few points out some positive relationship. As highlighted in the introductory section, a number of studies tended to support the hypothesis that exchange rate volatility negatively affect exports by creating uncertainty for producers (Cote (1994; Adubi and Okunmadewa, 1999; etc). The existing literature have tended to focus mostly on advanced countries and emerging market economies in Asia with little attention on Africa.

In the context of Sub-saharan African countries, Adubi and Okunmadewa (1999); Atingi-Ego and Sebudde, 2004; Kihangire (2004) and Musonda, 2008 provides some empirical edivence of the impact of exchange rate volatility and over valuation of exchange rate on export performance. These studies all provide evidence of a negative relationship between exchange rate volatility and export flows.

Mwangi et al., 2014 examined the effects of exchange rate volatility on French beans exports in Kenya. In this study, the values of exchange rate volatility of the Kenya shilling against the US dollar were computed using a generalized autoregressive conditional heteroscedasticity model. The results of co-integration analysis using vector autoregressive model indicated the presence of a long run equilibrium relationship between French beans exports and exchange rate volatility. The exchange rate volatility variable had negative long run effects on French beans exports. The responsiveness of French beans export demand in the EU market to exchange rate volatility was negative and elastic. This implied that an increase in the shilling exchange rate volatility leads to a more than proportionate decrease in demand for French beans exports from Kenya in the EU market. As the results indicated, a unit increase in exchange rate volatility in Kenya leads to a two-fold decrease in French beans exports to the European Union.

In summary, numerous studies, theoretically and empirically, have attempted to find the nature of the relationship between exchange rate volatility and exports. The empirical evidences have been mixed with some reporting positive while others suggest negative relationships. This study builds on this literature by specifically evaluating the impact of exchange rate volatility on export earnings from Uganda using correlation and regression model on yearly time series data.

2.7. Research Gaps

A study conducted by MacDonald (2008) analyzed the impact of exchange rate volatility on the volume of bilateral U.S. trade flows. The study finding provides evidence of a negative effect on trade from exchange rate volatility. Williams (2005) analyze the relationship between exchange rate uncertainties, trade volumes, the authors came to the conclusion that an unexpected fluctuation in exchange rates is usually accompanied by increasing export prices and decreasing trade volumes. Choudhry (2005) investigates the influence of exchange rate volatility on real exports of the U.S. The study finds negative effects of the exchange rate volatility on real exports. Irene (2011) studies the relationship between foreign exchange risk and financial earnings in Uganda. Muriithi (2011) studied the relationship between foreign exchange rate and market earnings for manufacturing companies. OKOT and NYANZI (2014) studied effect of exchange rate volatility for Uganda's flower export the findings revealed the existence of a positive long-run but negative short-run relationship between flower exports and REER volatility. Despite the contributions of these studies no studies have been done to examine how exchange rate fluctuations affect Uganda's traditional export earnings to.

CHAPTER THREE

METHODOLOGY

3.0. Introduction

This chapter comprised the research design, data type and sources, data analysis, Model specification and limitations of the study.

3.1. Research design

The study employed Ex-post research design is design also often applied as a substitute for true experimental research to test hypotheses about cause-and-effect relationships or in situations in which it is not practical or ethically acceptable to apply the full protocol of a true experimental design. Despite studying facts that have already occurred, ex post facto research shares with experimental research design some of its basic logic of inquiry.

3.2. Data Type and Sources

Annual time series secondary data were used for inflation rate (INF), Real Interest Rate (IT), foreign direct investment (FDI), price of coffee (PC), and exchange rate volatility, exchange rate volatility was calculated by using stander deviation of the variance of nominal effective of exchange rate (NEER). Data was attained through secondary data sources from the publications of statistical abstracts. The data sets attained were published online by Uganda Coffee Development Authority, Bank of Uganda and World Development Indicators data base, World Bank. Time series analysis comprises methods for analyzing time series data in order to extract meaningful statistics and other characteristics of the data. Time series forecasting is the use of a model to predict future values based on previously observed values. While regression analysis is often employed in such a way as to test theories that the current values of one or more independent time series affect the current value of another time series which focuses on comparing values of a single time series or multiple dependent time series at different points in time (Cowpewart, 2009).

3.3. Data analysis

The data was analyzed using STATA12 to perform the Ordinary Least Squares regression in order to establish if the above variables significantly affect export of coffee as well as the other tests

which precede regression analysis. The researcher analyzed time series regression analysis. The series were also tested for stationarity using the Augmented Dickey Fuller test. The reason for this test is the fact that macroeconomic variables are desired when they are stationary and on the contrary, regression on the series yields spurious results. The analysis of data took into consideration of the analysis on exchange rate volatility and Uganda's export of coffee. The exchange rate volatility was calculated by using standard deviation of the variance of nominal effective of exchange rate. Regressions analysis were used to determine the influence of effect on exchange rate volatility on exports of coffee. The design enabled to determine the relationship and nature of the effect between the exchange rate volatility and export of coffee from 1992-2016

3.4. Test for Stationarity

The series were also tested for stationarity using the Augmented Dickey Fuller test. The reason for this test is the fact that macroeconomic variables are desired when they are stationary and on the contrary, regression on the series yields spurious results. The ADF statistic is computed using STATA

3.5. Diagnostic tests

The variables were subjected to the Whiteness test. This is a test which examines the series for constant variance and serial correlation. The test for serial correlation tests the null hypothesis that the series are not serially correlated against the alternative that the series are serially correlated whereas the test for constant variance tests the hypothesis that the series have a constant variance against the alternative that the series have a varying variance.

3.6. Model specification

Coffee export supply refers to how coffee export volumes produced and offered for sale vary as the factors that influence production, supply and export of coffee vary over time. Literature suggests that production and export decisions in the agricultural sector are based on the relative price (real exchange rate), the international price of the crops, gross domestic product, gross capital formation.

The study utilized a model used by Musinguzi et al (2000). Coffee price, Real interest rate, and inflation, Terms of Trade (T.O.T), nominal Effective Exchange Rate (NEER) and exchange rate volatility, exchange rate volatility was calculated by using stander deviation of the variance of nominal effective of exchange rate, these variables were used by the trio as the explanatory variables of Export of coffee. However, the T.O.T was dropped because both T.O.T and Px are export prices. Hence the inclusion of both would Lead to the problem of multicollinearity in the model. The coffee export supply function was thus given by the following linear equation.

$$YQ = \beta_0 + \beta_1EXV + \beta_2INF + \beta_3IT + \beta_4FDI + \beta_5Px + \epsilon \dots\dots\dots(1)$$

$$YV = \beta_0 + \beta_1EXV + \beta_2INF + \beta_3IT + \beta_4FDI + \beta_5Px + \epsilon \dots\dots\dots(2)$$

Where,

YQ = volume of coffee exports.

YV= value of coffee exports

EXV = exchange rate volatility

INF =inflation rate

IT = Real Interest rate

FDI= Foreign direct investment

Pr = Price of Coffee

ϵ = Stochastic error term

The nominal exchange rate (NER) is the relative price of currencies of two countries. For example, if the exchange rate is £ 1 = \$ 2, then a British can exchange one pound for two dollars in the world market. Similarly, an American can exchange two dollars to get one pound.

$$NEER = REER (\text{Price in home country/ Price in foreign country})\dots\dots\dots (3)$$

Exchange rate volatility was calculated by using stander deviation of the variance of nominal effective of exchange rate

The real interest rate represents the cost of borrowing. It was chosen because the export of coffee requires a lot of money which an average citizen can not manage with own savings without borrowing and insurance. The IT is computed as follows:

$$\text{NIR} - \text{INF} = \text{RIR} \dots\dots\dots (4)$$

Where, NIR = Nominal Interest rate

INF = Inflation rate

RIR = Real Interest rate

3.7. Assumptions of error terms

- The error term (μ_i) is a random real number i.e. μ_i
- May assume any positive, negative or zero value upon chance. Each value has a certain probability; therefore error term is a random variable.
- The mean value of μ is zero, i.e $E(\mu_i)=0$ Homoscedasticity
- The variance of μ_i is constant

3.8. Limitations of the study

The validity of the findings of the study was estimated by some factors out of the researcher controlled such as personal bias and environment bias. The margin of error was set of 5% and the research took necessary measures to minimize the error. There was an expecting difficulty into collecting data since the rates exchange volatility and export of coffee was not acquired with ease. Despite all the above anticipated challenges, the researcher made efforts to adequately address them so as not to compromise the findings of the study in any way.

CHAPTER FOUR

PRESENTATION , INTERPRETATION AND ANALYSIS OF THE DATA

4.0 Introduction

This chapter presents empirically the relationship between nominal exchange rates, inflation rate interest rate, FDI and price in order to assert the effect of exchange rates volatility on export coffee in Uganda. It starts by presenting the descriptive analysis, bi-variate analysis and multivariate analysis.

Table 4. 1: Description of variables

| Variable | Description | Unit of measurement | Source |
|-----------------|---------------------------------|----------------------------|------------------------------|
| NEER | Nominal effective exchange rate | Index | Bank of Uganda |
| INF | Inflation rate | Percent | World Development Indicators |
| IT | Real Interest rate | Percent | World Development Indicators |
| FDI | Foreign direct investment | Millions US \$ | World Development Indicators |
| PRICE | Price of coffee | Us dollar | Source: UCDA |
| EXP-volume | Export volume of coffee | 60kg bag | Source: UCDA |
| EXP-value | Export value of coffee | Millions US \$ | Source: UCDA |

4.1 Descriptive Analysis

This section presents the summary of descriptive results of the series used in the study in a tabular form as well as charts. In order to simplify the data which had been obtained from Uganda Bureau of Statistics, the natural logarithm of the original data was taken as indicated in *appendix 2* This analysis was aided by STATA data analysis software

Table 4. 2: Summary of descriptive statistics

| Variable | Obs | Mean | Std. Dev | Min | Max |
|------------|-----|----------|----------|------------|----------|
| EXP-VOLUME | 25 | 3008187 | 573471.5 | 2002324 | 4237114 |
| EXP-VALUE | 25 | 269.5756 | 124.7261 | 83.94 | 448.89 |
| NEER | 25 | 76.8016 | 19.67201 | 49.6 | 113.34 |
| INF | 25 | 8.397898 | 10.17364 | -0.2875085 | 52.44227 |
| IT | 25 | 9.052 | 9.059761 | -0.3 | 42.2 |
| FDI | 25 | 4.54e+08 | 3.71e+08 | 3000000 | 1.21e+09 |
| PRICE | 25 | 1.4644 | .588197 | 0.44 | 2.58 |

Source: Stata output by the researcher(2018)

Table 4.2 presented summary of descriptive results of all the variables used in the study. The results showed the number of observations for each variable, i.e. the mean, standard deviation, minimum and maximum values for each of the variables in this study.

Table 4. 3: Summary of descriptive statistics of all variables transformed

| Variable | Obs | Mean | Std. Dev | Min | Max |
|-----------|-----|------------|-----------|------------|-----------|
| REXVOLUME | 24 | .0175112 | 0.1865713 | -.3345484 | .3961501 |
| REXVALUE | 24 | 0.040432 | 0.3313141 | -0.5409924 | 0.9232947 |
| RIF | 24 | -0.1798664 | 1.697684 | -4.77684 | 4.430439 |
| RIT | 24 | 0.0714126 | 0.6795763 | -1.462307 | 1.612628 |
| RFDI | 24 | 0.1926278 | 0.6352679 | -0.4365549 | 2.901422 |
| Rpr | 24 | 0.0187526 | 0.2921385 | -0.5031036 | 0.5579724 |
| EXV | 24 | 0.0032499 | 0.0021507 | 0.0007055 | 0.0087836 |

Source: Stata output by the researcher(2018)

Table 4.3 presented summary of descriptive results of all the variables transformed in to first difference. The results showed that number of observations for each variable, i.e. the mean, standard deviation, minimum and maximum values for each of the variables in this study.

4.2 Test for Stationary

The variables were tested for stationarity using the Augmented Dickey Fuller (ADF) statistic. Results of the test for stationarity are presented in the Table below:

Table 4. 4: Stationary test for variables at levels

| Variable | ADF statistic | 1% value | 5% value | 10% value |
|--------------------------|---------------|----------|----------|-----------|
| Exchange rate volatility | -3.74854** | -3.73424 | -2.99070 | -2.63479 |
| Inflation | -5.57888** | -3.74962 | -2.99695 | -2.64573 |
| Interest rate | -5.25566** | -3.78549 | -3.01144 | -2.64573 |
| FDI | -5.80125** | -3.72026 | -2.98500 | -2.63179 |
| Price | -1.67065 | -3.72026 | -2.98500 | -2.63179 |
| Export volume | -3.12630* | -3.72026 | -2.98500 | -2.63179 |
| Export value | -1.84224 | -3.72026 | -2.98500 | -2.63179 |

Source: Computed by author(2018)

Stationary at 1% ** stationary at 5% *

The results in Table 4.4 showed that exchange rate volatility, inflation rate, interest rate, and FDI are stationary at 1 % level of significance. The absolute values of their ADF statistics are greater than the critical values at 1% whereas for export volume, is stationary at 5 % level of significance, the absolute value of his ADF statistics is greater then the critical value at 5%, price and export value are not stationary and their ADF statistics in absolute terms are less than the critical values at 5 % significance level. So the variables such as price and export value were found to be non stationary and had to be differenced in order to make them stationary. Table 4.4 presents results of the test after differencing.

Table 4. 5: Test for stationarity after first difference

| Variable | ADF statistic | 1% value | 5% value | 10% value |
|--------------------------|----------------------|-----------------|-----------------|------------------|
| Exchange rate volatility | -3.74854** | -3.73424 | -2.99070 | -2.63479 |
| Inflation | -8.90408** | -3.78549 | -3.01144 | -2.64573 |
| Interest rate | -7.17752** | -3.83026 | -3.02936 | -2.65519 |
| FDI | -9.16235** | -3.73424 | -2.99070 | -2.63479 |
| Price | -3.49939* | -3.73424 | -2.99070 | -2.63479 |
| Export volume | -6.44767** | -3.73424 | -2.99070 | -2.63479 |
| Export value | -3.43727* | -3.73424 | -2.99070 | -2.63479 |

Source: Computed by author(2018)

All the variables after taking the first difference become stationary. The results further show that all the variables are stationary at the 5% level of significance. This is evident in the computed ADF coefficients being greater than the absolute critical tau value. These imply that all the series are integrated of order one.

4.3 Regression Analysis

The regression analysis is concerned with the distribution of the average value of one random variable as the other variables which need not be random are allowed to take different values. A multivariate regression model was applied. The regression model specifically connects the average values of dependent variable for various values of the independent variables. A regression equation is in no way a mathematical linking two variables but serves as a pointer to questions to be answered. Basically, the regression analysis is used in two distinct ways; (1) as a means of considering data taking into account any other relevant variables by adjustment of the random variable; and (2) to generate mathematical forms to be used to predict the random variable from the other (independent) variables. The regression model was as follows:

$$Y_1 = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + e \dots \dots \dots \text{eqn1}$$

$$Y_2 = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + e \dots \dots \dots \text{eqn2}$$

Table 4. 6: Regression results of exchange rate volatility and export volume of coffee

```
. regress rexvolume exv rif rit rfdi rpc
```

| Source | SS | df | MS | Number of obs = 24 | | |
|----------|---------|----|----------|--------------------|--------|--|
| Model | 0.38537 | 5 | 0.07707 | F(5, 18) = | 3.25 | |
| Residual | 0.45003 | 18 | 0.02368 | Prob > F = | 0.0274 | |
| | | | | R-squared = | 0.4613 | |
| | | | | Adj R-squared = | 0.3195 | |
| Total | 0.83541 | 23 | 0.034808 | Root MSE = | .1539 | |

| rexvolume | Coef. | Std. Err. | t | P> t | [95% Conf. Interval] | |
|-----------|---------|-----------|-------|-------|----------------------|---------|
| exv | 11.5315 | 16.3470 | 0.71 | 0.489 | -22.6831 | 45.7462 |
| rif | 0.0564 | 0.0223 | 2.53 | 0.020 | 0.00971 | 0.1029 |
| rit | 0.0997 | 0.0486 | 2.05 | 0.055 | -0.00216 | 0.2015 |
| rfdi | 0.0645 | 0.0631 | 1.02 | 0.320 | -0.06766 | 0.1968 |
| rpc | -0.1099 | 0.1139 | -0.96 | 0.347 | -0.34845 | 0.1286 |
| _cons | -0.0273 | 0.0586 | -0.47 | 0.646 | -0.15007 | 0.0951 |

variation in export volume of coffee is explained by the exchange rate volatility, inflation, interest rate, Foreign Direct Investment and price of coffee.

Adj R-squared: This is the adjusted value of R squared, which is adjusted value of R square on the basis of the number of independent variables in the regression model. This can also be used to analyze the goodness of fit of the regression model. The R squared can be improved by adding more independent variables in the model but not the adjusted R square. It takes into consideration the correlation between independent variable and the dependent variable.

In the above results the adjusted R square is 0.3195 which is less than the R squared value. This is because it has adjusted for the independent variables in the model on the basis of their association with the dependent variable.

F -ratio is calculated to represent the variance between the groups, divided by the variance within the groups. A large F ratio indicates that there is more variability between the groups (caused by the independent variable) than there is within each group, referred to as the error term (Pallat, 2005).

The F value of 0.0274 in this model indicates that the overall regression model is significant hence it has some explanatory value and the model is fit. This indicates that there is a relationship between the predictor variables interest rate, nominal effective exchange rate, inflation and price and export of coffee.

The above regression analysis indicates the p-value of each variable in our analysis the p-value of exchange rate volatility (p-value= 0.489), FDI (p-value =0.320) and price (p-value =0.347) this results shown us that all these variables are not statistically significant effect on export volume of coffee in Uganda, since the p-value of these variables is greater than the level of significant (p-value >0.05).

while inflation and interest rate have statistically significant effect to the export volume of coffee, the p-value of inflation is (0.020) which is less than the significant level of (0.05) while the p-value of interests rate is (0.05) which is equal to the level of significance.

The established regression equation after estimation was given as

$$Y1 = -0.0273 + 11.5315X1 + 0.0563 X2 + 0.0997X3 + 0.0646X4 - 0.1099X5 \text{Eqn1}$$

From the regression equation above, it was established that holding exchange rate volatility (X1), inflation (X2), interest rate (X3), FDI(X4) and price(X5) constant, export volume of coffee would be -0.0273.

$$Y_2 = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + e \dots \dots \dots \text{eqn2}$$

Table 4. 7: Regression results of exchange rate volatility and export value of coffee

```
. regress rexvalue exv rif rit rfdi rpc
```

| Source | SS | df | MS | | | |
|----------|---------|----|---------|-----------------|--------|--|
| Model | 2.18101 | 5 | 0.43621 | Number of obs = | 24 | |
| Residual | 0.45345 | 18 | 0.02386 | F(5, 18) = | 18.28 | |
| Total | 2.63445 | 23 | 0.10976 | Prob > F = | 0.0000 | |
| | | | | R-squared = | 0.8279 | |
| | | | | Adj R-squared = | 0.7826 | |
| | | | | Root MSE = | .15449 | |

| rexvalue | Coef. | Std. Err. | t | P> t | [95% Conf. Interval] | |
|----------|----------|-----------|-------|-------|----------------------|---------|
| exv | 12.4271 | 16.40893 | 0.76 | 0.458 | -21.9169 | 46.7715 |
| rif | 0.05600 | 0.02236 | 2.50 | 0.022 | 0.00919 | 0.10281 |
| rit | 0.09847 | 0.04885 | 2.02 | 0.058 | -0.00376 | 0.20072 |
| rfdi | 0.05819 | 0.06342 | 0.92 | 0.370 | -0.07456 | 0.19095 |
| rpc | 0.87838 | 0.11439 | 7.68 | 0.000 | 0.63894 | 1.11781 |
| _cons | -0.02459 | 0.05886 | -0.42 | 0.681 | -0.14780 | 0.09861 |

Source: Stata12 output by the researcher (2018)

In order to develop an understanding of the real effect of exchange rate volatility on export of coffee, another a regression was developed using the same attributes to exchange rate volatility against the variable of export value of coffee as summarised in table 4.7.

The F value of 0.000 indicates that the overall regression model is significant hence that the model is well specified. This indicates that there is a relationship between the predictor variables interest rate, exchange rate volatility, inflation, FDI and price on export value of coffee. The data also reveals that the five different attributes to exchange rate volatility, for instance, exchange rate volatility, inflation, interest rate, FDI, and price explain 83% of the variation in overall export value of coffee (R²= 0.8279).

The results of the analysis indicate that there exists insignificant effect of exchange rate volatility on export value of coffee (p-value >0.05). Furthermore, the results also show that there is significant effect of inflation on export value of coffee (p-value > 0.05). The data also indicates that there is significant effect of interest rate on export value of coffee in the country (p-value < 0.05).

The second regression analysis also shows that there is insignificant effect of FID and export value of coffee in the Uganda (p-value > 0.05). The data also indicates that there is positive strong significant effect of price on export value of coffee (p-value < 0.05).

$$Y_2 = -0.0245 + 12.4279X_1 + 0.0560X_2 + 0.0985X_3 + 0.0582X_4 + 0.8783X_5 \dots \dots \dots \text{Eqn2}$$

4.4 .Diagnostics tests of the regression model

Figure 4. 1: Diagnostics tests of the regression model

```
. estat vif
```

| Variable | VIF | 1/VIF |
|----------|------|----------|
| rfdi | 1.63 | 0.612455 |
| rif | 1.45 | 0.689907 |
| exv | 1.25 | 0.798425 |
| rpc | 1.12 | 0.890332 |
| rit | 1.11 | 0.902297 |
| Mean VIF | 1.31 | |

Source: Stata output by the researcher(2018)

The variance inflation factor (VIF) test the value of 2 for VIF shows close correlation and the value of 1 shows little correlation. The diagnostic tests for the regression model show that there is no exist of collinearity as the VIF statistics associated with each of the independent variables in the

model were within the acceptable range . For instance, FDI (VIF = 1.63), price (VIF = 1.12), Exchange rate volatility (1.25) , interest (VIF = 1.11) and inflation (VIF=1.45)

4.5. Test for Heteroscedasticity in Regression Residual

To further evaluate the adequacy of the regression model, Breusch-Pagan / Cook-Weisberg test for Heteroscedasticity was conducted. The null hypothesis is that there is no heteroscedasticity in the residual. Notice from figure 3 that the null hypothesis of no heteroscedasticity in the residual is upheld. This evident in the non-significance of the χ^2 (0.95) of the Breusch-Pagan / Cook-Weisberg test for Heteroscedasticity test.

Figure 4. 2: Breusch-Pagan / Cook-Weisberg test for heteroscedasticity

```
. estat hettest
```

```
Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
```

```
Ho: Constant variance
```

```
Variables: fitted values of rexvalue
```

```
chi2(1)          =          0.00
```

```
Prob > chi2      =          0.9499
```

CHAPTER FIVE

DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

This chapter presented the discussion of the findings, conclusions and recommendations of the study.

5.1 Discussion of findings of the study

5.1.1 influence of exchange rate volatility on Export of Coffee

The main purpose of our study is to examine the significant influence of exchange rate volatility on export of coffee in Uganda. The result found in the regression above tables (table 4.6 & table 4.7) exchange rate volatility has not statistically significant effect to the export coffee in Uganda. After running the two regressions for the two constraints in our dependent variable (export volume and value of coffee) the p-value of the coefficient (exchange rate volatility) is greater than the significance level of the study (0.05). So we fail to reject **the null hypothesis which states that there is no significant influence between exchange volatility and export of coffee in Uganda 1992 to 2016**. The non significance of exchange rate volatility on export of coffee is not surprise this is because coffee is agricultural commodity and it is influence by factors affected its productivity such as labor productivity and climate change; hence the depreciation of the real exchange rate may encourages export growth especially in the manufacturing and service but not the agricultural sector. Expansionary effects of the exchange rate policy affect the investment decisions, because the exchange rate is an important argument in the formation of expectations, by firms, of expansion of production and demand. The maintaining a depreciated exchange rate is a stimulus to exports and sectoral specialization of the economy. This finding is contradicts a number of other findings Studies in Ghana and India by Fosu (1992) and Sharma (2001) respectively have shown that real exchange rate has a significant negative relationship with export growth. According to Sharma, a fall in domestic prices due to exchange rate depreciation makes exports cheaper in the international markets resulting into their increased demand. Edwards and Golub (2004) examined the determinants of export supply in South Africa and found out that foreign

prices, domestic prices and the exchange rate have a strong impact on manufacturing export performance in South Africa.

Real exchange rate which reflects the underlying relative movement of prices at home and abroad, is proved to have a significant effect on the export performance of the lowest performers. Gonenc and Yilmaz (2008) point out the high effect of exchange rate on the competitiveness. They did find out that imported input costs act as a natural hedge against exchange rate movements and have a substantial effect on competitiveness. Aysan and Hachasanoglu (2007), on the other hand, found that real exchange depreciation does not induce a huge increase in exports.

Using an econometric model, results showed a positive and significant coefficient on the relative price variable and the real effective exchange rate. A conclusion was drawn that a 1 % increase in the relative price of exports is estimated to raise average manufacturing export volumes by to 2.5% in the long-run. Cline (2004) also had a similar study using pooled data for over 100 developing countries for the period 1981-2001. Ordinary Least Squares regression showed that the depreciation of real exchange rate increases export growth. rates and thereby stability in export earnings (Kiptui, 2008).

5.1.2 The effect of Inflation rate on Export of Coffee in Uganda

The objective two in the study employed that to examine the effect of inflation on export of coffee in Uganda. The interpretation of the regression results in table 4.6 & 4.7 indicates that inflation has positive statistical significant effect on both export volume and value of coffee in Uganda. The p-value of coefficient is less than the significance levels this indicates that there is sufficient evidence in your study to reject the null hypothesis. Which states that **there is no significant effect of inflation on export of coffee in Uganda?** The results showed that exports of coffee had a significant effect on inflation because higher exports increased domestic production which leads the firm to achieve economies of scale and cost of production decline. The persistence increase in price of coffee in international market helps the local farmers to respond and they would increase their production of coffee, and export of coffee would rise. This relationship also supported by the demand pull theory of inflation. The theory postulates that inflation results from a rise in aggregate demand. The factors influencing inflation as outlined comprises increase in consumption,

investment, exports, money supply, firms' markup prices, exchange rates, price expectations and among other structural factors

This finding is consistent with that (Vong and Chan, 2009), The expected rate of inflation is universally related to export earnings. So, an increase in the general price level erodes the real value of money and induces a portfolio shift. Friedman treats the rate of inflation as the rate of return on real assets just as the rate of interest is the rate of return on financial assets. Therefore, higher inflation rates lead people to shift part of their wealth from money and financial assets to real assets which, in turn, mean that higher inflation rates are associated with lower demand for money. It is therefore different from that of Schnitzer (1991) argued that inflation has an influence on the economy. When there is inflation, domestic products become expensive than the imported commodities and people find it easier to purchase foreign goods than domestic goods. Consequently, exports decrease since they become more expensive to importers.

5.1.3 Effect of Interest rate and Export of Coffee

In the objective three of the study, is to examine the effect of interest rate on export of coffee in Uganda. The study reveals that there has been statistically significant effect of interest rate on export of coffee in Uganda. Because the p-value interest rate is less than the significance level of (0.05), so we reject the null hypotheses, stated that **there is no significant effect of interest rate on export of coffee in Uganda**. Because we have enough evidence of reject the null hypotheses. This implying that coffee export growth can be driven by factors which are beyond the control of local farmers Such as the rate of interest in the market. Interest rate that have an important influence in the performance of Uganda's exports of coffee. The lower interest rate helps the local farmers to be more accessible to the loans schemes. Banking institution and micro finance institutions have a magnitude role of increasing agricultural productivity by providing loans to local famers since they don't have enough capital. Interest rate also influences the farmer's decision to enter the export market. It is important because normally the level of interest rate determines the amount an entrepreneur will invest. Increase in real interest rate increases the cost of borrowing or loans from commercial banks and other financial institutions. As a result producers and exporters cannot raise the financial requirements to increase production and coffee export volumes.

This is in agreement with Madura, (2007) who noted that an increase in international coffee price and gross domestic product increase coffee export volumes while real effective exchange rate depreciation and increase in real interest rate reduce the coffee export volumes.

5.1.4 Effect of FDI and Export of Coffee

The objective four in the study was to examine the effect of FDI on export of coffee in Uganda. The regression analyses in (table 4.6 and 4.7) indicated that Foreign Direct Investment has no statistically significant effect on export growth. Since p-value of both results in is greater than the level of significance (0.05). Foreign direct investment was found not to be significant and this may be due to the fact that, less of FDI is directed to the sector the reason been is, climate change had a serious impact on Uganda's coffee. The changing weather patterns have interrupted growth and discouraged investors, especially those that cannot afford irrigation. Secondly, This attributed to the fact that most foreign direct investments in Uganda focus on capturing the domestic market as opposed to foreign markets which would penetrated by producing export items other than locally consumed.

This finding contradicts that of UNCTAD (2002b) which reported that FDI is likely to affect export earnings positively. This is true for most levels of export earnings and for every period under consideration. The experience in a number of countries suggests that FDI strongly contributes to the transformation of the composition of exports. For instance, it has been well documented that FDI inflows into Singapore or, more recently China, have helped to increase significantly the technological content of exports by supporting strongly the development of export supply capacity, including knowledge based industries thereby improving the export earnings.

5.1.5 Effect of price on export of Coffee (1992-2016)

The objective five of the study was to examine the effect of price on export of coffee in Uganda. Price was found to be a significant factor effect on export value of coffee in Uganda, the p-value of price is less than the level of significance, so reject the null hypothesis stated that **there is no significant effect of price on export of coffee in Uganda**. The statistical significance effect of price on coffee is not Surprise because this was supported by the basic theory of supply, which

stated that the higher the price the higher the quantity supplied, and the basic theory of demand. So price has significant impact of both the demand side and the supply side of coffee exporters. This finding is consistent with that of Ndulu and Lipumba (1990) who while studying opportunities and constraints to trade and their influence on growth and development of African economies, established that foreign prices of primary commodities significantly affect the export performance of countries involved in their production. Edwards and Golub (2004) investigated the determinants of export supply in South Africa and found out that foreign prices have a highly significant impact on manufacturing exports performance in South Africa.

5.2 .Conclusions

This study aimed at addressing the debatable issue in Uganda's foreign exchange market: i.e. "What is the influence of exchange rate volatility on Uganda's export of coffee? and related macroeconomic policy such as the relevant parameters of the effect of inflation, interest rate, FDI and price on export coffee in Uganda .To address the above, the study tested the main research hypothesis that: **there is no significant influence of exchange volatility on export of coffee in Uganda 1992 to 2016.** The effect of exchange rate volatility on export of coffee is not statistically significant. This could have been due to high susceptibility of our export to price fluctuations which limits the gains arising out local currency depreciation. This finding is similar to that of Musinguzi and Obwona (2000) who found no significant relationship between exchange rate volatility and export growth rate but then contradicts a number of other findings Studies in Ghana and India by Fosu (1992) and Sharma (2001) respectively have shown that real exchange rate has a significant negative relationship with export growth. One may therefore conclude that since the adoption of a floating exchange rate regime in November 1993, exchange rate variability is not an important factor for Ugandan export of coffee. Empirical results and analysis presented in the study suggest that inflation has significant effect on export of coffee, and FID have insignificant effect with export of coffee. While interest rate and price have statistically a significant positive effect of export of coffee .

The positive relationship of foreign price level is consistent with past findings. The significance of price explains the Uganda's exports of coffee BOU (2005) reported that coffee export earnings during the second half of 2004/05 amounted to USD 88 million up from USD 66.6 million realized

in the corresponding period of 2003/04. It further revealed that export volumes fell from 1.39 (60kgs) million bags during the second half of 2003/04 to 1.28 million bags in the corresponding period of 2004/05. In the same period, there was an increase of 43.3% in average unit price which more than offset the decline in export volumes leading to the increase in coffee export earnings.

5.3 Recommendations

Since the exchange rate volatility has no significant effect on export of coffee the government should undertake other studies to investigate factors effect by coffee exporters in Uganda.

Government should also take other researches based on firm level which is investigating the factors affect the productivity of coffee.

The government has put-up a policy of increasing Uganda export of coffee with the target of 20 million bags by 2020, to achieve this target Uganda governments should Increased and sustainable production and yield at the farm level. Encourage coffee production in new areas and expand acreage in traditional coffee areas. Improve the use of agro inputs in coffee production. Promote the availability of water for production at farm level. Promote coffee farming as a business among small holder farmers. Service delivery shall be guided by the needs of all actors in the value chain.

Value addition shall be pursued at all stages of the coffee value chain. The study recommends the establishment of agreements with international coffee buyers to increase prices, prevent exchange rate depreciation, expansion in gross domestic product.

Government should come policy the support local firms to be more accessible to credit service such as soft loans, and also to promote saving and investment habit.

Government of Uganda should subsidize the local farmer to be able to meet their running cost, so they would be competitive in terms price in international market.

Although exporters and policy makers have been preoccupied with recent steep exchange rate appreciation, focus needs to shift to production level and support towards reforms of trade agreements. This will enable exporters to hedge against low quality export.

Government of Uganda should also promote policy of devalue the local currency which helps the local exporters to increase their export of coffee, it would be cheaper the international buyers to buy Uganda's coffee.

The researcher also recommends that government should come a clear policies guide the both international and local investors since FDI contributes to the technological upgrading and structural evolution of the export sector, the structure of the sector is an important ingredient of export performance both at an early stage of development of the export sector and at a later stage.

Moreover, export-oriented economic policies should be pursued and supported by modernization of the coffee production and flow chain.

5.4. Contribution to knowledge

The researcher contributes that exchange rate volatility does not have statistical significance on export of coffee. Because coffee is been traded in commodity market no monetary market.

The researcher also contributes that inflation has positive statistical significant effect on export of coffee. This is because the persistence increase in price level of coffee in international market causes the local farmers to respond by increasing their production of coffee, and export of coffee would rise.

To the contribution of the knowledge the researcher funded that interest rate have statistically significant effect on export of coffee in Uganda, the low interest rate on loans helps the local farmers to be more accessible to their financials.

FDI does not has much effect on export of coffee in Uganda, as we fund in our analysis the reason been is less FDI is directed to the coffee sector

The relative movement of prices at home and abroad have much effect on revenue generated the export of coffee, if the price of coffee increases the revenue of coffee exporters would increase.

5.5 Recommendations for Further Research

This study recommends a further in-depth study on the effect of other determinants of Coffee export performance and competitiveness. A similar study should be conducted over a longer period of time and try to see the behavior of Uganda's Coffee export and exchange rate fluctuations over such a longer period.

This study was carried out on the Coffee industry in Uganda; further research could be carried out on other economic sectors of the country and even the broader East African region to establish the effect of exchange rate volatility on export earnings from the different sectors under study and across the east African region.

This study focused on five independent variables i.e. exchange rate volatility, inflation, interest rate, foreign direct investment and price of coffee as a determinates of Uganda's coffee export . This study recommends that another study be conducted with more independent variables that affect Coffee export performance in Uganda such as domestic transport infrastructure and the macroeconomic environment as these could influence the results obtained from such a similar study.

There is also need to study sensitivity of exchange rate as to export earnings and import costs. Some areas of the economy do not respond equally, effectively and efficiently to exchange rate fluctuations. When the economy establishes sensitivities then efforts will be direct towards addressing the imbalances or towards mitigating the impact. There is need for further research into how firms manage exchange rate fluctuations. This may lead to best ways of deal with adverse effects and how to enhance favorable effects. There is also need for a study to establish how the importers are affected by exchange rate fluctuations. This will enable the economy to handle exchange rate volatility fairly without hurting one side of the economy.

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APPENDICES

APPENDIX I: MACRO ECONOMIC DATA OBTAINED FROM WEBSITE (1992-2016)

| YEAR | INTEREST RATE | INFLATION RATE (CIP) | FDI (MILLION USD) | NEER (INDEX) | PRICE (US\$ KILO) | EXPORT VOLUME OF COFFEE (60-Kg bages) | EXPORT VALUE OF COFFEE (MILLION USD) |
|------|---------------|----------------------|-------------------|--------------|-------------------|---------------------------------------|--------------------------------------|
| 1992 | -35.0187 | 52.44227 | 3000000 | 69.77 | 0.85 | 2053217 | 104.55 |
| 1993 | -3.95721 | 1.163983 | 54600000 | 61.69 | 0.87 | 2088642 | 108.70 |
| 1994 | 6.663525 | 10.03676 | 88200000 | 49.6 | 1.52 | 3005205 | 273.66 |
| 1995 | 9.861413 | 6.55014 | 121200000 | 51.71 | 2.58 | 2791753 | 432.49 |
| 1996 | 15.03425 | 7.191647 | 121000000 | 51.98 | 1.56 | 4148803 | 388.92 |
| 1997 | 17.72687 | 8.169021 | 175000000 | 50.65 | 1.4 | 4237114 | 355.13 |
| 1998 | 11.10069 | 0.068804 | 210000000 | 54.64 | 1.52 | 3032338 | 276.47 |
| 1999 | 21.68683 | 5.777369 | 140200000 | 61.03 | 1.29 | 3647989 | 283.01 |
| 2000 | 10.62161 | 3.392022 | 160700000 | 64.16 | 0.94 | 2917257 | 164.76 |
| 2001 | 17.3345 | 1.865125 | 151496150.7 | 64.82 | 0.57 | 3074773 | 104.77 |
| 2002 | 22.99559 | -0.28751 | 184648059.2 | 65.44 | 0.44 | 3146381 | 83.94 |
| 2003 | 10.32904 | 8.680477 | 202192593.6 | 79.37 | 0.66 | 2663888 | 105.50 |
| 2004 | 4.339244 | 3.721287 | 295416479.8 | 76.64 | 0.76 | 2523042 | 115.71 |
| 2005 | 21.76555 | 8.448726 | 379808340.7 | 77.04 | 1.08 | 2504890 | 162.14 |
| 2006 | 15.909 | 7.310676 | 644262499.9 | 80.25 | 1.42 | 2002324 | 170.34 |
| 2007 | 10.98062 | 6.138511 | 792305780.9 | 78.41 | 1.58 | 2704236 | 256.58 |
| 2008 | 13.24297 | 12.05086 | 728860900.7 | 78.04 | 2.02 | 3210603 | 388.40 |
| 2009 | -9.74941 | 13.01726 | 841570802.7 | 85.6 | 1.59 | 3053688 | 291.76 |

| | | | | | | | |
|------|----------|----------|-------------|--------|------|---------|--------|
| 2010 | 8.689203 | 3.976553 | 543872727.3 | 92.22 | 1.67 | 2668971 | 267.13 |
| 2011 | 16.44007 | 18.6929 | 894293858 | 105.39 | 2.38 | 3149423 | 448.89 |
| 2012 | 3.809184 | 12.6797 | 1205388488 | 100.65 | 2.4 | 2726249 | 392.70 |
| 2013 | 18.51338 | 4.904101 | 1096000000 | 99.45 | 2.01 | 3582629 | 432.69 |
| 2014 | 17.58096 | 3.076285 | 1058564540 | 96.71 | 1.88 | 3499829 | 393.92 |
| 2015 | 16.75824 | 5.416062 | 737652140.2 | 111.44 | 1.98 | 3455852 | 410.55 |
| 2016 | 19.66767 | 5.464428 | 522638531.6 | 113.34 | 1.64 | 3315567 | 326.68 |

Source: Bank of Uganda (2018)

APPENDIX II: TRANSFORMED DATA IN TO FIRST DIFFERENCE

| RIT | RIF | RFDI | EXV | RPC | REXVOL UME | REXVALUE |
|----------|----------|----------|----------|----------|---------------|----------|
| 0.072513 | -3.80787 | 2.901422 | 0.008784 | 0.023257 | 0.017106 | 0.038926 |
| 0.057427 | 2.154407 | 0.479573 | 0.008759 | 0.557972 | 0.363832 | 0.923295 |
| 0.391981 | -0.42677 | 0.317835 | 0.000937 | 0.529079 | -0.07368 | 0.457673 |
| 0.421701 | 0.093434 | -0.00165 | 0.001251 | -0.5031 | 0.39615 | -0.10619 |
| 0.164751 | 0.127429 | 0.368995 | 0.001945 | -0.10821 | 0.021063 | -0.09089 |
| -0.46807 | -4.77684 | 0.182322 | 0.002666 | 0.082238 | -0.33455 | -0.25038 |
| 0.669698 | 4.430439 | -0.40404 | 0.002947 | -0.16407 | 0.184842 | 0.02338 |
| -0.71381 | -0.53252 | 0.136469 | 0.002008 | -0.31652 | -0.22353 | -0.54099 |
| 0.489807 | -0.5981 | -0.05898 | 0.002643 | -0.50024 | 0.052587 | -0.45272 |
| 0.282604 | -0.37071 | 0.197891 | 0.00394 | -0.25886 | 0.023022 | -0.22167 |
| -0.80034 | -0.33364 | 0.090769 | 0.005797 | 0.405465 | -0.16647 | 0.228609 |
| -0.86726 | -0.84701 | 0.379165 | 0.000706 | 0.141079 | -0.05432 | 0.092376 |
| 1.612628 | 0.819946 | 0.251281 | 0.000729 | 0.351398 | -0.00722 | 0.337373 |
| -0.31344 | -0.14468 | 0.528439 | 0.001198 | 0.273696 | -0.22394 | 0.049336 |
| -0.37075 | -0.17475 | 0.206841 | 0.001638 | 0.106768 | 0.300511 | 0.409644 |
| 0.187335 | 0.674553 | -0.08346 | 0.002268 | 0.245673 | 0.171639 | 0.414595 |
| 0.045788 | 0.07714 | 0.143787 | 0.003362 | -0.23936 | -0.05011 | -0.2861 |
| 0.045788 | -1.18586 | -0.43655 | 0.00337 | 0.04909 | -0.13466 | -0.0882 |
| 0.63764 | 1.547729 | 0.497319 | 0.003995 | 0.354277 | 0.165526 | 0.519042 |
| -1.46231 | -0.38814 | 0.298523 | 0.002324 | 0.008368 | -0.14429 | -0.13373 |
| 1.581079 | -0.94993 | -0.09513 | 0.002798 | -0.17733 | 0.27317 | 0.096976 |
| -0.05168 | -0.46635 | -0.03475 | 0.004063 | -0.06686 | -0.02338 | -0.09387 |
| -0.04793 | 0.565646 | -0.3612 | 0.005665 | 0.051825 | -0.01265 | 0.04135 |
| 0.160086 | 0.008891 | -0.34458 | 0.004227 | -0.1884 | -0.04144 | -0.22852 |
| 0.060086 | 0.006891 | -0.34458 | 0.003227 | -0.1884 | -0.04144 | -0.12852 |