Macro-Economic Determinants of Kenya's Trade Balance

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Abstract: **- Balance of Trade is an important component of any economy's growth and development. Since independence, Kenya has been struggling with balance of trade deficit in its current account. Given limited empirical evidence of the cause of such deficits, this paper undertook to investigate macro-economic determinants of trade balance. The paper applied Vector Error Correction Model on a 54-year period data (1963-2016). We find that terms of trade, trade liberalization and FDI have a significant and positive long-run relationship with trade balance. Similar results are observed for the case of Gross Domestic Product. Furthermore, we find a negative and a significant long-run relationship between real exchange rate and trade balance. The study recommended the need for the government to employ strategies that could stabilise exchange rate. It also recommended that Kenyan government should create conducive climate for investment, and stable macroeconomic factors to enhance trade balance.**

Key Words: **Trade balance, Current Account, VECM, Macroeconomics, Kenya**.

I. INTRODUCTION

Over the years, Trade balance in most Sub-Saharan African countries has performed poorly (Ongutu, 2014). Chronic trade deficits have characterised majority of these economies and Kenya is not an exception. This is partially attributed to dependence on specific primary agricultural products as their only exports while importing many manufactured goods which results into huge trade deficits (UNCTAD, 2015). Countries have adopted various strategies to spearhead economic reforms ranging from fiscal to monitory policies as well as policies to enhance export and discourage importation of unnecessary goods and services. Value addition on agricultural produce has also been emphasized in the majority of developing countries. Balance of trade is a key component of the current account balances and therefore, knowledge of the determinants of trade balance is vital for policy makers in their efforts to enhance trading activities and hence national economic growth (Marchetti *et al*., 2012; McCombie and Thirlwall, 2016). Generally, an economy will experience two kinds of trade balance, that is, surplus which occurs when the value of a country's exports surpasses that of exports and trade deficit for the case of low value of exports relative to import value (Posner, 1961).

The presence of surplus or deficit in the balance of trade may be favorable or unfavorable with regard economic situation (Metzler, 1950). For instance, surplus in the balance of trade could be a manifestation of a country's competitiveness of its companies at the global level (Ahmed *et al*., 2011). In addition, trade deficit could be an indication of increased import activities which could also enhanced FDI, a key to national development (Mann, 2002). On the other hand, persistence in the trade deficit, could imply that majority of its citizens are living beyond their means potentially due to low savings and FDI (Mann, 2002).

Kenya has seen implementation of various policies aimed at enhancing its trade balance and its global trading position. Such policies include: import substitution policies (1960-80's), Structural Adjustment Programmes (SAPs) of 1980/1981, policies to promote exports (1989-1993), and the 1980's capital flow liberalization. These were all aimed at managing macroeconomic environment such as inflation, exchange rate, rates of interest and price stability in order to create a conducive business environment for viable economic activities with favorable balance of trade (Mabior, 2014). Vision 2030 and National Trade Policy of 2014 envisions Kenya to be globally competitive in the trading sector. Kenya's main agenda for these policies was to become a stable economy capable of expanding national and international trade (Bolo & Nkirote, 2012).

Despite all these efforts, Kenya still experiences adverse balance of trade and hence the need to address the challenge through discovery of the main causes of trade imbalances. Thus, this paper makes several contributions. First, it contributes to the growing list of debates on determinants of trade balance and secondly, it recommends policies which lead to improvement of Kenya's macroeconomic environment and hence trade balance. The rest of the paper is organized as follows: overview of the Kenya's trade balance, literature, methodology, results, and finally conclusion and policy recommendations.

1.1 Overview of Kenya's Balance of Trade Performance

Kenya's trade balance as a percentage of its GDP has been worsening since independence (see Figure 1.1). During this period, Kenya's level of trade balance has not recorded any clear trend, but rather, there has been fluctuations. This can be attributed to economic shocks such as droughts, floods, post-election violence of 2007-2008 and unpredictable climatic conditions which adversely affects the agricultural sector. In addition, instability in the Kenya's macroeconomic environment such as exchange rates, inflation, interest rates as well as global financial crises could have influence Kenya's

balance of trade deficits (Central Bank of Kenya (CBK), 2012).

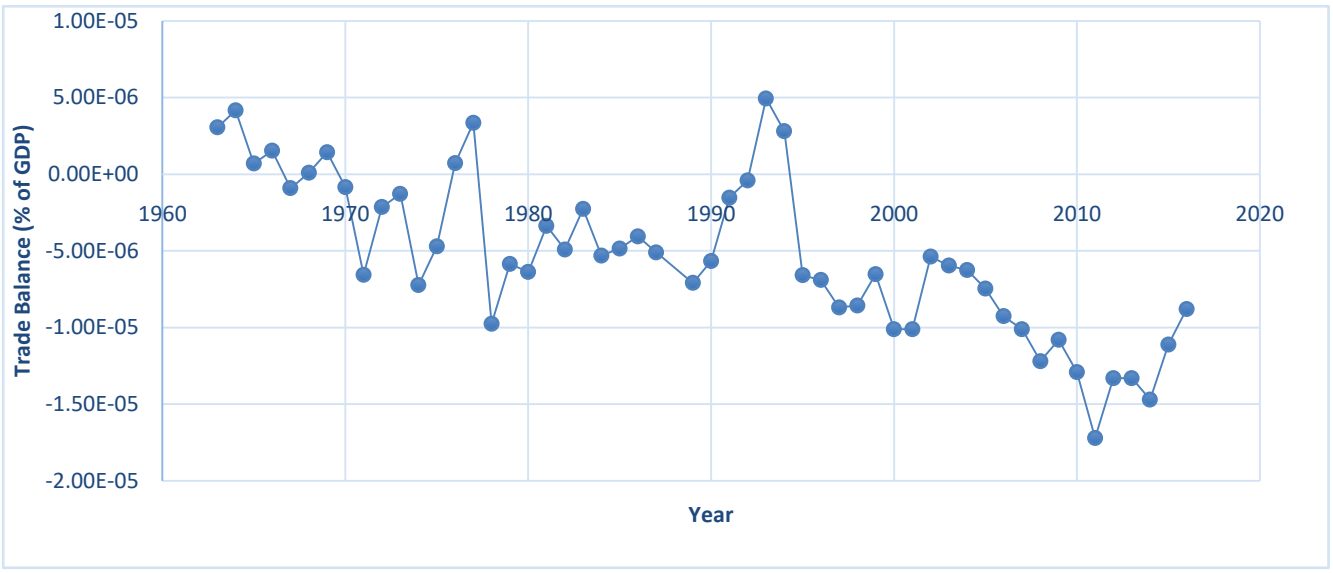

Figure 1.1: Kenya's Trade Balance (statistics of World Bank, 2017)

A better understanding of Kenya's trade balance deficit is illustrated by Figure 1.2 which indicates that export values as a percentage of GDP have always been lower than imports except in early 1960's.

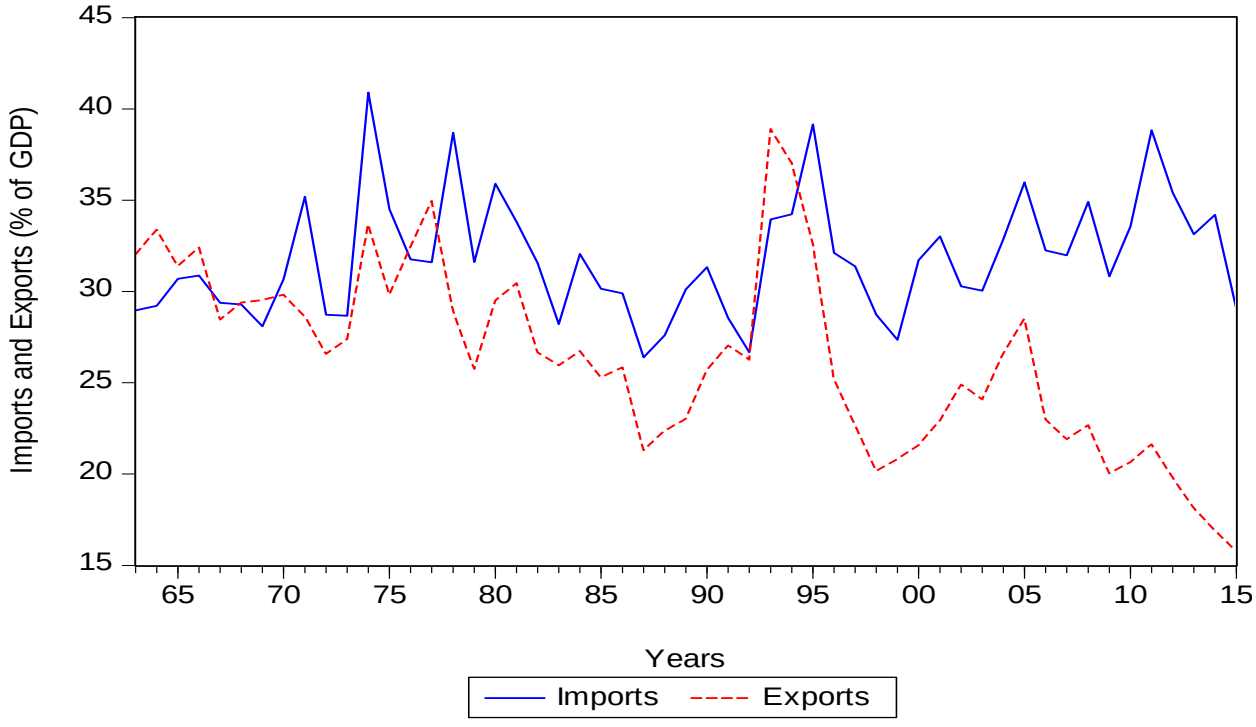

Figure 1.2: Kenya's Imports and Exports as a percentage of GDP (Statistics of World Bank, 2017)

Figure 1.2 indicates that Kenya's exports were higher than imports in early 1960's. For example, in 1963, the exports accounted for 32% of its GDP. However, from late 1960's, the value of exports started to decline while the value of imports rose. This trend has been maintained up to today, though, both exports and imports have been volatile throughout the period of this study. This has exacerbated balance of trade deficit. Several factors such as oil crisis of

1973, volatility of the world currencies, the 2008 world economic crisis, Kenya's post-election violence, droughts and other domestics and global shocks could partially be attributed to this trend.

II. LITERATURE

Various theories guided the study. The elasticity approach proposed by Robinson (1999) argues that trade balance is explained by consumption and production effects, as well as substitution effect due to adjustment in the exchange rate. The theory makes several assumptions. First, it assumes two economies trading in two goods in a perfectly competitive market and secondly, local and foreign prices are exogenously determined (Hsieh, 1982). Robinson investigates the effects exchange rate on the balance of trade by separating import and export markets (Shao, 2009). By ignoring income, elasticity approach argues that if capital movements are omitted, currency devaluation is anticipated to increase a country's exports and reduce imports of the country of origin and hence, a favourable trade balance (Jha, 2003). Another approach which has been used extensively to examine the effect of trade openness of the balance of trade is absorption theory associated with Alexander (1952) and explicated by Johnson (1958). This approach terms trade balance as the difference between local income and expenditures (Mankiw, 2003). According to Alexander, assuming fixed government expenditure, any currency devaluation would lead to an increase in net exports. Proponents of absorption approach further asserts that if the economy is not at full employment, then, depreciation of the local currency could enhance trade balance (Mankiw, 2003). Monetary approach attributed to Hume and Alexander (1952), Frenkel (1976) Johnson (1975) and Duasa (2007) explains trade balance through supply and demand for money. This approach observes that if money demand surpasses it supply, then, foreign currency would come in to fill the gap. This move could lead to favourable balance of trade due to a depreciated local currency (Duasa, 2007).

Empirically, studies have established mixed findings regarding the impact of real exchange rate on the balance of trade. For instance, Wai-mum *et al.* (2008) by using VECM, has observed that exchange rate and trade balance are negatively related in Malaysia. In addition, the authors note that a depreciation of domestic currency enhances trade balance in the long-run. Mehare and Edriss (2012) for the case of Ethiopia have also reported a negative and cointegrating link between trade balance and real exchange rate. On the other hand, Baharumshah (2001) while employing unrestricted Vector Auto regression model, found a positive relationship between exchange rate and trade balance for Thailand, Malaysia, United States and Japan. Similar results have been reported by Bahmani-Oskooee and Brooks (1999), Valenzuela and Anderson (2008) and Xing (2012).

Studies have revealed that trade liberalization can favour the growth of imports more than exports and hence adverse trade balance (Parikh & Stirbu, 2004; Santos-Paulino & Thirlwall, 2002; Parikh, 2002; Chen, 2008). For example, Santos-Paulino and Thirlwall (2002) in their investigation of 22 developing countries, established that trade openness reduces trade balance by 1 percent of gross domestic product and thereby worsening the BOP by nearly 0.5 percent of the GDP on the overall. Similarly, Edwards (1997) had argued that opening up of trade escalated balance of payment crisis, and hence trade balance deficit. Studies have reported favourable or unfavorable effect of the terms of trade on trade balance. For instance, Baharumshah (2001), Otto (2003) and Tsen 2006) argue that terms of trade are favourable to trade balance when prices of exports rise relative to prices of imports and unfavorable when export prices fall relative to import prices. On the other hand, Backus and Smith (1993) and Otto (2003) observed that a positive shock to the terms of trade improves trade balance initially; but suffers later as the shocks become persistent. According to studies, GDP is positively related to terms of trade (Valenzuela & Anderson , 2008; Parikh, 2002; Bigsten *et al.*, 2000; Pan & Chen 2008).

In summary, several studies have investigated how macroeconomic factors affect balance of trade and mixed findings have emerged. A critical analysis of these studies shows that a debate on the effect macroeconomic environment is inconclusive, with real exchange as a case in point. In addition, existing literature does not show clearly how trade liberalization relates to the balance of trade. This is because trade openness that favors importation would worsen balance of trade and vice versa for trade openness which favors exports. Furthermore, literature is scanty on the effect of macroeconomic factors on trade balance in Kenya.

III. METHODOLOGY

3.1 Theoretical Framework

In economic theory, various factors determine trade balance through their effect of imports and exports. We begin by defining Trade Balance (TB) as export income (X), minus import expenditure (M) and therefore, expressed as:

$$TB = X - M \qquad \text{…….(1)}$$

We follow Dornbush (1980) to present a simple relationship between TB and macroeconomic variables as:

$$TB = (\beta(NX, C) \text{ …... (2)}$$

Where NX=net exports and C=vector of control variables such are real exchange rate, terms of trade, FDI, Inflation and GDP.

Exchange rate has a direct influence on the export and import prices. It is therefore expected that exchange rate could either affect TB negatively or positively depending on how it affects export price relative to import price. Theoretically, an increase in FDI, GDP and favourable terms of trade are expected to enhance trade balance, while high levels of inflation could explain TB negatively.

3.2 Model Specification

We applied Vector Error Correction Mode drawn from cointegration theory (Johansen, 1991). Considering our theoretical framework, we express our VECM model as:

$$\Delta(TB)_t = \alpha_1 + \alpha TB_{t-1}^{\theta} + \sum_{i=1}^{n} \alpha_{1i} \Delta TB_{t-1} + i=1o\beta 1i\Delta REERt-1+i=1p\emptyset 1i\Delta TOt-1+i=1q\partial 1i \Delta TOTt-1+i=1t\theta 1i\Delta GDPt-1+i=1u\omega 1i\Delta FDIt-1+\varepsilon 1t \ldots\ldots\ldots\ldots\ldots\ldots (3)$$

Where; TB=Trade Balance

REER=Real Effective Exchange Rate

TO=Trade Openness

TOT=Terms of Trade

GDP= Gross Domestic product

FDI= Foreign Direct Investment

ε= Random error term

T=time in years

θ_{t-1} is a lagged one period error correction term. This term captured deviation of the estimates from a long-run equilibrium. The larger its value, the high the likelihood of the variable to go back to long-term relation.

3.3 Data

We used annual time series data set for the period 1963 – 2016. This data was obtained from various sources as: World Development Indicators (WDI), World Integrated Trade Solution (WITS), Kenya National Bureau of Statistics (KNBS) and Central Bank of Kenya (CBK).

IV. MODEL ESTIMATION

To ascertain validity of the estimates, the study checked for the presence of unit roots. Variables which were found with unit roots (non-stationary) were transformed through differencing. Stationarity status of variables was determined for two reasons. First, to verify that their regression results are valid and not spurious (Cang & Seteeram, 2012) and secondly, to know whether the external shocks impact on the variable were temporary or permanent. Trend stability was tested to provide evidence whether a time series is trend stationery or difference stationery.

4.1 Findings

The VECM implemented the Johansen (1988) approach for estimation of the parameters of the VECM. The study was interested in the first model where TB was the dependent variable. Tables 1, 2 and 3 displays the results. The model is divided into two; the short-term (Table 2) and long-term relationship (Table 3)

Table 1: Summary Statistic results of Vector Error-Correction Model

Sample: 1963-2016	Obs.	54		AIC	36.4799
Log Likelihood	-861.477			HQIC	37.73146
Det (Sigma ML)	33884.92			SBIC	39.74448
EQUATION	PARMS	RMSE	R-SQ	χ^2	P> χ^2
D_TB	10	745.307	0.3453	22.14731	0.0144
D_REER	10	13.4941	0.6069	64.84916	0.0000
D_TOT	10	.120914	0.3857	26.36721	0.0033
D_TO	10	.079789	0.4175	30.10279	0.0008
D_GDP	10	.125013	0.2404	13.29163	0.2078
D_FDI	10	4.32215	0.4163	29.95142	0.0009

Source: Data Analysis Results, 2018

The short-run model estimates are presented in Table 2

Table 2: Summary for Short-run Parameters of VECM

Variable	Coef.	Std. Err.	Z	P>z
D_TBD				
_ce1				
L1.	-0.08901	0.0447	-1.99	0.047**
TBD				
LD.	-0.4261	0.1574	-2.71	0.007**
REER				

LD.	8.059864	1.389	0.58	0.564
TOT				
LD.	0.283.710	0.907	0.31	0.755
TO				
LD.	0. 1452.5	0.151	0.96	0.339
GDP				
LD.	1.436	0.1436	1.00	0.317
FDI				
LD.	-2.93424	0. 27.8	-0.11	0.916
_cons	0.022586	106.725	0.00	1.000

Source: Data Analysis Results, 2018

* denotes statistical significance at 1% level and ** denotes statistical significance at 5% level.

VECM estimates both short-run and long-run causality. From this result, error correction term (ECT) represented by L1 is negative (-.0890071) and significant at 95% confidence interval. The study therefore concludes that there is a short-term causality running from explanatory to dependent variables. The coefficients of lagged variables in Table 2 represents short-term causality with that of the dependent. The p-values for all the lagged variable coefficients except the lagged variable for TB indicates that they are not significant. Table 3 presents long-run relationship estimated from VECM.

Table 13: Summary Statistics for Cointegration Equations of VECM

Equation	Parms		χ^2	P > χ^2
_ce1	7		107.481	0.0000
Variable	Coeficients	Standard error	Z	P>|Z|
_ce1				
TB	1.00	.	.	.
REER	-0.211	0. 110	-1.91	0.046**
TOT	0.104	0. 475	2.20	0.028**
TO	0.367	0.719	5.10	0.000*
GDP	0.672	0.333	2.02	0.044**
FDI	0.295	0.139	2.12	0.034**
_cons	-0.107	.	.	.

Source: Data Analysis Results, 2018

* denotes statistical significance at 1% level and ** denotes statistical significance at 5% level.

From the estimates, we express the overall equation as:

$$TB = -0.107 - 0.211REER + 0.104TOT + 0.367TO + 0.672GDP + 0.295FDI \ldots\ldots\ldots\ldots (4)$$

These results show that trade liberalization, proxied by TO has a significant and positive relationship with TB. This variable was also found to be highly significant at 99% confidence level. This imply that for Kenya, trade openness increases export value at a higher rate relative to imports. REER has a negative and significant effect on trade balance. This effect is very strong judging from the size of its coefficient. Wai-mum et al. (2008) for Malaysia and Bahmani-Oskooee and Alsie (1994) have found similar results. However, Xing (2012) did not find any significant relationship between TB and REER for the case of China. Findings for TOT show that this variable has a positve impact on TB implying that an increase in TOT leads to a favourable balance of trade. Similar results have been reported by other reseachers (Backus & Smith, 1993; Otto, 2003).

The study has also revealed that Kenya's GDP is positively related to trade balance. Various studies support this view (Bigsten et al., 2000; Valenzuela & Anderson, 2008; Pan & Chen, 2008; & Basri &Hill, 2011). The estimated results for FDI indicate a strong and positive correlation with trade balance.

V. CONCLUSION AND POLICY RECOMMENDATIONS

The aim of Kenya's trade liberalization was to enhance its level of trading activities particularly, to promote exports in order to achieve balance of trade. However, following decades of trade openness coupled with reforms in the trade sector, Kenya is yet to realize this dream. While empirical literature affirm that trade balance plays a key role in the economy's growth and development, limited evidence exists regarding factors explaining it in the Kenyan situation.

Employing time series, we find that trade liberalization favors Kenya's trade balance in the long-run. To this end, any government efforts towards trade liberalization should be encouraged. With regard to REER, the study concludes that it affects trade balance negative in the long-run as well. This means that fluctuations in the Kenya's exchange rate against foreign currencies is disastrous to the trade balance. Furthermore, the study has observed a positive and long-term impact of TOT on trade balance. Concerning GDP, the study has established a positively relationship. Indeed, increased economic activities could indicate a conducive business environment to promote both export trade and FDI. Finally, the study has reported a positive relationship between FDI and the balance of trade. In summary, there is a significant positive long-run relationship between TOT, TO, FDI, GDP and Kenya's trade balance. On the other hand, REER is negatively associated with Kenya's trade balance in the long-run.

Findings from the study have shown that real exchange rate movements worsen balance of trade. It is therefore recommended that the government should strategize on how to stabilise Kenya's exchange rate to improve trade balance. In addition, since Kenya's terms of trade and trade openness are positively related to Kenya's trade balance, we recommend that the government should enhance policies aimed at opening trade in Kenya, encouraging exports and import reduction. Finally, the study recommends opening of the Kenyan economy to foreign investors, and expansionary policies to expand the economic growth.

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