THE EFFECT OF FOREIGN EXCHANGE RATE FLUCTUATIONS ON HORTICULTURAL EXPORT EARNINGS IN KENYA

BY

WAMUKHOMA WILSON OLIVER

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DECLARATION

This research project is my original work and has not been presented to any other University or College for academic purposes.

Wamukhoma, Wilson Oliver

Reg. No D63/63782/2013

Signature..... Date.....

This research project has been submitted for examination with my approval as the University supervisor.

Mr. Herrick Ondigo

Lecturer, Department of Finance and Accounting,

School of Business,

University of Nairobi

Signature..... Date.....

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DEDICATION

I dedicate this work to my special friend, entire family and friends for their support and patience during the period I undertook this research study.

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LIST OF ABBREVIATIONS

ANOVA	Analysis of Variance
CBK	Central Bank of Kenya
EAC	East African Community
EPZ	Export Processing Zone
EU	European Union
FDI	Foreign Direct Investment
FPEAK	Fresh Produce Exporters Association of Kenya
GDP	Gross Domestic Product
HCDA	Horticultural Crops Development Authority
IFE	International Fisher Effect
IS-LM	Investment Savings - Liquidity Preference Money supply Model
KFC	Kenya Flower Council
KHC	Kenya Horticultural Council
KNBS	Kenya National Bureau of Statistics
PPP	Purchasing Power Parity
UNCTAD	United Nations Conference on Trade and Development
US	United States

ABSTRACT

Kenya's horticultural export sector is a key sector with regard to sector contribution to the country's economy. This sector's primary market is Europe. Being a foreign market, this presents an issue in that the primary market's currency is different from that of the exporting country - Kenya and this brings in the issue of foreign exchange rate. Kenya operates under a floating exchange rate system where the exchange rate of the country is determined through forces of demand and supply for the local currency. This means that the local currency keeps fluctuating against other world currencies and for this case, the currencies of the primary market for the horticultural sector in Kenya. The objective of this study was to determine the effect of foreign exchange rate fluctuations on horticultural export earnings in Kenya. This study adopted the use of secondary data to achieve the stated research objective. Horticultural export earnings from HCDA were analyzed together with the Exchange rates (Kshs Vs USD) obtained from Central Bureau of Statistics for the period January 2009 to December 2013. The model adopted for this study also included inflation indices and foreign direct investment as a percentage of GDP statistics to derive a wholesome understanding of how these factors affect or relate to horticultural export earnings in Kenya. Multiple regression was employed to determine the relationship between Horticultural export earnings and foreign exchange rates, inflation indices and Foreign direct investment as a percentage of GDP for the period 2009-2013. The findings of this study concluded that the exchange rate is associated with horticultural export earnings in Kenya. The Pearson correlation was 0.689. It can therefore be concluded that the fluctuations in foreign exchange rates largely affect horticultural export earnings in Kenya. The government needs to come up with structures to support horticultural export performance in Kenya. Policy makers should create an enabling environment to maintain and sustain a stable exchange rate system that is resistant to external shocks. There is need for the government to develop and implement policies that lead to export diversification. There is also need to boost supply in the horticultural sector through incentives and subsidies that will lead to lower costs of production. With regard to further research, other studies should be done in this research area to ascertain the effect of other factors not accounted for in this study on horticultural export earnings in Kenya. The study period for this research was 5 years. A longer duration of time could be considered in another research study to establish if the results will remain consistent with the findings of this study or if they will be varied.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Kenya participates in international trade, including through its horticultural export sector. Foreign countries form the base market for the horticultural export industry in Kenya. In this study, the researcher was keen to understand how fluctuations in foreign exchange rates affect horticultural export earnings in Kenya. Fluctuating foreign exchange rate is defined as an international monetary exchange system in which prices of currencies are determined by competitive market forces. It is an exchange rate system in which the rate of each currency is determined by interaction of market forces of supply and demand. This is also referred to as floating or flexible foreign currency rate (Accounting Dictionary, 2014).

The relationship between a country's exchange rate, export earnings and economic growth is a crucial issue from both descriptive and policy perspectives. As Edwards (1994) puts it "it is not an overstatement to say that exchange rate behaviour occupies a central role in policy evaluation and design". A country's exchange rate is an important determinant of the growth of its cross-border trading and export earnings and it serves as a measure of its international competitiveness (Bah and Amusa, 2003).

The exchange rate plays a crucial role in guiding the broad allocation of production and spending in the domestic economy between foreign and domestic goods. The exchange rate's level, relative to an equilibrium exchange rate level, and its stability has been shown to importantly influence export earnings, growth, consumption, resource allocation, employment and private investments (Aron et al., 1997). Because of this important role the exchange rate plays in the economy, emerging economies, in particular, are encouraged to conduct their policies so as to get this macroeconomic relative right. The 'right' exchange rate is one that does not stray too far from its equilibrium value (Otieno and Mudaki, 2011).

1.1.1 Foreign Exchange Rate Fluctuations

The exchange rate is a prominent determinant of international trade with regard to export earnings generated therefrom. This concept has received much attention in the context of global imbalances in international trade. Research related to exchange rate management still remains of interest to economists, especially in developing countries, despite a relatively

enormous body of literature in the area. This is largely because the exchange rate in whatever conceptualization, is not only an important relative price, which connects domestic and world markets for goods and assets, but it also signals the competitiveness of a country's exchange power vis-à-vis the rest of the world in a pure market. Besides, it also serves as an anchor which supports sustainable internal and external macroeconomic balances over the medium to long term. There is, however, no simple answer to what determines the equilibrium exchange rate. Estimating equilibrium exchange rates and the degree of exchange rate fluctuations remains one of the most challenging empirical problems in open economy macroeconomics (Williamson, 1994). According to Chang and David (2005), the fundamental difficulty is that the equilibrium value of the exchange rate is not observable. While exchange rate fluctuations refer to a situation in which a country's actual exchange rate deviates from such an unobservable equilibrium with respect to another currency, an exchange rate is said to be undervalued when it depreciates more than its equilibrium, and overvalued when it appreciates more than its equilibrium. The issue is, unless the equilibrium is explicitly specified, the concept of exchange rate fluctuations remains subjective.

A high exchange rate level lowers the receipts that exporters receive thereby decreasing export earnings. On the other hand, a low exchange rate level raises receipts that exporters receive thereby improving export earnings. A fluctuation in the exchange rate impacts directly either positively or negatively on export earnings. Exchange rate fluctuations might impact negatively on exporters and trend economic growth by discouraging firms from undertaking investment, innovation and trade. It may also deter firms from entering the export market. Large fluctuations in foreign exchange rate impose adjustment costs on the economy as resources keep shifting between the tradable and non-tradable sectors. This could permanently shift resources to non-tradable sectors if firms are put off from export markets due to high foreign exchange rate fluctuations (Kiptui, 2007). If exchange rate movements are not fully anticipated, an increase in exchange rate fluctuations may lead risk-averse agents to reduce their international trading activities. The presumption of a negative nexus between exchange rate fluctuations and export earnings is an argument routinely used by proponents of managed or fixed exchange rates.

The CBK's primary objective is to formulate and implement policy to achieve stability in general price levels and this includes the exchange rate. In order to achieve price stability, the CBK uses a combination of indirect monetary policy tools and instruments such as open market operations and statutory requirements stipulated by law (CBK, 2013). In the period

under study, the Kenya shilling exchange rate to the US dollar was Kshs 77.9 per dollar, Kshs 89 per dollar, Kshs 81 per dollar, Kshs 84.8 per dollar and Kshs 85.5 per dollar respectively over the years 2009, 2010, 2011, 2012 and 2013 (CBK, 2014). Foreign exchange rate fluctuations lead to exchange rate risk which is a potential gain or loss occasioned by movements in the exchange rate. In measuring fluctuations in foreign exchange rates, the following models can be applied: purchasing power parity theorem (PPP), the Mundell-Flemming model, the Balassa-Samuelson model or the International Fisher Effect (IFE) model (Madura, 2007).

1.1.2 Export Earnings

There are strong indications in literature which link a country's export earnings to fluctuations in foreign exchange rates. For instance, De Rosa et al (1991) suggest that in order to boost export earnings, exchange rates should be allowed to adjust to more realistic values. This will lead to significant increases in production and export of such export items as high value horticultural products. Export performance is sensitive to foreign exchange rate fluctuations with the effect of the foreign exchange rate fluctuations dominating the financial performance of the export oriented products and crops. Total export earnings from horticultural crops in Kenya historically tend to have an inverse relationship with movements in the exchange rate, although the trend is obscured by changes in volumes from year to year (Kiptui, 2008). Under the floating exchange rate regime, fluctuations in world prices of horticultural produce strongly affect export earnings. Therefore, a higher demand or a decrease in supply which causes appreciation of foreign currency makes export earnings decline (Akila, 2004).

Like most sub-Saharan African countries, Kenya's export structure is predominantly composed of primary commodities mainly tea, coffee and horticulture. This makes export earnings from this sector more vulnerable to fluctuations in world prices. While certain non-traditional exports such as horticultural products have experienced rapid growth in the last few decades, manufactured goods make only a small proportion of total exports (Wagacha, 2000). The role of export earnings in economic development is widely acknowledged. Ideally, export earnings stimulate growth in a number of ways including production and demand linkages, economies of scale due to larger international markets, increased efficiency, adoption of superior technology embodied in foreign produced capital

goods, learning effects and improvement of human resources together with increased productivity through specialisation (Basu et al., 2000).

Kenya has ideal tropical and temperate climatic conditions that make it favourable for production and development of horticulture and agricultural products which are the backbone of the export industry in Kenya (EPZ, 2007). A decline in the price of foreign goods in terms of domestic goods has two primary effects on the export earnings. First, on the production side, fewer resources will be allocated towards producing goods that can be exported, since these goods will be expensive to foreigners. At the same time, production of substitutes for foreign goods will also decline. Secondly, on the consumption side, a fall in the price of foreign goods relative to domestic goods will stimulate domestic spending on foreign goods. The net effect is making exports less competitive in foreign markets, while stimulating imports, hence a current account deficit. Consequently, domestic manufacturer's incentives and profits will be lowered leading to declining investment and export volumes (Otieno and Mudaki, 2011).

Agriculture contributes to a substantial amount of Kenya's export earnings thereby providing the much needed foreign exchange. Between 1990 and 2001, this contribution averaged 60 percent though it varied between 50 and 62 percent depending on the agricultural performance. This movement has since improved through the years to hit highs of 65-70 percent. The key commodities contributing to Kenya's export earnings are coffee, tea, horticulture, pyrethrum and a few livestock products such as hides and skins. The level of Kenya's export earnings is mainly dependent on rainfall and the world prices of key commodities that the country exports as well as the domestic policies affecting production and marketing of these commodities (Kiptui, 2008).

1.1.3 Effect of Foreign Exchange Rate Fluctuations on Export Earnings

Early theoretical models of analysing the effect of foreign exchange rate fluctuations on export earnings suggest a negative effect of foreign exchange rate fluctuations on export earnings especially in situations where hedging is not possible or is costly (Clark, 1973). This theoretical proposition can be applied in the case of Kenya, being a developing country where developed financial markets are up coming. The positive relationship between depreciation of the exchange rate and export earnings in Kenya in the period 2002-2004 perhaps could explain why there has been concern over appreciation of the shilling with exporters warning of job losses in Kenya's main export sectors (Kiptui, 2008). More recently however, the

country has experienced depreciation in value of its currency against major foreign currencies, mainly the US dollar.

Empirical evidence in support of the hypothesis of a negative link between exchange rate fluctuations and export earnings is mixed. The pertinent survey of McKenzie (1999) concludes that exchange rate fluctuations may impact differently on different markets and calls for further tests using export market specific data. A number of earlier studies employ only cross sectional or time series data and therefore the results from these studies is mixed. For example in the study by Hooper and Kohlhagen (1978), they used time-series data to examine the impact of exchange rate volatility on exports of industrialised countries and found essentially no evidence of any negative relationship.

De Grauwe (1988), states that an increase in foreign exchange risk has both a substitution and an income effect. The substitution effect per se decreases export activities as an increase in exchange rate risk induces agents to shift from risky export activities to less risky ones. The income effect, on the other hand, induces a shift of resources into the export sector when expected utility of export revenues declines as a result of the increase in exchange rate risk. If the income effect dominates the substitution effect, exchange rate fluctuation will have a positive impact on export activity and vice versa. In addition, an increase in foreign exchange fluctuations can create profit opportunities for exports if firms in this sector can protect themselves against negative effects of foreign exchange rate fluctuations by hedging or if they have the ability to adjust trade volumes to movements in the exchange rate.

From a political economy point of view, Brada and Mendez (1988) note that exchange rate movements facilitate the adjustment of balance of payments in an event of external shocks, and thus, reduce the use of trade restrictions and capital controls to achieve equilibrium, and this in turn encourages international trade. Economic theory suggests that when markets are free of distortions, an exchange rate misalignment has no long run effects on export earnings as it does not change relative prices. But long run effects are predicted in models that assume market distortions such as information problems or product market failures. In the short run when some prices in the economy can be sticky, movements in nominal exchange rates can alter relative prices and affect international trade flows (Marc and Michelle, 2011).

Coric and Pugh (2010), state that on average, foreign exchange rate fluctuations exert negative effects on international trade. Exporting firms may be more sensitive to foreign exchange rate fluctuations than domestic firms but this sensitivity is likely to be reduced by

factors such as the existence of hedging instruments, the presence of imported inputs, the presence of firms on the global market where upward and downward movements of various exchange rates cancel out, the possibility of invoicing in the local currency and the capacity to absorb losses due to exchange rate changes and other factors in profit margins.

Kenya, like other developing countries has experienced a combination of exogenous shocks such as worsening terms of trade mainly on account of fluctuations in international commodity prices, oil price shocks and volatility in capital flows, which have created macroeconomic management policy challenges. External shocks require appropriate fiscal and monetary policies and the adoption of a flexible exchange rate regime to prevent the emergence of unsustainable current account deficits, growing foreign debt burdens and steady losses of international competitiveness. Kenya's vulnerability to external shocks is amplified by its concentration in agricultural product exports such as tea, coffee and horticulture, thus exposing the country's export earnings to direct impacts of fluctuations in exchange rates (Otieno and Mudaki, 2011).

More recent studies using panel data tend to find evidence of a negative effect of exchange rate fluctuations on export earnings. The choice of the data to use in these studies has both advantages and disadvantages for example, Dell'Arricia (1999) notes that unobservable cross sectional specific effects which may have an impact on export trade flows such as cross country structural and policy differences, can be accounted for either via fixed effects or random specification effects. The effect of foreign exchange rate fluctuations on export earnings is a delicate but critical issue that needs to be understood since there are varied findings by studies done elsewhere regarding the effects of foreign exchange rate fluctuations on export earnings.

1.1.4 Horticultural Industry in Kenya

The Horticultural industry in Kenya is the fastest growing industry within the agricultural sector, recording an average growth rate of 15% to 20% per annum. It contributes positively to wealth creation, poverty alleviation, and gender equity especially in rural areas. The industry continues to contribute to the Kenyan economy through generation of income, creation of employment opportunities and foreign exchange earnings, in addition to providing raw materials to the agro processing industry. The sub sector employs approximately 4.5 million people countrywide directly in production, processing, and marketing, while another 3.5 million people benefit indirectly through trade and other activities (KHC, 2014). Europe

forms the base market for Kenya's fresh horticultural produce with the main importing countries being the United Kingdom, Germany, France, Switzerland, Belgium, Holland and Italy.

A well developed and dynamic private sector has profitably marketed a wide range of horticultural products to diverse international markets. The government has minimally come in to encourage sectoral growth through infrastructure development, incentives and support services. Structural and macroeconomic reforms plus the introduction of a more liberal trading environment has provided a major boost to the country's horticultural prospects. The horticultural sector currently ranks as one of the economy's fastest growing sectors and is ranked among the largest foreign exchange earners in the country. This is shown through its continuous year to year expansion in fruit, vegetable and cut flower exports. The growth trend is expected to continue as a result of a number of positive attributes in the sector (HCDA, 2014). According to Nyangweso et al., (2004), The Kenyan horticultural industry has experienced rapid growth due to the active role of the private sector in the industry and the minimal government interference experienced.

Domestic horticulture is particularly dominated by small-sale production. HCDA estimates that about 800, 000 small scale farmers are involved in growing fruits and vegetables for export. Further, HCDA estimates that small scale farmers produce 50 percent of exported fruits and 70 percent of exported vegetables. However, due to the capital-intensive nature of flower production and the requirements by importers, flowers and some vegetable production is dominated by large-scale producers. Horticultural export production is currently facing major regulatory challenges e.g. imposition and monitoring of the EU maximum residue level legislation which sets residues at the limit of detection for certain pesticides used in vegetable production. Complying with these requirements is an additional cost to production and thereby reduces horticultural profits further (HCDA, 2014). The key constraints in the horticultural sector include: increasing costs of production resulting from market requirements to comply with environmental and social conditions such as quality attributes, production standards and safety requirements, stagnating or declining prices of exports coupled with increasing production costs which reduce profits. A large number of small-scale producers are therefore marginalized because they are unable to meet these requirements (HCDA, 2014).

1.2 Research Problem

There is growing agreement in literature that substantial exchange rate fluctuations create severe macroeconomic disequilibria on export earnings and the correction of this external balance requires both exchange rate devaluation and management policies. The main argument behind this is that an increase in exchange rate fluctuations leads to uncertainty which might have a negative impact on export earnings. According to Anderton and Skudelny (2001), the economic logic underpinning the negative link between exchange rate fluctuations and export earnings leads to the aversion of export firms from engaging in trade and this leads to loss of export earnings. In a study by, Baldwin, Skudelny and Taglioni (2005) they discovered that the effect of exchange rate risk occasioned by exchange rate fluctuations on export earnings in the EU countries is negative; Export earnings therefore increase as exchange rate fluctuations decrease and they decrease as exchange rate fluctuations increase.

The horticultural export earnings in Kenya, have improved since 2002, but continue to fall short of the ambitions of vision 2030. The level of the Kenya shilling exchange rate continues to be determined by forces of demand and supply in the foreign exchange market. Questions have arisen in the policy arena and in the public domain in most cases revolving around the possible effects of the appreciation and depreciation of the Kenya shilling real exchange rate against key currencies on horticultural export earnings (Malcolm et al., 2000). The Kenya shilling depreciated in value against the dollar in the period under study (2009 - 2013) from Kshs 77.9 per dollar in June 2009 to Kshs 85.5 per dollar in 2013. During this period, the shilling performed worst in June 2011 hitting a high of Kshs 89 per dollar as compared to June 2010 when the shilling exchanged at Kshs 81 per dollar. In June 2012 the shilling exchanged at an average of Kshs 84.8 per dollar (CBK, 2013).

Pollin and Heintz (2007) call for a reassessment of monetary policy with a view to achieving a more depreciated shilling. The biggest devaluation of exchange rates was in the period 1990-1994, and it is mirrored by a jump in the parallel market premium. The real interest rate, while mostly positive, was relatively low until recent years. Export earnings lacked dynamism, leading to a chronic balance of payment deficit. This was reflected in the rapid growth of external debt. Perhaps the most significant growth detracting element was the chronic fiscal deficit. This created widespread financial uncertainty, which is reflected in the

declining rates of savings and investment. Viewed in broader terms, Kenya's economy has not performed at anywhere near its potential (Malcolm et al., 2000).

Studies done on exchange rate fluctuations and export earnings reflect relatively an inconclusive state of early theoretical models regarding the effects of exchange rate fluctuations on export earnings, the empirical work conducted by academics and policy oriented economists in support of theoretical considerations leaves more or less ambiguous evidence of the effects of exchange rate fluctuations on export earnings. Taglioni (2005) indicates that it's customarily presumed that there is an adverse effect of exchange rate fluctuations on export earnings but it's certainly not large". This conclusion is shared by Ozturk (2006). In his study, Ozturk (2006) comes up with a comprehensive account of the empirical surveys dedicated to the impact of exchange rate fluctuations. His study concludes on a rather wide mix of evidence, some in favor of and some against the hypothesis of a negative relationship between exchange rate fluctuations, trade and export earnings. These mixed conclusions are perhaps best illustrated in the IMF's 2004 study on exchange rate fluctuations and trade flows, IMF (2004). This study allowed for an exploration of the effects of exchange rate fluctuations, trade and export earnings along several new dimensions. IMF's conclusion was that there was no "obvious negative relationship between aggregate exchange rate fluctuations and aggregate trade and export earnings" These conclusions need to be elaborated especially in the case of the Kenyan horticultural export earnings and therefore necessitates this study to establish the true picture in the Kenyan scenario.

This study intended to address the working research question, what is the effect of foreign exchange rate fluctuations on horticultural export earnings in Kenya?

1.3 Objective of the Study

To examine the effect of foreign exchange rate fluctuations on horticultural export earnings in Kenya

1.4 Value of the Study

The results from this study will be useful to existing and prospective exporters in Kenya in understanding the effects of foreign exchange rate fluctuations on horticultural export earnings in Kenya. These results can be utilised by other stakeholders in this and other industries to develop coping mechanisms for similar effects experienced by them. This will also inform the government and related agencies especially in the horticultural sector, in

coming up with policies to boost the horticultural industry in Kenya. The information will guide these organisations in planning and will inform their strategies when coming up with such policies.

Researchers and students will benefit from this study in that they will be in a position to get information that can help them while carrying out research work in related fields to advance their research papers and projects respectively. This research will also increase the knowledge base concerning the effects of foreign exchange rate fluctuations on horticultural export earnings in Kenya. Importers, exporters, investors and monetary authorities are all concerned with the behaviour of the exchange rate, as it directly or indirectly affects them. The behaviour of the exchange rate is, therefore, a useful indicator of economic export performance that needs to be understood.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter describes the theories of exchange rate fluctuations, determinants of export earnings, and an empirical review of past studies on related areas after which it concludes with a summary of the literature review.

2.2 Theoretical Review

Four major theories are used in explaining movements in foreign exchange rates between countries. These are the Purchasing Power Parity theorem, International Fisher Effect, Mundell- Fleming model and the Balassa- Samuelson model as elaborated below.

2.2.1 Purchasing Power Parity Theorem

This theory was developed by Cassel in 1918. The theory if 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. 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 is expressed as below: (Madura, 2007).

$$\text{Percentage change in the direct quote} = \frac{(\text{Inflation rate in home market}) - (\text{Inflation rate in foreign market})}{((\text{Inflation rate in the foreign market}) + 1)} * 100$$

2.2.2 International Fisher Effect

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 foreign 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).

The international Fisher effect (IFE) suggests that currencies with high interest rates will have high expected inflation and therefore will be expected to depreciate. Therefore, investors based in the home country may not necessarily attempt to invest in interest bearing securities in foreign countries because the exchange rate effect could offset the interest rate advantage. The exchange rate effect is not expected to perfectly offset the interest rate advantage in every period. It could be less pronounced in some periods and more pronounced in other periods. But advocates of the IFE suggest that on average, investors that attempt to invest in interest bearing securities with high interest rates would not benefit because the best guess of the return after accounting for the exchange rate effect in any period would be equal to what they could earn domestically. The International Fisher Effect can be expressed as follows: (Madura, 2007).

$$\text{Percentage change in the direct quote} = \frac{((\text{Interest rate in home market}) - \text{Interest rate in foreign market}))}{(\text{Interest rate in the foreign market} + 1)} * 100$$

2.2.3 The Mundell-Fleming Model

This theory was developed in the early 1960's by Fleming and Mundell. They independently extended the open economy Keynesian model of macroeconomic policy to incorporate systematically the role of capital flows. In 1970, Dornbusch published a series of articles on exchange rate policy that codified these contributions into the Mundell Fleming model. This model is an extension of the IS-LM model to the case of an open economy, and thus provides understanding of how the exchange rate is determined. The IS-LM model considers three markets: goods, money and asset markets, and is mainly used to analyze the impacts of monetary policy and fiscal policy. Under this model, the balance of international payments is considered another equilibrium condition in addition to the money market and goods market. One of the most important issues addressed by the model is the trilemma, which states that perfect capital mobility, monetary policy independence and a fixed exchange rate regime cannot be achieved simultaneously. Specifically, it argues that a country cannot sustain monetary policy independence in a fixed exchange rate regime with perfect capital mobility. However, this argument is made in a small country setting, and it is not necessarily true in bigger economies (Akila, 2004).

2.2.4 Balassa-Samuelson Model

This theory was developed by Balassa and Samuelson in 1964. They independently provided what has come to be regarded as definitive explanation of why the absolute PPP theory is flawed as a theory of exchange rates. The Balassa-Samuelson model is one of the cornerstones of the traditional theory of the real equilibrium exchange rate. The key empirical observation underlying the model is that countries with higher productivity in tradables compared with non-tradables tend to have high price levels. The B-S model hypothesis states that productivity gains in the tradable sector allow real wages to increase commensurately and, since wages are assumed to link the tradable to the non-tradable sector, wages and prices also increase in the non-tradable sector. This leads to an increase in the overall price level in the economy, which in turn results in an appreciation of the real exchange rate (Akila, 2004).

2.3 Determinants of Export Earnings

Export earnings are regarded as one of the key indicators of an economy's performance. Research into export earnings has grown considerably during the past few decades. While numerous studies have been conducted to explain export earnings and its antecedents, there is

no generally accepted conceptualization. Export earnings represent the outcome of an economy's activities in export markets (Sousa, Martinez-Lopez, and Coelho, 2008). A number of factors have been brought forth as the determinants of export earnings as listed below.

Foreign Exchange Rate Fluctuations

Otieno and Mudaki (2011), state that swings in foreign exchange rates determine export earnings of the exporting country. Recently, exchange rate fluctuations have increased posing challenges for macro management. Kiptui (2008), states that there is need to monitor exchange rate fluctuations and to adopt appropriate monetary and fiscal policies to ensure stability in exchange rates and thereby stability in export earnings. Although exporters and policy makers alike have often been preoccupied with the recent steep exchange rate appreciation, focus needs to shift to exchange rate fluctuations and support towards reforms that enable exporters to hedge against exchange rate risk such as developing forward and futures markets which basically represent long term solutions. In the short run however, the pursuit of appropriate fiscal and monetary policies to counter volatile short term capital inflows would help reduce the effects of such changes on the countries currency. While maintaining a stable exchange rate is important, strategies that lead to a relatively overvalued exchange rate could be a disincentive to exports, implying that flexibility in exchange rate movements, in line with the fundamentals of the economy might be beneficial. With the rising level of globalisation, openness through an export led growth strategy is inevitable, particularly in consideration of other development constraints currently facing the country (Were et al, 2000).

Inflation

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).

Foreign Direct Investment

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).

Domestic Transport Infrastructure

Export earnings depend critically on the availability of physical infrastructure, ranging from roads and ports to energy and telecommunications. It appears that internal transport costs have a significant impact on export earnings. Internal transport facilitation plays an important role across all regions in explaining export earnings in later periods. Its significance appears to be more marked among better performing exporters. Internal transport infrastructure plays an important role in export sector development. Most African countries, are characterized by poor transport infrastructure, and are found in all periods to be poor export performers. This indicates that Kenya could do more to raise its supply capacity by investing in transport infrastructure. This conclusion is supported by the study by Limao and Venables (2001) who present some empirical analysis indicating that levels of export trade flows observed for African countries are relatively low, essentially because of poor transport infrastructure. This could be more acute in the case of landlocked countries because of their geographical handicaps. The fact that there is still a substantial investment in infrastructure in Kenya could explain the slow upward mobility in export earnings (Fugazza, 2004).

Macroeconomic Environment

An overvalued currency, sometimes as a result of fixed exchange rates that are used as a nominal anchor to control inflationary pressures, translates into a direct loss of price competitiveness for exporting firms. In other words, good export performers are more likely to have a stronger position in more capital intensive or differentiated product markets and may face less aggressive competitors than exporters in more labour intensive product markets. As a consequence, their competitiveness might be expected to be less sensitive to small movements in the real exchange rate, and relatively more dependent on technological content of their product and thus to a large extent on capital. This is not likely to be the case for producers exporting low skill intensive products, which are highly substitutable and whose demand is very volatile and price sensitive (Fugazza, 2004).

2.4 Empirical Review

A number of researchers have carried out studies on the effects of foreign exchange rate fluctuations on export performance. Some of them have concluded that the relationship between exchange rate fluctuations and export performance is positive while others have concluded that the relationship is negative. Some of these studies are expounded below.

2.4.1 International Evidence

Batten and Belongia (1984) conducted a study on the decline of agricultural export earnings in the US due to the effect of fluctuations of the exchange rate and came to a conclusion that a negative nexus exists between fluctuations in exchange rates and agricultural export earnings. Fabiosa (2002) in his working paper examined the impact of foreign exchange fluctuations on pork and live swine exports. The pork export supply equation was expressed as a function of the expected level of real exchange rate and a time-varying variance of real exchange rate. The same model was used to examine the sensitivity of pork exports to Japan from Canada, the United States and Denmark. The parameters of all pork and live swine in export equations were theoretically consistent and many were significant. His study concluded that the level of the exchange rate has a significant positive effect on pork export earnings, with more pork products being exported when there is a depreciation of the domestic currency.

Arize, Osang and Slottje (2004) investigated the impact of real exchange rate volatility on export flows of eight Latin American countries. The results show that increases in

fluctuations of the exchange rate exert a significant negative effect on export demand in both the short and long-run thereby decreasing export earnings. In Ghana, Bhattarai and Armah (2005) confirm a stable long run relationship between both exports and imports and the exchange rate. They also found that when the domestic currency weakens, that is devaluation; the effect on both imports and exports is contractionary. Examining the impact of exchange rate fluctuations on South African export flows, Todani and Munyama (2005), came to more or less the same conclusion with respect to the differential impact of foreign exchange rate fluctuations on export earnings of agricultural and non-agricultural exports. Cameron et al., (2005) investigated the effects of exchange rate variability on Uganda's tropical freshwater fish exports. The empirical evidence suggests that Uganda's export earnings of fish were negatively and significantly correlated with foreign exchange rate fluctuations.

Chit et al. (2010) examined the real exports of five emerging East Asian economies among themselves, as well as to thirteen industrialized countries. The paper provides strong evidence that exchange rate fluctuations have had a statistically significant negative impact on the export earnings of those emerging East Asian economies. They also tested the impact of foreign exchange rate fluctuations on third world countries to establish whether a rise in exchange rate fluctuations between the importing country and other exporting countries encouraged bilateral exports between two trading partners. Their findings tend to confirm that not only absolute fluctuations but also relative fluctuations are important for bilateral export flows and earnings of emerging East Asian economies. They conclude that exchange rate fluctuations in East Asian economies have a significant negative impact on export flows and earnings to the world market.

Bristy (2013) analysed the impact of exchange rate volatility on exports of Bangladesh. This study inspected how exchange rate depreciation and its volatility affect exports of Bangladesh. The study found that exchange rate depreciation has a positive impact on export earnings of Bangladesh. Despite a positive link between export demand and exchange rate depreciation, He found that the trade balance of Bangladesh was deteriorating over the year. He attributes this to too much fluctuation in the exchange rate that offsets the export growth generated by depreciation. He states that international trade depends on interpersonal relationship and because of long run relationship between countries; trade may not response immediately with the change of exchange rate policy. Therefore, the previous year's exchange rate plays a significant role in augmenting exports. He concludes that, a good

understanding of economic and business environment of trading partners policies are needed to improve export earnings of Bangladesh.

2.4.2 Local Evidence

Ndung'u et al., (2001) examined Kenya's exchange rate movements in a liberalized environment. Using an error correction formulation, the empirical results show that widening of the interest rate differential, improvements in the current account balance and increases in the external inflows are strongly associated with the appreciation of exchange rates. A rise in the price differential is also associated with real exchange rate appreciation. In addition, the exchange rate movements are significantly driven by events such as expectations regarding the outcome of withholding donor funding and other intermittent changes in the economy. They concluded in their study that exchange rate fluctuations have negative effects on Kenya's export earnings. Were et al (2002) carried out a study on Kenya's export performance. They attempted to examine factors that influence trends in Kenya's horticultural exports. These factors were categorized into price and production factors. The production or non-price factors generally included government intervention, costs of inputs and labour costs. They concluded that the exchange rate has a profound effect on Kenya's Horticultural export performance and the potential for export supply response is evident. They state that while maintaining a stable exchange rate is important, strategies that lead to a relatively overvalued exchange rate could be a disincentive to export performance, implying that flexibility in the exchange rate movements, in line with the fundamentals of the economy might be beneficial to horticultural export performance.

Mwanza (2007) carried out a study on the effect of the strong Kenya shilling on horticultural exports in the period around year 2003. He notes that the country had been experiencing sudden movements in the foreign currency rates in certain period's yet horticultural export earnings had been gradually increasing. He gives an example in 2003 when Kenya experienced adverse effects of a strong shilling on export earnings which wiped out millions of earnings resulting in losses. He concludes in his study that a strong shilling portends mixed fortunes. Kiptui (2008) conducted a research study on whether exchange rate volatility harms Kenyan exports and concluded that foreign exchange rate fluctuations have significant negative short and long run effects on Kenya's real exports of tea and horticulture.

Otieno and Mudaki (2011) in their study, factors influencing real exchange rate and export sector performance in Kenya argue that the real exchange rate has positive effects in the

short-run but these effects are found to be statistically insignificant. Nevertheless, the short run elasticities are high and positive as in the case of coffee and manufactured goods which are close to unity. Therefore the effects of the real exchange rate are more likely to be long term in nature rather than short term. Concerns over short run effects of real exchange rate appreciation are therefore unwarranted. From their findings, they also conclude that exchange rate fluctuations have not been to levels that harm export growth and thereby earnings, that is, there could exist a threshold level at which exchange rate fluctuations harm exports. The positive relationship between export performance and depreciation of the shilling in real terms in Kenya has raised questions over underlying determinants of demand for the country's exports. While it has been argued by some that the exchange rate is a factor, others point to favourable economic growth prospects in export destination countries.

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. The short-run dynamics of the French beans export demand model were estimated using a Vector Error Correction model and the coefficient on error correction term was found to be -0.77. The negative sign of this coefficient indicated that the direction of correction is towards the long-run equilibrium while the size indicated the speed of adjustment towards the long-run equilibrium. The results of this study indicate that exchange rate volatility is one of the variables that influence performance of French beans exports from Kenya to the European Union market with a negative and elastic short run and long run relationship. They also conclude that there is interdependence between exchange rate stability, macroeconomic stability, institutional reforms and export performance.

2.5 Summary of Literature Review

From the empirical studies conducted by different researchers on the effect of foreign exchange rate fluctuations on export earnings, different conclusions have been made. While some researchers such as Ndung'u (2001), Kiptui (2008) and Mwangi et al., (2014) posit a negative nexus between fluctuations in foreign exchange rates and export earnings, others such as Fabiosa (2002), Otieno and Mudaki (2011) and Bristy (2013) conclude that the relationship between export earnings and foreign exchange rate fluctuations are positive. Some studies however, conclude that the relationships established are statistically insignificant. The Economic Report of Africa (2010) shows that most countries with floating foreign exchange rate regimes have performed poorly in the export sector, in terms of export earnings and volumes, especially those with a comparative advantage in the horticultural export sector. This is however not the case for Kenya as the country's horticultural export sector has recorded continuous annual increments in export earnings and volumes under the floating rate system.

Prior studies on this area have mainly focused on the effect of foreign exchange rate fluctuations even though there are other factors apart from fluctuations of foreign exchange rates that hinder horticultural export earnings, most of which are not correlated with either the floating or fixed rate regimes. These factors vary among countries with comparative advantage in the horticultural export sector. Although there is a wide range of factors that have been identified from related studies as factors responsible for export earnings, most studies empirically tend to narrow these factors to price variables, indicating the difficulty of quantifying non-price variables or obtaining reliable and complete set of data (Alemayehu, 1999). According to Otieno and Mudaki (2011), recurring policy objectives have been to maintain an exchange rate that would ensure international competitiveness and minimal negative effects on export earnings, while at the same time keeping the domestic rate of inflation at low levels. This has however been difficult in practice. This research project fills this gap by analysing fluctuations in foreign exchange rates and examining their effects on horticultural export earnings in Kenya. Few studies have been done on the horticultural export sector in Kenya with regard to how these export earnings are affected by fluctuations in foreign exchange rate. This study aimed to put this into perspective as well as analyse the effect of other factors; inflation and foreign direct investments on Kenya's horticultural export earnings.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter discusses the overall methodology that was adopted in conducting this study and it's divided into the following sections: Research Design, Population, Data collection and Data analysis.

3.2 Research Design

Kothari (2004) defines research design as the arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to research purpose with economy in procedure. Kothari goes further to state that "in fact, research design is the conceptual structure within which research is conducted: It contributes the blue print for the collection, measurement and analysis of data". This research study is quantitative and specifically descriptive research. Descriptive research is the process of collecting data in order to answer questions concerning the current status of the subjects in the study. Saunders et al. (2003), states that descriptive research portrays an accurate profile of persons, events or situations. This research design offers the researcher a profile or describes relevant aspects of the phenomena of interest from an individual, organizational, industry oriented or other perspectives.

Saunders et al. (2003), goes ahead to explain that descriptive research helps present data in a meaningful form and it thus helps the researcher to understand characteristics of different groupings in a given situation. Descriptive research design also helps the researcher to think systematically about aspects in a given situation under his/her study and offers ideas for further probe into the issues under research to help make decisions (Sekaran, 2003). This will involve generation of data in a quantitative form that will be subjected to rigorous quantitative analysis in a formal and rigid fashion. With this type of research therefore, numerical analysis will be possible which is of great importance when we come to comparative analysis.

3.3 Population

The population under study was the aggregate of licensed horticultural produce exporters (Licensed by HCDA). Monthly export earnings for all the licensed horticultural produce exporters as provided by HCDA were analysed. The unit of analysis was the aggregate horticultural export earnings therefore this study was a census study.

3.4 Data Collection

This study used secondary data gathered from HCDA, KNBS, and CBK for the period of five years (2009 - 2013), to try and derive a whole-some understanding that helped the researcher achieve the research objective stated. Horticultural export earnings statistics data were obtained from HCDA; Data on foreign exchange rate fluctuations was obtained from CBK while data on inflation was obtained from KNBS.

3.5 Data Analysis

The data collected was processed, analysed, interpreted and presented in such a manner that it was clear, precise and unambiguous. This data was quantified and coded using descriptive statistics. The Statistical package for social sciences (SPSS16) was used to describe the collected data, sort and sift through and analyse it. Measures of central tendency were used in data analysis together with tests of significance.

3.5.1 Analytical Model

The data was expressed in the form of an equation $Y=\alpha+\beta_1X_1+\beta_2X_2+\beta_3X_3+\varepsilon$

Where: Y= Log of Total horticultural export earnings

X_1 = Monthly Foreign exchange rate (Kshs Vs the dollar)

X_2 = Monthly Inflation

X_3 = Monthly Foreign direct investment as a percentage of the country's GDP

ε = Error term

3.5.2 Test of Significance

The researcher employed tests of significance tools mainly Analysis of variance (ANOVA), Coefficient of determination (R^2), Correlation coefficient (R) and the F statistic to better understand the different relationships between the variables in the study. Through ANOVA, the researcher established a statistical test of whether or not the means of the groups under study were equal. In measuring how well the regression model fits the data in the study, the researcher employed the use of the goodness of fit statistic R^2. The R^2 calculated was used to examine how close the data was to the fitted regression line. The R test was used to measure the strength and the direction of the linear relationship between variables. R is defined as the covariance of the variables divided by the product of their standard deviations. The F statistic was used to measure variances in the population under study. The significance of the regression results were tested using the F test statistic which is basically a ratio that compares the explained sum of squares and the unexplained sum of squares.

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents findings from analysed secondary data. Descriptive statistics and model results are presented. This chapter also includes results interpretation and summary of the findings.

4.2. Descriptive Statistics

Descriptive statistics presents the mean, maximum and minimum values of variables used in this study together with their standard deviations.

Table 4.1 Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Horticultural Export Earnings	60	9.58501	9.89226	9.7309783E0	.07170120
Monthly Exchange Rate	60	1.87355	2.00548	1.9193535E0	.02704851
Monthly Inflation Index	60	-1.49757	-.56067	1.1282305E0	.26608388
Monthly Foreign Direct Investment as a percentage of GDP	60	-1.47712	-1.07918	1.2633450E0	.16173471
Valid N (list wise)	60				

Source: Research Findings

Table 4.1 above gives the descriptive statistics for the variables used in this study. The descriptive analysis of all the variables in this study was sourced using SPSS 16 software for the period of five years (2009 to 2013) for the horticultural export industry in Kenya. Horticultural export earnings had mean of 9.731 with a standard deviation of 0.0717. The exchange rate had a mean of 1.9194 with a standard deviation of 0.027; inflation index had a mean of 1.128 with a standard deviation of 0.266 while foreign direct investment as a percentage of GDP had a mean of 1.2633 with a standard deviation of 0.1617

4.3 Correlation and Regression Analysis

4.3.1 Correlation Coefficients

Correlation coefficients were used to analyse the effects of exchange rate, inflation and foreign direct investment as a percentage of GDP on horticultural export earnings in Kenya. As a key assumption of the regression model, this study sought to establish if there was linearity between the independent variable and the independent variables. Pearson correlation was used to analyse the correlations between the independent variables and the horticultural export earnings.

Table 4.2 Pearson Correlation Matrix

Pearson Correlation	Horticultural Export Earnings	Monthly Exchange Rate	Monthly Inflation Index	Monthly Foreign Direct Investment as a percentage of GDP
Horticultural Export Earnings	1.000	.689	-.192	.772
Monthly Exchange Rate	.689	1.000	.289	.782
Monthly Inflation Index	-.192	.289	1.000	.015
Monthly Foreign Direct Investment as a percentage of GDP	.772	.782	.015	1.000

Source: Research Findings

From Table 4.2, all the independent variables are correlated to the dependent variable. From the table, the exchange rate had a correlation coefficient of 68.9% with horticultural export earnings. The correlation coefficient between inflation and horticultural export earnings was negative 19.2 % while foreign direct investment as a percentage of GDP had a correlation coefficient of 77.2 % to horticultural export earnings.

4.3.2 Goodness of Fit Statistics

Table 4.3 indicates the strength of the relationship between horticultural export earnings and the independent variables; the exchange rate, inflation and foreign direct investment as a percentage of GDP. The results from this model show a standard deviation of 70.1 % and an adjusted R square of 68.5% which indicates that the model is very reliable

Table 4.3 Goodness of Fit Statistics

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.837[a]	.701	.685	.04021920

Source: Research Findings

Adjusted R squared is the adjusted coefficient of determination which tells us the variation in the dependent variable due to changes in the independent variables. From the findings in table 4.3 above, the value of the Adjusted R square was 0.685, an Indication that 68.5% of the variations in horticultural export earnings in Kenya are caused by changes in exchange rates, inflation and foreign direct investment at 95% confidence interval. Other factors not stated in the model account for 31.5% of the variations in horticultural export earnings in Kenya. R is the correlation coefficient which in this case was 83.7%. This showed that there was a strong positive relationship between the study variables: the exchange rate, inflation and foreign direct investment as a percentage of GDP.

4.3.3 Analysis of Variance

Table 4.4 Analysis of Variance

Model	Sum of Squares	Df	Mean Square	F	Sig.
1 Regression	.213	3	.071	43.839	.000[a]
Residual	.091	56	.002		
Total	.303	59			

Source: Research Findings

From the analysis of variance in table 4.4, the F Test of 43.839 indicates that the regressions explanatory power on the overall significance was strong. The significance value of 0.00 obtained implies that the regression model was significant in predicting the relationship between horticultural export earnings and the predictor variables as it was less than $\alpha = 0.05$. This significance level means that the chances are almost zero that the results of the regression model were due to random exogenous events instead of the true relationship existing in the model.

4.3.4 Regression Model

Regression analysis was used to predict statistical significance between the dependent and independent variables. Regression analysis measures the effect of the relationship of the independent variables on the dependent variable. The researcher conducted a multiple regression analysis to investigate the impact of the given independent variables (exchange rate, inflation and foreign direct investment) on the horticultural export earnings in Kenya. The model used for the regression analysis was expressed in the form of the equation below

$$\mathbf{Y=\alpha +\beta_1 X_1 + \beta_2 X_2+\beta_3 X_3 + \varepsilon}$$

Table 4.5 Regression Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	7.550	.735		10.268	.000
Monthly Exchange Rate (MER)	1.207	.347	.455	3.480	.001
Monthly Inflation Index (MII)	-.089	.022	-.329	-4.039	.000
Monthly Foreign Direct Investment as a percentage of GDP (MFDI)	.186	.056	.421	3.357	.001

Source: Research Findings

Table 4.5 interprets the standardized regression coefficients (Beta). In estimating the contribution of each of the independent variables to the study it was established that all the independent variables had a significant contribution to the variance of the dependent variable

at a significance level of 0.05. The relative importance of each of the independent variables was however different as shown in table 4.5.

The regression equation after estimation was given as

$Y= 7.550 + 0.455 X_1 - 0.329 X_2 + 0.421 X_3 + \varepsilon$

From the regression equation above, it was established that holding the exchange rate (X_1), inflation (X_2) and foreign direct investment as a percentage of GDP (X_3) to a constant zero, horticultural export earnings would stand at 7.55

4.4 Interpretation of the Findings

This study established that there was a significant relationship between foreign exchange rate fluctuations and Kenya's horticultural export earnings. Table 4.2 shows the results of the correlations from which the exchange rate had a correlation coefficient of 68.9% to horticultural export earnings; inflation had a negative coefficient of correlation of 19.2% while foreign direct investment as a percentage of GDP had a correlation coefficient of 77.2%. In summary therefore and based on these correlation coefficients, the higher the exchange rate and foreign direct investment as a percentage of GDP, the higher the horticultural export earnings that will be achieved in the country. The correlation coefficient matrix reveals strong relationships between horticultural export earnings and the exchange rate and foreign direct investment as a percentage of GDP while the relationship between inflation and horticultural export earnings is negative.

The coefficient of determination as explained by the adjusted R squared for the study was 68.5% which means that the independent variables (the exchange rate, inflation and foreign direct investment as a percentage of GDP) account for 68.5 % of the changes in horticultural export earnings in Kenya at 95% confidence level. This also means that other factors not stated in the model account for 31.5% of the horticultural export earnings in Kenya. From the research findings and based on the magnitude of the beta coefficients, the exchange rate is the greatest predictor of Kenya's horticultural export earnings (.455, t= 3.48, sig. 0.001) followed by foreign direct investment as a percentage of GDP (.421, t= 3.357, sig. 0.001) and lastly inflation index (-.329, t = -4.039, sig. 0.000). The exchange rate is therefore a major determinant of horticultural export earnings in Kenya. The results indicate that holding other things constant, a unit increase in the exchange rate would lead to a 0.455 unit increase in

horticultural export earnings in Kenya. The significance values of the coefficients in the model are less that 0.05 indicating that the coefficients are significant.

Foreign direct investment is a significant determinant of Kenya's horticultural export earnings. The findings of this study indicate that a unit increase in foreign direct investment leads to a 0.421 unit increase in horticultural export earnings in Kenya. This could be explained by the structural developments that result from foreign direct investments which decrease the cost of production thereby impacting positively on the returns from horticultural products. Inflation had a negative relationship with export earnings in that a unit increase in inflation leads to 0.329 unit decrease in horticultural export earnings of Kenya. Inflation is the sustained increase in the general price levels of goods and services in an economy over a period of time. This therefore leads to the loss in purchasing power of the Kenya shilling and therefore deflates the earnings achieved from sale of Kenya's horticultural products. Looking at the study as a whole, the findings were statistically significant since the significance values of the coefficients were found to be close to 0.000 and less than 0.05. This is an indication that the error rate on making conclusions using the model derived from the findings was low and therefore the recommendations from these findings reflect the true picture of the effects of these independent variables (the exchange rate, inflation and foreign direct investment) on the horticultural export earnings in Kenya.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECCOMENDATIONS

5.1 Introduction

This chapter summarizes the study and makes conclusions based on the results of the study. Policy recommendations, limitations of the study and recommendations for further research are also presented. This section also presents the findings from the study in comparison to what other scholars have concluded as noted under literature review.

5.2 Summary

The objective of this study was to establish the effect of foreign exchange rate fluctuations on horticultural export earnings in Kenya. The research methodology involved the use of secondary data collected from Kenya national bureau of statistics, the central bank of Kenya and the Horticultural crops development authority. The descriptive statistics helped the study to describe the relevant aspects of the phenomena under consideration and it provided detailed relevant information about each of the variables under study. The research findings indicate that there is a positive relationship between the exchange rate fluctuations and horticultural export earnings in Kenya. The implication of these findings is that an increase in exchange rate fluctuations affects horticultural export earnings in Kenya positively.

The regression results show that when the exchange rate fluctuation, inflation and foreign direct investment as a percentage of GDP have zero values then the space allocation will be 7.55. From the findings, it is also established that a unit increase in the exchange rate leads to a 0.455 unit increase in horticultural export earnings; a unit increase in inflation leads to a decrease of 0.329 units in horticultural export earnings while a unit increase in foreign direct investment leads to an increase of 0.421 units in horticultural export earnings in Kenya. The findings of this study are consistent with those of Fabiosa (2002), Otieno and Mudaki (2011) and Bristy (2013) who concluded that the relationship between export earnings and foreign exchange rate fluctuations are positive. They also conclude in their studies that the exchange rate is an important determinant of a countries export earnings, conclusions which are consistent with those made in this study.

5.3 Conclusion

This study examined the effects of foreign exchange rate fluctuations on horticultural export earnings in Kenya using monthly time series data from 2009-2013. In this study, the dependent variable was horticultural export earnings while foreign exchange rate fluctuations, inflation and foreign direct investment as a percentage of GDP were independent variables. The independent variables were found to be statistically significant determinants of Kenya's horticultural export earnings. Export performance of successful economies has been driven mostly by supply capacity although this has a limited effect on developing countries and this includes Kenya. Political instability, weak and poor institutional and macroeconomic environment and poor infrastructure have continued to drag the performance of the horticultural industry in Kenya thereby negatively affecting export earnings from this sector. In this study a conclusion was drawn that the exchange rate is a major determinant of the horticultural export earnings in Kenya. This was consistent with the findings of Were et al (2002) whose study on Kenya's export performance revealed that the exchange rate had a profound effect on Kenya's horticultural export performance.

5.4 Policy Recommendations

Under Vision 2030, Kenya should have been transformed into an industrialised middle income country with a middle income economy and it should be able to provide quality life to all of its citizens. If this is to be realized, there is need for the government to encourage and boost exports from the country and horticultural exports in particular in order to boost the country's export earnings. The government needs to establish special economic zones in partnership with private investors to support increased exports and competition and this will definitely lead to export diversification and hence increased export earnings.

There is need for the government to ensure political stability and national security by dealing with the current terror threats and ensure a stable and conducive macroeconomic stability in the country in order to attract foreign direct investment. Macroeconomic stability in Kenya is key to the success of the country's development and improved export performance and growth.

The government needs to come up with structures to support horticultural export performance which will in effect lead to job opportunities. Creation of employment opportunities leads to increased production and this therefore leads to improved export performance.

Kenya should move away from concentration in production of primary products like coffee and tea whose prices are ever fluctuating in the world market. These primary products are always subject to external shocks because their prices are determined by economic situations in developed countries which form the base markets for the country's export products. There is need for the government to develop and implement policies that lead to export diversification and also widen the country's export base. There is also need to boost supply in the horticultural sector through incentives and subsidies that will lead to lower cost of production. The EAC common market protocol allows for free movement of capital and labour, goods and services and this contributes positively to increased trade and Kenya appears to be one of the biggest beneficiaries of this act in the region.

Lastly, Policy makers should create an enabling environment to maintain and sustain a stable exchange rate system that is resistant to external shocks. This can only be achieved through independence of the Central Bank especially the monetary policy committee.

5.5 Limitations of the Study

This study was limited to the extent that not all the factors affecting horticultural export earnings in Kenya were considered in the model mainly due to limitations of data.

The study was based on a five year period from 2009 to 2013. A longer duration of the study would have captured periods of various economic significance such as booms and recessions. This would have given a longer time focus hence it would have given a broader dimension to the research problem.

The time taken to carry out this study was in no means sufficient for the amount of detail and analysis the study involved. With more time, detailed tests could be conducted to determine whether the same conclusions could have been derived with more variables included in the research model.

The period within which this study was conducted was short and the researcher therefore had to consider a period of 5 years (2009 - 2013) as opposed to a longer period say 10 years if the duration of the study was longer.

5.6 Recommendations for Further Research

This study recommends a further in-depth study on the effect of other determinants of horticultural export performance and competitiveness.

A similar study should be conducted over a longer period of time for example ten years to try and see the behaviour of Kenya's horticultural export earnings and foreign exchange rate fluctuations over such a longer period.

This study was carried out on the horticultural industry in Kenya; 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 foreign exchange rate fluctuations on export earnings from the different sectors under study and across the east African region.

This study focused on three independent variables i.e. foreign exchange rate, inflation and foreign direct investment as a percentage of GDP. This study recommends that another study be conducted with more independent variables that affect horticultural export performance in Kenya such as domestic transport infrastructure and the macroeconomic environment as these could influence the results obtained from such a similar study.

This study focused on the US Dollar as the foreign currency (Kshs Vs US $). This study recommends a further study on other currencies of other foreign countries that form markets for the Kenyan horticultural export sector such as the British Pound.

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APPENDICES

APPENDIX 1 : LIST OF LICENSED FLOWER EXPORTERS AND VEGETABLE AND FRUIT COMPANIES AND THEIR LOCATIONS AS AT 31/08/2014

No	Company Name	Location
1	Everflora Ltd	Ruiru
2	Fontana Ltd	Nakuru
3	Karen Roses Ltd	Nairobi
4	K-Net Flowers Ltd	Nairobi
5	PJ Flowers Ltd	Nairobi
6	Tropiflora Ltd	Nairobi
7	Wilmar Aqgro Ltd	Thika
8	Carnation Plants Ltd	Nairobi

No	Company Name	Location
9	Fides kenya Ltd	Embu
10	Gatoka Ltd	Thika
11	Karuturi Ltd	Naivasha
12	Lauren International Flowers Ltd	Nairobi
13	Panocal International Ltd	Kitale
14	Subati Flowers Ltd	Nairobi
15	Wilfay Investments Ltd	Nairobi
16	Zedgee Ltd	Nairobi

No	Company Name	Location
1	AAA Growers Ltd	Nairobi
2	African fruits and vegetables Ltd	Nairobi
3	Avenue fresh produce Ltd	Nairobi
4	Avo-Health (EPZ) Ltd	Nairobi
5	Batian Horticultural Agencies	Meru
6	Benvar Estates Ltd	Nairobi
7	Best grown produce (K) Ltd	Nairobi
8	Deluxe fruits Ltd	Nairobi
9	Dominion Veg fruits Ltd	Nairobi
10	East African growers Ltd	Nairobi
11	Everest Enterprises Ltd	Nairobi
12	Evergreen Crops Ltd	Nairobi
13	Exotic Farm East Africa Ltd	Nairobi
14	Fian Green Kenya Ltd	Nairobi
15	Fresh An Juci Ltd	Nairobi
16	Frigoken Ltd	Nairobi
17	From Eden Ltd	Nairobi
18	Green point Exporters Ltd	Nairobi
19	Green lands Agro Producers Ltd	Nairobi
20	Hillside Green Growers & Expoters Co Ltd	Nairobi
21	Homegrown Kenya Ltd	Nairobi

No	Company Name	Location
22	Indu farm EPZ Ltd	Nairobi
23	Kakuzi Ltd	Thika
24	Kandia Fresh produce suppliers Ltd	Nairobi
25	Keitt Ltd	Nairobi
26	Kenya Horticultural Exopoters Ltd	Nairobi
27	Key Export Co Ltd	Nairobi
28	Makindu growers and packers Ltd	Nairobi
29	Mboga Tuu Ltd	Nairobi
30	Namelok Exotics (K) Ltd	Kitengela
31	Nicola Farms Ltd	Maragua
32	Sacco Fresh Ltd	Nairobi
33	Shree Ganesh Fruits & Vegetables Ltd	Mombasa
34	Sian Exports Kenya Ltd	Nairobi
35	Sunmango Ltd	Ruirui
36	Sunripe (1976) Ltd	Nairobi
37	The African Herb Co Ltd	Nanyuki
38	Value Pak Foods Ltd	Nairobi
39	Vegpro Kenya Ltd	Nairobi
40	Wamu Investments Ltd	Nairobi
41	Woni Veg Fru Impoters and Exporters Ltd	Nairobi
42	Wilham Kenya Ltd	Nairobi

Source: Fresh Produce Exporters Association of Kenya (FPEAK)

APPENDIX II : LIST OF CUT-FLOWER COMPANIES AND THEIR LOCATIONS AS AT 31/08/2014

No	Company Name	Location
1	Africana Lillies Ltd	Nairobi
2	Aquila Dev Co Ltd	Nairobi
3	Bawan Roses Ltd	Thika
4	Beverly Flowers Ltd	Nairobi
5	Bilashaka Flowers Ltd	Naivasha
6	Black Petals Ltd	Nairobi
7	Bondet Ltd	Nanyuki
8	Charm Flowers Ltd	Nairobi
9	Country wide Connections Ltd	Nanyuki
10	Dave Roses	Nairobi
11	Elbur Flora Ltd	El Burgon
12	Finlay Flowers Ltd	Kericho
13	Florema (K) Ltd	Nivasha
14	Florensis (K) Ltd	Naivasha
15	Gatoka Ltd	Thika
16	Grandi Flora Ltd	Nairobi
17	Groove Ltd	Naivasha
18	Hamwe Ltd	Naivasha
19	Harvest Ltd	Nairobi
20	Highlands Plants Ltd	Ol Kalao
21	Homegrown (K) Ltd	Nairobi
22	Isinya Flowers	Nairobi
23	Kariki Ltd	Thika
24	Kenya Highlands Nurseries	Nakuru
25	Kreative Roses	Nairobi
26	Kisima Farm Ltd	Timau
27	Kudenga Ltd	Molo
28	Lake Flowers Ltd	Nairobi
29	Lathyflora Ltd	Nairobi

No	Company Name	Location
30	Longonot Horticulture Ltd	Nairobi
31	Liki River farm	Nanyuki
32	Live wire Ltd	Naivasha
33	Magana Flowers (K) Ltd	Nairobi
34	Matasia Valley Roses	Nairobi
35	Mosi Ltd	Nairobi
36	Mt. Elgon Flowers Ltd	Kitale
37	Mweiga Growers Ltd	Nyeri
38	Nini LTD	Naivasha
39	Ol Njorowa Ltd	Naivasha
40	Oserian Dev Co Ltd	Naivasha
41	P.J. Dave Flower Ltd	Nairobi
42	Pollen Ltd	Ruiru
43	Primarosa flowers Ltd	Athi River
44	Primarosa Zuri Ltd	Njororok
45	Redlands Roses Ltd	Ruiru
46	Roseto Ltd	Nakuru
47	Sian Roses Ltd	Nairobi
48	Simbi Roses	Thika
49	Subati Flowers Ltd	Nairobi
50	Suera Flowers Ltd	Nairobi
51	Terrasol Ltd	Nairobi
52	Timaflor Limited	Nanyuki
53	Tambuzi Ltd	Nanyuki
54	Valentine Growers co ltd	Nairobi
55	Waridi ltd	Nairobi
56	Wildfire Ltd	Naivasha
57	Windsor Flowers	Thika
58	Xpressions Flora Ltd	Nairobi

Source: Kenya Flower Council (KFC)