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Exchange Rate Volatility and Export Performance of Tea Firms in Kenya

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Abstract: ***The problem of exchange rate volatility has for many years given rise to a relentless debate in the field of economics and to the finance professions in many parts of the world. In Kenya, the subject has been at the centre of current economic policy debate for the past decades, involving policymakers, the business community, academicians and or researchers and the business press at large. It is therefore from these continuous agitations from different corners of the business word that this study is purposed to empirically establish the effect of Exchange rate volatility and on export performance of Tea firms managed by Kenya Tea Development Agency in Kenya with specific interest being to determine the magnitude at which foreign exchange rate affects export performance of tea firms in Kenya, to examine the level at which tea substitute prices affect export performance of tea firms in Kenya and toestablish the degree at which domestic tea prices affect export performance of tea firms in Kenya. This study was therefore governed by positivism research philosophy characterized by the testing of hypothesis developed from existing theory through measurement of observable social realities. This study adopted a census approach where secondary average monthly means for the 54 (fifty-four) tea firms was collected fora period of five years (January 2008 to December 2012).The results in this study indicated that exchange rate volatility and domestic tea prices weresome of the variables that influence export performance of tea firmsin Kenya to the world markets. However, the tea substitute's prices did not influence the export performance of tea firms to the importing countries. The study further realised interdependence between exchange rate stability, macroeconomic stability and export performance and hence policy makers needs to consider the existing degree and likely effects of exchange rate volatility while designing, developing and implementing trade policies. Key words: Exchange rate volatility, export performance, forex rate, tea substitutes, and domestic tea prices***

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1. Background of the Study

Trade is widely accepted as a major drive of economic growth (Omojimite&Akpokodje, 2010). The relationship between exchange rate and trade flows has been widely studied both on theoretical and empirical grounds. It is withcommon knowledge that the movements in real exchange rate have a permanent effect on both imports and exports. Therefore the effects of exchange rate volatility on the volume of international trade have been the subjects of both theoretical and empirical investigations since the inception of flexible exchange-rate regime in 1973. The widespread popular perception, that greater exchange rate risk reduces trade, has helped to motivate monetary unification especially in Europe and is strongly related to currency market intervention by central bank (Hosseinipour&Moghaddasi, 2010). Most current micro-structural and theoretical models of exporter behavior predict a negative relationship between exchange rate risk and volumes of trade that is reflected in the conditional variance of exchange rate and export volumes (Barloulas, 2002). Moreover, the increase in exchange rate volatility is widely believed to have detrimental effects on international trade and thus has an overall negative economic impact. It therefore follows that the presumption of a negative nexus between exchange rate volatility and trade is an argument routinely used by proponents of managed or fixed exchange rates (Chit & Judge, 2011). However, a vast economic literature yields highly inconsistent empirical results on the same issue. According to Cho *et al.,* (*2002*), exporters can easily insure against short-run exchange rate fluctuations through financial markets, however it is more difficult and expensive to hedge against long-run risk. This implies that Long-run fluctuations in exchange rates has often been cited of having more significant impacts on trade volumes rather than short-run exchange rate fluctuations which can be hedged at low cost. Furthermore, some argued literature support that hedging is both imperfect and costly as one of the means of avoiding exchange rate risk, particularly in developing countries and smaller firms, as they are more likely to face liquidity constraints see; (Doroodian, 1990; Mundell, 2000; and Wei, 1999). This therefore leads to the conventional argument that exchange rate volatility causes revenue uncertainty that will dampen trade due to risk aversion, irreversible investment in productive capital, or both.

According to Todani & Munyama (2005) study, exchange rate volatility is a measure that intends to capture the uncertainty faced by exporters due to unpredictable fluctuations or swings in exchange rates. Economic fundamentals such as inflation rate, interest rate and the balance of payments became more volatile in the 1980's and early 1990s', hence led to exchange rate volatility. Lately, there has been an increase in cross-border flows which has beenfacilitated by the trends in liberalization of the capital accounts, the advancement of technology, and currency speculation hencecausing exchange rate to fluctuations (Hook and Boon, 2000). This liberalization of capital flows and the associated intensification of cross-border financial transactions also appeared to have amplified the volatility of exchange rates (Chit *et al.,* 2012). The empirical findings

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from studies carried out in support of the hypothesis of a negative link between exchange rate volatility and trade have always posited mixed results since an increase in exchange rate volatility intwo markets from different countries would be affecteddifferently hence, leading to further tests studies using export market specific data (McKenzie, 1999). This argument is in line withMunyoki*et al.,* (2012) study which emphasisedthat Real Exchange Rate (RER) volatility has a significant implications on Kenya's economic growth and hence an increase in Real Exchange Rate (RER) volatility would likely increase the uncertainty in profits on contracts denominated in foreign currencies, and therefore would reduce economic growth to levels lower than it would otherwise exist if uncertainty were removed. However, there is no available evidence of success having been achieved in realizing the objective for which foreign exchange market was liberalized and therefore, large volatilities in nominal exchange rates have since been characterized with Kenya's financial market (Kip too, 2007).

1.1.1 Exchange rate volatility

The high degree of volatility and uncertainty of exchange rate movements since the beginning of the generalized floating of exchange rates in 1973 triggered a debate among policy makers and researchers about the impacts of exchange rate volatility on trade flows. Since the breakdown of the Bretton Woods system of fixed exchange rates, both real and nominal exchange rates fluctuated widely. The problem of RER volatility has given rise to a broad debate in the economics, and finance professions in many parts of the world (Kiptui, 2008). In Kenya, almost all studies point out the potential deleterious effects of excessive volatility observed in the country's currency market since the adoption of a floating exchange rate in 1993 on the country's economic growth (CBK, 2002). There is, however, no consensus yet on whether such volatilities in the real exchange rate have influenced the Kenyan economic growth. It is also not known whether such real exchange rate volatilitieshave translated into misalignment, and if so, the nature, extent, and the impact of such misalignment on the Kenyan economic growth (Kiptoo, 2007). The negative effects of real exchange rate volatility in both the short-run and the long run on Kenya's exports of horticulture and tea in an export demand framework, includes relative prices, which indicates the existence of long-run relationships (Kiptui, 2008). Therefore the long-run estimations effects are corroborated by the short-run dynamics derived from the error correction models, showing how exchange rate volatility has significant negative effects in the short-run and that the foreign income and relative price variables remain highly significant. Therefore, it calls for need to pay greater attention to exchange rate volatility by effectively monitoring movements in the exchange rate. Moreover, the exchange rate movements on tea export earnings among smallholders' tea factories in Kenya greatly affect the earnings of smallholders at tea factories (Cherop, 2010). It then follows that there arise a needs to point out that during the time of depreciating local currency, the export earnings are expected to be higher even with low export quantities while export earnings reduces when the currency is appreciating. However, this argument centered on the tea export earnings and ignored the aspect of export volumes, which is the main indicator of the actual economic performance of the firms. The exporters can easily insure against short-run exchange rate fluctuations through financial markets, while it is more difficult and expensive to hedge against long-term risk (Wang & Barrett, 2007). This leads to the conventional argument that exchange rate volatility causes revenue uncertainty and therefore dampens trade due to risk aversion, irreversible investment in productive capital, or both see; Demers, (1991) and Sercu, (1992). They further pointed out that the effects of exchange rate volatility on trade volumes would remain a fundamentally empirical issue.

However, the relationship between the exchange rates and trade is somewhat ambiguous. As some studies shows a positive impact of volatility on trade, others point out a contrary impact while some studies do not find evidence of any kind of relationship at all. In addition, it has also been confirmed that exchange rates volatility relationship differ with various sectors of the economy depending on the dynamics of that industry, not to mention theexistence of major contradictions between the theoretical concepts and empirical analysis as one aspect (theoretical) of the trade relationship with exchange rates might lead to one direction while when empirical aspects are tested might also lead to the other different results (Shah *et al.,* 2010).Benita and Lauterbach (2004) established that exchange rate volatility has real economic costs that affect price stability, firm profitability and a country's economic stability. It then follows that exchange rate movement affects firm's output levels as well as the trade balance of anyeconomy. A study by Adams *et al* (2006) investigated the impact of exchange rate volatility in third world countries to find out whether a rise in exchange rate volatility between the importing countries and other exporting countries encouraged bilateral exports between two trading partners. The study found evidence of robust negative impactin exchange rate volatility on bilateral exports with the inclusion of a third world country volatility variable. The problems of a possible simultaneity bias and heteroscedasticity were addressed by employing GMM-IV estimation techniques. The GMM-IV results also confirmed the existence of a negative impact of exchange rate volatility on exports and suggested that the negative relationship was not driven by simultaneous causality bias. This study was based on the general exports but did not narrow down to a specific industry like tea firms in order to establish the direction and magnitude of relationship. Soric (2007) analyzed the influence of exchange rate variability on export volume in Croatian exports. The study used historical volatility as an approximation for exchange rate variability in empirical studies. However, many macroeconomic time series are characterized by heteroskedasticity, thus in this study the ARCH model was used as a model of conditional heteroskedasticity, while exploring the influence of exchange rate volatility and domestic income on export volume, Johansen's multivariate co-integration approach and error-correction model (ECM) were used. The first proposed model displayed a mild negative long-run relationship, while the second showed a much stronger aversion of Croatian exporters to volatility as a measure of exchange rate uncertainty. The study focused only on exports in terms of value or incomes and ignored the aspect of volume as a crucial measure of export performance. The

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study also ignored the used of other econometric analysis like OLS regression to establish the magnitude and level of relationship. Borrowing from Mtembu&Motlaleng (2010), investigation on the effects of exchange rate volatility on Swaziland's total exports, the study employed exports quarterly time series data and a vector error correction model which was employed to evaluate the relationship between exports and their determinants. The conclusions of the study suggested that the exchange rate volatility is detrimental to Swaziland's exports. The study further focused on the total exports rather than specific export industries like tea firms in order to establish the magnitude of relationship between ERV and export volumes as a measure of performance. On the other hand, Shah *et al* (2011) conducted an investigation on the empirical relationship between the exchange rates and the volatility associated in respect to the export sectors of Pakistan. The results of the Co-integration test indicate the existence of a long-run relationship between the exchange rates and the major import and the export sectors respectively. The OLS regression results and GARCH equations of both the mean and the variances indicated positive significance which revealed that exchange rates volatility affected the export sectors and therefore supporting the literature for positive relationship between exports and the exchange rates which means that the depreciation in the currency boosts the exports. This study focused only on one direction of exchange rate variation and ignored the side of appreciation which might otherwise give different results. The study also did not explore on specific industry like tea firms since ERV effects varies from sector to sector.

Yuksel, Kuzey&Sevinc (2012), conducted a study on the impact of exchange rate volatility, export prices and weighed GDP of trading partners in Turkey'sexports aggregate. On employing OLS regression method to determine the relationship of the RER volatility and exports, the study applied appropriate tests for reliability and analysis of the data which included; time series data and cross correlation to determine the relationship between the pairs of variables was utilized. The results indicated the presents of a negative relationship between exports and volatility; however, this relationship was not significant at a level of 5%.Finally, Gautam*et al* (2013) analyzed the effect of real exchange rate volatility of Indian rupee with Euro, US Dollar, UK pound and Japanese Yen on India's agricultural exports such as Tea, Coffee, Cereals and Rice to Euro Area, UK, USA and Japan for the period 2002 to 2009. The study used a panel data fixed effect analysis and the results indicated the Real exchange rate and GDP were the important determinants of cereals exports while GDP was the only determining factor for Rice exports in India, where as for tea and coffee the exports determinants were real exchange rate and real exchange rate volatility. The study found that real exchange rate was significantly influencing the exports of cereals, tea and coffee while for coffee and tea exchange rate volatility was also playing a significant role.

1.1.2 Export performance

Export activities stimulate growth in a number of ways including production and demand linkages, economies of scale due to larger international markets, increased efficiency, and adoption of superior technologies embodied in foreign produced capital goods, learning effects and improvements of human resources, creation of employment and increased productivity through specialization (Alemayehu*et al.,* 2002). According to Otinga (2009), the role of exports in economic development has been widely acknowledged, see; the export led growth hypothesis (ELGH). Similar studies have argued that export performance is measured by the total volumes of commodity and or tea exported monthly to the five major export destinations (Pakistan, Egypt, UK, Afghanistan and Sudan), which accounts for 71% of the total annual exports (KTDA, 2012; and Learner & Stern, 1970). This is because Kenya adopted a more liberal policy for the domestic economy and volume is used rather than value because price effects may distort the value figures due to inflation, which reduces the competitiveness of domestic product in the world market. In theory, export performances have been reinforced by two Independent Swedish Economists: Eli Heckscher and Bertil Ohlin in 1933 who postulated a theory called Heckscher - Ohlim theory of export (trade). The theory stipulates that the main determinant of the pattern of production, specialization and export among regions is the relative availability of factor supplies. Regions or countries have different factor endowments and factor supplies. Therefore, some countries that are rich in capital will export capital-intensive goods while countries that have much labour will export labour-intensive goods (like Kenya). Hecksher - Ohlim theory further presents the issue that international and interregional differences in production costs occur due to the differences in the supply of production factors (Ball, McCullock, 1999). Following Johnson (1969) arguments, the prices and exchange rate are perfectly flexible and any shock arising from the changes in the nominal exchange rate should be absorbed through changes in prices, leaving the Real Effective Exchange Rate (REER) and trade volumes unchanged and therefore, export may be negatively correlated with exchange rate variability. According to Ether (1973) study, it was found that uncertainty of exchange rate was detrimental to world trade. In contrast, De-Grauwe (1988) found that exchange rate variability is an insignificant factor for exporters.Thiscontroversies generated by the vast empirical literature, therefore reinforces the fact that exports are important for a country's economic development especially when its export structure is predominantly composed of primary commodities, which are subjected to more vulnerable exchange rate fluctuations. In Kenya, tea industry remains the leading foreign exchange earner and therefore it contributes up to four per cent (4%) of the Gross Domestic Products (GDP). Despite the significant effects of exchange rate volatility on macro-economic variables such as economic growth, studies that specifically focus on the export performance of tea firms in Kenya are scanty and hence, this study is directed to close the gap and empirically examine the effect of exchange rate volatility on the export performance of tea firms under Kenya Development Tea Agency (KTDA) in Kenya.

1.1.3 Tea substitutes prices

Coffee is one of the majorsubstitutesof tea all over the world, therefore common knowledge demands that the volume of tea export are expected to increase with a rise in coffee prices. This is because when coffee prices increase domestically, consumers lose their demand for the

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commodity as they opt for the substitute (tea). As the demand for tea increases, the producers shift resources away from coffee (substitute) production to tea and by so doing the exported tea volumes increases given that 95% of tea produced in Kenya is exported to the outside markets. Therefore, tea substitute as a variable is a very crucial factor to be investigated in order to determine the magnitude of its relationship with the performance of tea exports in Kenya in respect to the studies done on the same which includes; the study byEssien, Dominic & Sunday (2011), the effects of price and exchange rate fluctuations on Agricultural exports (cocoa) in Nigeria, where the export supply function for cocoa was specified and estimated using the Ordinary Least Squares Regression. The results showed that exchange rate fluctuations and agricultural credits positively affected cocoa exports in Nigeria. The results further revealed that cocoa prices were insignificantly related to quantity of export. This therefore implied a positive significant effect of exchange rate volatility on cocoa exports in Nigeria. Moreover, the study onthe exports of French beans as one of the leading foreign exchange earners in kenya was carried out by Mwangi*et al* (2014).The study also evaluated the magnitude and direction of the effects of exchange rate volatility on French beans exports from Kenya to major trading partners in the European Union using monthly data from January 1990 to December 2011. The generalized autoregressive conditional heteroscedasticity model was employed to measure exchange rate volatility. The study further employed other analytical approach which encompassed the estimation of an export demand model, co-integration and specification of an error correction model. The study findings found a negative and significant short and long run effect of exchange rate volatility on French beans exported. However this study focused on French beans exports and ignored the analysis of tea firms which was the leading foreign exchange earner in Kenya at that time while establishingthe effect of exchange rate volatility and its magnitude on tea export performance.

There has been varied findings relating to the past empirical studies, for instance, Mwangi*et al* (2014) study showed that an increase in exchange rate volatility resulted to adverse effects on the volume of international trade. Some other studies have demonstrated the presents of ambiguity or positive effects on trade volumes in respect to an increase in volatility, see; Altintas*et al* (2011). It is therefore in the researchers' believes that an increase in exchange rate volatility inhibits the growth of international trade. On contrary, negative effects of exchange rate uncertainty on trade flows are reported in many other studies. These studies haveall found that exchange-rate risk depresses trade flows. Moreover Essien*et al* (2011) study posited mixed finding as some results did not pose any significant relationship between exchange-rate volatility and trade. It follows that lack of clear cut distinguishing studies that demonstrated positive impact of volatility on trade from those studies that pointed out a negative impact as well as those studies which could not find any evidence of any kind of relationship at all were wanting, since this findings led to contradictions with the theoretical concepts and empirical results respectively.

1.2 Statement of the Problem

The need to carry out this study has been necessitated by the enormous fluctuations experienced in export performance of agricultural firm's which poses the challenge of instability, lack of confidence and economic threats to tea producers. More so, these exchange rates movements are not desirable since they increase risk and uncertainty in international transactions and thus discourage trade. According to (Boar, 2010), the dynamics in export performance of agricultural firms is due to fluctuations in international world prices that may have led to a major decline in future output in tea firms since they are unpredictable and erratic. It is argued that higher exchange risks lower the expected revenue from exports thus reducing the incentive to trade (Clark 1973; Baron, 1976), therefore in so doing; it hampers the economic growth in a country. Moreover, the relationship between exchange rate volatility and trade flows in the existing literature is still contradictory. According to Aviel (2000) study, the perception about the exchange rates variability has been that, the more fluctuations occur in the exchange rates the more it becomes volatile and that volatility creates an uncertainty, thus, reducing the volume of the trade. It therefore follows that due to the ambiguity posted in the past studies opens an avenue on which this study anchors on with sole objectives of uncovering the ambiguity experienced in early studies.

1.3 Purpose of the Study

The general objective of this study was toestablish the effect of exchange rate volatility and selected Micro-economic variables on the export performance of Tea Firms managed by KTDA in Kenya in order to contribute towards the development of a vibrant and competitive tea sector in Kenya, with specific intention to; (a) determinethe effect of Exchange Rate Volatility on the export performance of Tea firms managed by KTDA in Kenya, (b)Examine the effect of domestic Tea Prices on the export performance of Tea firms managed by KTDA in Kenya and (c) Determine the effect of Tea Substitute (Coffee prices) on the export performance of Tea firms managed by KTDA in Kenyawhich further generates the hull hypothesis for the study.

2. Study Design and Methodology

2.1 Study Design

This study employed a descriptiveresearch design as the overall strategy to integrate the components of the study in a coherent and logical way. A research design is a systematic plan to study a scientific problem (Kothari, 2004) and therefore this type of research design was adopted since the study tested the hypotheses of the effects between exchange rate volatility and micro-economic variables on the export performance in order to draw inferences from the results about the magnitude and the level of the effects. It required procedures that were not only reduce bias and increase reliability, but permit drawing inferences about the level of effects (Ibid).

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2.2 Empirical Research Model

The export performance analysis cannot be complete without explaining why tea firms' has for a long time recorded poor performance. Moreover, arguments posited in past studies also calls for an appropriate approach aimed at analyzing the effects of tea firms' characteristics, Exchange Rate Volatility, and policy related variables on the export performance of individual tea firm using a regression-based model. In order to achieve the above, this study employed quantitative data to help explain the relationship between exchange rate volatility and selected micro-economic variables on export performance of tea firms in Kenya. This study relied heavily on Musyoki*et al*, (2012) and Mwangi*et al*., (2014) studies, to estimate the effects of exchange rate volatility and micro-economic variables on tea export performance. This study further employed the basic framework of analysis for export performance and micro-economic variables which was based on the work of Rezitis and Stavropoulos (2009) where they evaluated the Greek meat market for its response to price volatility, using a simple autoregressive conditionally heteroscedastic (ARCH) approach that was specified as in the functional form below:

$$P_t|\Omega_{t-1} = c_0 + \sum_{i=1}^{n} C_i P_{t-i} + \varepsilon_{2t} \quad (1)$$

$$h_t = b_0 + \sum_{i=1}^{q} b_{1i}\,\varepsilon_{2t-i}^2 + \sum_{i=1}^{p} b_{2i} h_{t-i} \quad (2)$$

$\boldsymbol{\varepsilon_{2t}}|\Omega_{t-£} \sim N(0, h_t)$, where; $b_0 > 0, b_{1i} \geq 0\ i = 1, \ldots, q, b_{2i} \geq 0\ i = 1, \ldots, p, \sum b_{1i} + \sum b_{2i} < 1.$

The ARCH (Engle, 1982) made the conditional variance $h_t$to depend on past volatility measured as a linear function of past errors, ε_{2t} while leaving unconditional variance constant. Equation 1, $\varepsilon_{2t}$is a discrete time stochastic error, and Ω_{t-1} is the information set of all past states up to the time t–1.Equation 2 (GARCH conditional variance equation), $h_t$is the conditional variance specified as a linear function of $p$lagged squared residuals and its own $q$lagged conditional variances. The variance was expected to be positive, and so are the coefficients b_0, b_{1i} and b_{2i} . The stationarity also of the variance was preserved by the restriction$\sum b_{1i} + \sum b_{2i} < 1$. The predictions of Pt^e and h_t are to be generated by the ARCH/GARCH model, which could be used in estimating the export performance function, (Rezitis& Stavropoulos, 2009). The auction prices of tea were evaluated with Equation 1 and the generated errors from Equation 1 was auto regressively analyzed with Equation 2. The same process was used in analyzing the behaviour of the mean monthly foreign exchange rate, domestic tea prices and substitute prices over the period of four year from 2008 to 2012.The specification of the model is as follows:

$$InEp_t = \beta_0 + \beta_{1,t}\ InER_{1,t} + \beta_{1,t}\ InTp_{1,t} + \beta_{1,t}\ InTp_{1,t} + ECM_t + \varepsilon_t \quad (3)$$

Where;ln= Natural logarithm of variables,$InEp_t$ = Tea export volume at period t,$InER_{1,t}$ = Exchange rates at period t, $InTp_{2,t}$ = Domestic tea prices at period t , $InTp_{3,t}$ = Tea substitutes prices at period t, ECM_{t-1} = Error correction Mechanism
ε_t = Error term

2.3 Target Population

Mugenda and Mugenda (2003) defined target population as a process that researchers employs to generate the results for the study. Ngechu (2004), further defined a population as a well-defined or set of people, services, elements, and events, group of things or households that are being investigated. This study adopted a census method to collect the monthly information on export volumes of tea, domestic tea prices and tea substitute prices of all the fifty-four (54) Tea Firms managed by KTDA for the period of four years stating January 2008 to December 2012. Relevant research data was collected from the databases of Kenya National Bureau of Statistics, Kenya Revenue Authority,Central Bank of Kenya, Organization for Economic Cooperation and Development reports and International Monetary Fund.

2.4 Data Collection Procedure and Analysis

This study employed the use of secondary datawhere monthly average time series data for the period of four years from January 2008 to December 2012 on fifty four (54) tea firms managed by Kenya Tea Development Agencies. The study adopted time series method for data analysis where secondary data was collected from the Central Bank of Kenya (CBK) publications, Statistical Bulletins, Economic and Financial Reviews, and Annual Reports and Statement of Accounts respectively. Other relevant information was obtained from various issues of Kenya National Bureau of statistics (KNBS) databases. Specifically, monthly tea export volumes and values were obtained from Kenya Revenue Authority (KRA) and CBK online database, Foreign exchange rates from KNBS. Domestic tea and coffee prices was obtained from the Tea Board and Coffee Board of Kenya respectively. The data was obtained in soft copy and as such the accuracy of information was high.

3. Findings and Discussion

This chapter presents and explains the results from the data collected and the findings are presented and analyzedin respect to the specific objectives and hence testing the hypotheses of the study. It also covers data analysis, interpretation and discussion of the research findings. The results were presented in the form of frequency tables. The tables 3.1 below, presents a brief description statistics of the data collected as illustrated below**.**

3.1 Descriptive Statistics

Table 3.1: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
KTDA FIRMS MONTHLY TEA EXPORT (Qty in M. Kgs)	60	13.44	26.82	20.1670	3.11761
Forex Rate-KES/USD	60	61.90	101.30	79.8397	7.80928
Domestic Tea Prices	60	147.00	302.71	205.6357	42.74154
Tea Substitute (Coffee Prices)	60	163.00	368.16	276.9517	77.47870

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The Table 3.1 above presents a descriptive statistics of the fifty-four (54) firms managed by KTDA, in respect to the study variables. As presented, the highest monthly tea export was 26.82 metric tonnes while lowest was 13.44 metric tonnes. On the highest exchange reported for the period starting from January 2008 to December 2012 was 101.30 while the lowest exchange report was 61.90. On the domestictea prices, the highest price was at 302.71 per kg, substitute's highest price was 368.16. A high of $ 3139.74 billion were accrued from the tea importing countries. The Means of Tea Exports, Exchange Rate, Tea Prices and Tea Substitute prices (coffee prices) were; 20.17 MT, Kshs. 79.84, Kshs. 205.6 andKshs. 276.95, while the Standard Deviations were 3.11 MT, Kshs. 7.81, Kshs. 42.74, Kshs. 77.48 respectively.

3.2 Test Results

In this study, the GMM regression model is used to test the dynamic relationship among the exchange rate and export performanceand the result were estimated as in table 3.2 below:

Table 3.2: GMM Regression Results

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
	(Constant)	21.203	4.608		4.602	.000		
	Forex Rate-KES/USD	-.099	.082	-.246	-1.202	.235	.318	3.140
	Domestic Tea Prices	-.005	.012	-.066	-.422	.675	.542	1.846
	Tea Substitute (Coffee Prices)	.029	.007	.721	3.995	.000	.409	2.445
a. Dependent Variable: KTDA FIRMS MONTHLY TEA EXPORT (Qty in M. Kgs)								

From the coefficients obtained from the GMM regression model were as follows; Tea substitutes prices (coffee) had a beta value of (Beta = 0.029), the domestic tea prices were explained by beta value of (Beta = -0.005) while the forex rate registered a beta of -0.099 respectively. This implied that decrease in forex rate, and domestic tea prices would lead to a decrease in monthly tea export volume from the KTDA by -0.005 and -0.099 respectively. An increase in Tea Substitute prices (Coffee prices)would however lead to an increase in monthly tea export volume by0.029.

Thus the Generalise Method of moment regression equation was presented in this study as below;

$$InEp_t = \beta_0 + \beta_{1,t}\, InER_{1,t} + \beta_{1,t}\, InTp_{1,t} + \beta_{1,t}\, InTp_{1,t} + ECM_t + \varepsilon_t \quad (3)$$

$$InEp_t = 21.203 - 0.099\, InER_{1,t} - 0.005\, InTp_{2,t} + 0.029\, InTp_{3,t} + \varepsilon_t$$

According to the regression equation established, taking all factors into account (Foreign exchage, Domestic Tea Prices and Tea Substitute prices (Coffee Prices) constant at zero, the tea export volume performance of the fifty-four firms was 21.2 Metric Tonnes. The findings further illustrated that keeping all other independent variables at zero, a unit decrease in forex rate led to a 0.099 decrease in tea export volume of the firms; a unit decrease in domestic tea prices led to a 0.005 decrease in firm's tea export volume and a unit increase in tea substitute prices led to a 0.029 increase in tea export volume of the Kenya Tea Development Agencies managed firmsrespectively. This implied that an increase in the shilling exchange rate volatility leads to more proportionate decrease in demand for tea exports volumes from Kenya to the main five importers since an increased exchange rate volatility increases uncertainty in the behaviour of future exchange rates. It then follows that tea exporters in Kenya are risk averse and with an increase in exchange rate volatility,exporters reduce their exports in order to reduce their risk exposure.

The above study findings agreed with Markusen, (2010) study, which indicated the existence of exports increase with increasing exchange rate volatility. The study argued that there exist greater income effects while exports decline and also when the substitution effect outweighs the income effect. Thus higher income effects above the substitution effects can lead to a positive relationship between trade and exchange rate volatility. The above study findings disagreed with Serenis&Serenis (2011) study results which suggested that exchange rate volatility do not have any major effects at the sector level of exports hence contradicting the above findings in Kenyan perspective. This study further disagreed with findings by Barrett *et al* (2007) which posited that monthly exchange rate volatility, negatively affected agricultural trade flows while in this study it was established that there existed a significant positive relationship between the foreign exchange rate and total monthly export volume. These resultstherefore implied that exchange rate influenced the amount of exported tea. A similar significant positive relationship trend was observed between coffee prices and Kenya Tea Development Agencies firms' monthly tea export, Forex Rate-KES/USD and Domestic Tea Prices. This study results also agreed to the findings of Soric (2007) study which was done in Croatian exports. The results posited a mild negative long-run relationship, while the second showed a much stronger aversion of Croatian exporters to volatility as a measure of exchange rate uncertainty. The study also established a negative relation on the effect of foreign exchange volatility and the total monthly tea exports. It also agreed with the findings by Mtembu&Motlaleng (2010) as their conclusions of their study suggested that the exchange rate volatility is detrimental to Swaziland's exports as so does the forex volatility in Kenya's tea monthly export. Further, the study also agreed with the findings by Shah *et al* (2011) indicated positive significance which reveals the effects of the exchange rates volatility on the export sectors.This study also agreed on the findings of the study carried out by Kiptui (2008), which cited that real exchange rate had positive effects in the short-run but the effects were found to be

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statistically insignificant but conflicted where the short-run elasticities were high and positive as in the case of coffee and manufactured goods which were found close to unity. Studies with similar arguments includes; Jebitok, (2010); Essien, Dominic & Sunday (2011); and Mwangi*et al* (2014).

The coefficient of determination (R^2) indicates that about 54.3% of change in firms' monthly tea export is accounted for by the explanatory variables while the adjusted R-square of 49.2% further justifies this effect. A linear relationship between the following, KTDA firms' monthly tea export, forex rate-KES/USD, domestic tea prices andsubstitute's prices (coffee prices) were tested at 5% level of significance. From these findings three predictor variables explained the variations in the dependent variable (monthly tea export).

3.2 Hypothesis Testing

This study was led by three hypotheses as below:-

H_{01} Exchange Rate Volatility has no significant effect on the export performance of Tea firms managed by Kenya Tea Development Agencies in Kenya.

H_{02} Domestic Tea Prices has no significant effect on the export performance of Tea firms managed by Kenya Tea Development Agencies in Kenya.

H_{03} Tea Substitute (Coffee prices) has no significant effect on the export performance of Tea firms managed by Kenya Tea Development Agencies in Kenya.

Table 3.2: t -Test statistics for hypothesis testing

Variables	Test Statistic Values	Probability (p)
Tea Export (Qty in M. Kgs)_ C	4.602	0.000
Tea Exp_Forex Rate-KES/USD_ C	-1.202	0.235
Tea Exp_Domestic Tea Prices_C	-0.422	0.675
Tea Exp_Tea Substitute (Coffee Prices)_C	3.995	0.000

The study here used the t-tests Statistics of the three variables to show thesignificance of each factor in explaining tea export volume of the firms and also to ascertain the claims whether the null hypotheses were accepted or not.

The t- tests were carried out at 5% level of significance. The study only found Tea Substitute (Coffee Prices) to be significant to the export performance of the tea firms managed by Kenya Tea Development Agencies with p value of ($InTp_{3,t}$ p= 0.000). However, the other two parameters were not significant to the study as t –statistic posited a p value of Forex Rate and Domestic Tea Prices to be;($InTp_{1,t}$ p=0.235 and $InTp_{2,t}$ p=0.675) respectively. The study results therefore failed to reject all the two null-hypotheses (Forex Rate and Domestic Tea Prices) while rejecting the null hypothesis in respect to tea Substitute (Coffee Prices) in that order.

4. Conclusions

Exchange rate volatility affects the aggregate demand and supply of any nation but the degree of effectiveness and consequences depends on the existing economic conditions. This study employed empirical analysis in examining the effect of exchange rate volatility and selected micro-economic variables on export performance using average monthly data asfromJanuary 2008 to December 2012. The results of this study indicated that exchange rate volatility and the selected micro-economic variables influences performance of tea exports from Kenya to the main five tea importing countries in the world. An increase in the shilling exchange rate volatility led to a more than proportionate decrease in demand for tea exports volumes from Kenya to the main five importers. This meant that tea exporters in Kenya are risk averse and with an increase in exchange rate volatility exporters would tend to reduce their exports in order to reduce their risk exposure.

Hence in conditions of high exchange rate volatility which causes uncertainties regarding exporters' profits, their option was to reduce production or sell to the domestic market. According to the risk aversion theory, this is due to lack of well-developed hedging facilities and institutions in Kenya's foreign exchange markets (Doroodian, 1999). Therefore, exporters prefer to sell in domestic markets rather than foreign markets, negatively affecting exports. This study therefore implicates that those economic policies aimed at stabilizing the exchange rate would tend to increase the volume of tea exports in Kenya.This study further noted the existence of interdependence between exchange rate stability, macroeconomic stabilityand export performance. Therefore, the policy makers need to consider the existence, degree and likely effects of exchange rate volatility while designing, developing and implementing trade policies. The government needs to make key commitments to maintain the stability and competitiveness of the exchange rate as part of its export promotion and diversification strategy and apply appropriate policy management tools to this task and hence trade policy should be geared towards overall macroeconomic stability supported by a competitive exchange rate as well as structural reforms that contribute to increased productivity and the enhancement of international competitiveness.

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