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KENYA**

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FACTORS INFLUENCING REAL EXCHANGE RATE AND EXPORT SECTOR PERFORMANCE IN KENYA

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ABSTRACT

In December 2004 to December 2007, the Kenya shilling real exchange rate appreciated by 30 percent representing a major deviation from its past levels. Appreciation of the shilling real exchange rate has attracted public attention recently, especially from exporters and importers who have argued that the weakening shilling is eroding their competitiveness. This study was guided by the following objectives; to investigate the effects of foreign aid inflow on real exchange rate and export volumes in Kenya. It was hypothesized that foreign aid inflows to Kenya do not result in real exchange rate appreciations, and that exports do not respond positively to foreign aid inflows. The data comprised of annual time series data for Kenya over the sample period 1960 to 2010. The sources of data included World Bank world tables, Organization of Economic Co-operation and Development, Central Bank of Kenya and Kenya National Bureau of Statistics. The study adopted Error Correction Model, because of its ability to induce flexibility by combining the short run dynamic and long run equilibrium model in a unified system. Inferential statistics were applied using Micro fit and PC Give Ox-metrics, unit root, co integration and granger causality tests were done prior to estimation. The study found that, foreign aid inflow lead to real exchange rate appreciation in Kenya. This was depicted by the significance of aid in the long run co-integrated equilibrium results. Foreign aid inflows also had a positive impact on export volumes as shown by the significance of aid in the export performance model estimation. The results of short-run parsimonious real exchange rate model revealed that real exchange rate is influenced by domestic factors such as government expenditure, technological progress and commercial policy stance. External factors proxied by terms of trade also tend to play a critical role as they lead to real exchange rate depreciation this was shown by the positive co-efficient of terms of trade in the long run co-integrated equilibrium results. The study concluded that for foreign aid to be an effective investment, policy management need to focus on ensuring the prevalence of sound macroeconomic fundamentals, liberalizing trade, focusing on export-led growth strategy and promotion of tourism industry in Kenya.

KEY WORDS: Real Exchange Rate, Aid, Exports Sector Performance.

CHAPTER ONE

INTRODUCTION

1.0 Introduction

The chapter provides an insight into the study by discussing the background to the study, problem statement, objectives, hypothesis and justification of the study.

1.1 Background to the study

The relationship between a country's exchange rate and economic growth is a crucial issue from both the descriptive and policy prescription perspectives. As Edwards (1994: 61) puts it "it is not an overstatement to say that real exchange rate behaviour now 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 it serves as a measure of its international competitiveness (Bah and Amusa, 2003). The real exchange rate, in particular, defined as the relative price of foreign goods in terms of domestic goods, is of greater significance, as it is an important relative price signaling inter-sectoral growth in the long run and acts as a measure of international competitiveness. In other words, the real 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 real exchange rate's level, relative to an equilibrium real exchange rate level, and its stability have been shown to importantly influence export growth, consumption, resource allocation, employment and private investments (Aron *et al.*, 1997). Because of this important role the real exchange rate plays in the economy, emerging economies, in particular, are encouraged to conduct their policies so as to get this macroeconomic relative price right. The 'right' real exchange rate is one that does not stray too far from its equilibrium value.

The deviation of the actual or observed real exchange rate from the equilibrium real exchange rate is referred to as misalignment (Montiel, 2003:318). When the real exchange rate is misaligned, it can lead to a distortion in price signals that affect the allocation of resources in the economy. In developing countries, misalignment in the real exchange rate has often taken the form of overvaluation, which adversely affects the tradable goods sector or export sector. Overvaluation results in a real decline in the price of foreign goods relative to domestic goods. A decline in the price of foreign goods in terms of domestic goods has two primary effects on the export sector. First, on the production side, fewer resources will be allocated towards producing goods that can be exported, since these goods will be expensive for foreigners; at the same time, production of substitutes for foreign goods will also decline. These both destroy the current account. Second, 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. In other words, this situation lowers the growth and international competitiveness of an economy. In addition, when the real exchange rate is perceived to have become excessively misaligned, the expectation will be created that it will adjust towards its equilibrium level in the future. To the extent that this adjustment is expected to take place through an appreciation or depreciation in the nominal exchange rate, this will discourage domestic agents from holding assets denominated in the domestic currency, which is a potential source of capital outflow and exchange rate crisis (Montiel, 2003: 311). Importers, exporters, investors and the 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 performance that needs to be understood.

Throughout the economic adjustment agenda, exchange rate and trade reform occupied a core position. The real exchange rate, by virtue of its impact on the international competitiveness of an economy, assumed an overriding importance among the cohort of policy variables. Surges in external aid inflows are believed to be causing real exchange rate appreciation problems for the macroeconomic management of the Least Developing Countries' economies. The management of aid has been characterized by a combination of foreign exchange accumulation, credit to the banking system, and increased public spending especially on development projects. Efforts to maintain the real exchange rate in an era of increased aid inflows have kept inflation high (Younger, 1992). With regard to the impact of the real exchange rate on international trade, the real exchange rate is usually used as an indicator of the need for devaluation of a currency. An appreciation in the real exchange rate may signify that a country may experience current account difficulties in the future because it usually leads to an overvaluation of the exchange rate. Overvaluation makes imports artificially cheaper for consumers and exports relatively expensive for producers and foreign consumers; hence it reduces the external competitiveness of a country. In other words, overvaluation has the net effect of a large import bill and reduced export receipts. A fall in a country's international competitiveness results in poor economic performance and several associated problems.

1.2 Problem Statement

The Kenyan Government liberalized the financial, foreign exchange and domestic goods markets. The liberalization of the foreign exchange market in Kenya was gradual, from a fixed exchange rate regime up to 1982 to crawling peg during the period 1983 to 1993 before a floating exchange rate regime was adopted in 1993. Following the liberalization of the foreign exchange market, Kenya attained monetary independence to control inflationary pressures but lost the nominal anchor to tie domestic prices down and thus globalization effects are transmitted directly into the country (Kiptui and Kipyegon, 2008). With its nominal exchange rate managed for a larger part of the period under review, Kenya provides a case study of the adverse effects of a "controlled" exchange rate in the context of imprudent fiscal and monetary policies. Over the period 1985 to 1990 real Gross Domestic Product grew at an average rate of approximately 5.5 percent. However, from 1990 to 1996 the average growth rate was only 2.3 percent, implying that real per capita income declined significantly in the first half of the year 1990s. There were a number of factors associated with this unsatisfactory performance. Inflation was relatively high and erratic. The real exchange rate had been unstable over the last ten years (Malcolm *et al.*, 2000).

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. Exports lacked dynamism, leading to a chronic balance of payments 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. During the analyzed period, Kenya received large inflows of foreign assistance. This, however, was inadequate to offset the negative impact of the factors noted above. The result was a significant decline in the rate of economic growth. Viewed in broader terms, Kenya's economy has not performed at anywhere near its potential (Malcolm *et al.*, 2000).

Real exchange rate is an active source of discussions in Kenya, where exports performance has improved since 2002, but continues to fall short of the ambitions of the vision 2030. The level of the Kenya shilling exchange rate continues to be determined by the 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 reasons for persistent appreciation of the shilling real exchange rate against key currencies. Empirical studies on the Kenyan economy explaining the impact of shocks to real exchange rate movements are scanty (Kiptui and Kipyegon, 2008). Pollin and Heintz (2007) have recently called for a reassessment of monetary policy with a view to achieving a more depreciated shilling. Kenya adopted a

unified and flexible exchange rate in the early 1990s, as part of a market-based reform program designed to improve the investment environment and spur economic growth according to Ndung'u, (2008).

1.3 Justification

The real exchange rate has been a policy target, and in most exchange rate regime changes the aim is to maintain a stable and competitive real exchange rate. A number of researchers have argued that real exchange rates are crucial not only for attaining sustained general economic performance and international competitiveness, but have a strong impact on resource allocation amongst different sectors of the economy, foreign trade flows and balance of payments, employment, structure of production and consumption and external debt crisis (Edwards, 1989: 5, Aron *et al.*, 1997: 25 and Edwards and Savastano, 1999: 3).

The Kenya shilling weakened against major world currencies in the fiscal year 2010/11. It depreciated against the US dollar by 10 percent between June 2010 and June 2011 to exchange at an average of Ksh 89.05 per US dollar in June 2011 compared with Ksh 81.02 per US dollar in June 2010. In the East African Community, the Kenya shilling gained against the Uganda shilling and the Tanzania shilling by 1 percent in the fiscal year 2010/2011 to exchange at Ush 27.61 per Kenya shilling and Tsh17.79 per Kenya shilling in June 2011 (CBK, 2011). The Kenya shilling real exchange rate has gone through several phases since its liberalization in 1993. The shilling real exchange rate depreciated by 21 percent in January 1995 to October 1999 followed by a period of relative stability in October 1999 to December 2004.

Recently however, the shilling real exchange rate has experienced a strong appreciation. In December 2004 to December 2007, the shilling real exchange rate appreciated by 30 percent representing a major deviation from its past levels. This appreciation of the shilling real exchange rate has attracted public attention especially from exporters and importers who have argued that the weakening shilling is eroding their competitiveness. The large swings in the shilling exchange rate are also associated with varying degrees of volatility. Volatility was highest during the period just after liberalization, that is, January 1995 to October 2000 and lowest in the period from October 2000 to November 2004. Recently however, volatility increased posing challenges for macroeconomic management (Kiptui and Kipyegon, 2008). In addition to the developments in the Kenya shilling exchange rates, there have been significant changes in net external capital inflows as a ratio of GDP averaged 3 percent in 1994 to 2000 compared with an average of 2.6 percent in 2001 to 2006. The net external capital inflow in 2005 and 2006 was on average 3.9 percent of GDP (Kiptui, 2008).

Export earnings have been on an upward trend since 2002, the period during which the shilling depreciated in real terms. This is particularly true for manufactured goods, horticultural products and to some extent, tea. Coffee earnings stopped declining in the period after 2002 and remained fairly stable. However, the real exchange rate volatility has been on an upward trend since 2002 and therefore makes it difficult to conjecture the possible effects of the real exchange rate fluctuations on exports. The positive relationship between the depreciation of the real exchange rate and export earnings in the year 2002-2004 perhaps could explain why there has been concern over the more recent appreciation of the shilling from the year 2005-2007 with exporters warning of job losses in Kenya's main export sectors; Tea, Horticulture, Coffee, and manufactured goods (Kiptui, 2008).

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 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

concentration in agricultural products exports such as tea, coffee and horticulture, thus exposing the country to direct impact of fluctuations in global commodity prices.

The recurring policy objectives have been to maintain an exchange rate that would ensure international competitiveness while at the same time keeping the domestic rate of inflation at low levels, conducting a strict monetary policy stance and maintaining positive real interest rates. This has been difficult in practice. This thesis fills this existing gap by analyzing the role of external aid inflow in determining movements in the real exchange rate and analyzing the impact of the fluctuations of the real exchange rate on Kenya's exports, in the post-liberalization period.

1.3 General Objective

This study, in broad terms, investigated factors influencing real exchange rate in Kenya with special focus on foreign aid inflow and the behavior of exports in the presence of large aid inflow and real exchange rate volatility. The study was fundamentally concerned with forms of evidence and was structured around two objectives.

1.4 Specific Objectives

- a) To investigate factors influencing real exchange rate in Kenya
- b) To investigate the behavior of exports in the presence of aid inflows and real exchange rate volatility

1.5 Hypotheses

- H_{01} : Foreign aid inflows to Kenya do not result in real exchange rate appreciation
- H_{02} : Exports do not respond positively to aid inflows and real exchange rate volatility.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter presents a review of the relevant literature to the study pertaining to external aid inflow and other factors influencing Real Exchange Rate and Export Sector Performance, it includes discussion of related literature on Real Exchange Rate and a brief summary of literature reviewed. Several studies have been advanced to describe the relationship between external aid inflow and real exchange rate.

2.1 Kenya's Macroeconomic Outlook

Arianna (2002), Kenyan post-independence economic history can be divided into two periods. The first from 1963 to the beginning of the 1980s is characterized by strong economic performance and huge gains in social outcomes. A second period from the 1980s to the present is typified by slow or negative growth, mounting macroeconomic imbalances and significant losses in social welfare, notably rising poverty and falling life expectancy. Failure to reform and the increased role of politics over policy are at the heart of this structural break.

Kenya's economic growth was strong in the first two decades after independence and weak or negative thereafter. Between 1963 and 1970, the economy grew at an average real growth rate of 5 percent and from 1970 to 1980 at 8 percent. Economic growth delivered a real per capita GDP that was two-thirds higher in 1980 than in 1963. In contrast, the following two decades are characterized by a stagnating economy with average growth rates of 4 and 2 percent in the 1980/90 and 1990/2000 periods. By the year 2000, real per capita GDP had slightly declined relative to 1980. The transition from high to low growth affected all sectors. Agricultural growth fell from 5 percent in the 1970s to less than 1 percent in the 1990s. In the industrial sector, output growth fell from a buoyant 11 percent in the 1970s to a mere 4 and 2 percent in the 1980s and 1990s. Growth in the service sector declined as well from 8 percent in the 1970s to 5 and 3 percent in the 1980s and 1990s.

The relatively stronger performance of the service sector affected the composition of the economy. Between 1963 and 2000, services gained share from 44 to 60 percent of value added while the share of agriculture fell from about 38 to only 23 percent. Employment in agriculture dropped accordingly from 87 percent of the labor force in 1963 to 77 percent in 1999. The growth rates experienced in the 1970s were the result of a combination of favorable factors. In agriculture, the newly independent government had successfully distributed productive land to small farmers and promoted the cultivation of cash crops such as tea, coffee, and hybrid maize and the development of dairy farming. As a result of this and good market conditions, rural incomes rose by 5 percent a year from 1974 to 1982, and the smallholders' share of coffee and tea production rose to 40 and 70 percent respectively in the early 1980s, as did the varieties of maize produced (Swamy 1994).

In the 1963-1980 periods, sustained commodity exports provided foreign exchange earnings, which favored investment and capital imports. In industry, a mutually benefiting alliance between business and the body politic provided the rationale for implementing an industrial strategy based on import-substitution. The approach afforded high barriers to entry to importers and disincentives to export growth. It delivered high growth rates for the sector in the first years of implementation even though it relied too heavily on capital intensive technology to provide for the growth in employment policymakers had hoped for. It also set the basis for an inefficient and rent seeking industrial sector.

Starting in the 1970s, several factors started to negatively affect Kenya's growth potential. Among them a series of trade shocks, poor macroeconomic responses, and a change in the structure of the economy in which the government started to become an increasingly dominating force. Government expanded largely. Its expenditures increased by 60 percent in 1972-94. The fiscal imbalances that accompanied the expansion put pressure on domestic credit and inflation. Domestic credit provided by the banking sector expanded from 12 percent of GDP in 1966 to a peak of 56 percent in 1992. Money and quasi money swelled from a low of 27 percent of GDP in 1988 to a high of 45 percent in 1997, an election year. And, from a low average of 5 percent in the 1960s, inflation fluctuated between 10 and 20 percent annually from the mid-1970s to the mid-1980s, and accelerated further in the 1990s reaching a peak of 46 percent in 1993 (CPI).

Changes in the structure of the economy were set off by a rapidly expanding state-owned enterprise sector. Involved in manufacturing, financial services, and processing and marketing of agricultural products, it engendered distortions and inefficiencies. Large financing requirements of parastatals, combined with favoritisms from the state-owned banking sector crowded out private sector production and investment. The absence of productivity gains in the state-owned enterprise sector significantly lowered productivity gains in the economy overall. Furthermore the oligopolistic industrial structure nurtured by state-owned enterprises and import substitution policies increased inefficiencies and decreased the economy's capacity to adjust to changing external conditions. Policy response was also weak. When the natural market afforded by the regional customs zone with Uganda and Tanzania broke down in 1977, Kenya failed to implement the needed policy shift towards a more export-oriented approach. Instead, it continued to protect local business. Even weaker was the response to the oil crises.

The rapidly deteriorating terms of trade of the 1970s led to the balance of payments crises of 1974 and 1978-80. With the first oil shock the terms of trade fell 24 percent (1972-75); rose 41 percent in the next two years with the coffee boom; dropped again 28 percent with the second oil shock; continued falling all through the 1980s another 30 percent; and finally improved to pre-shock levels by 1994 and thereafter. The external balance followed a similar pattern, falling in the red during the first oil crisis, recovering during the coffee boom, and falling again in the aftermath of the second oil shock. The deficit in the trade balance will persist to the present with the exception of 1994, the year after the 81 percent devaluation of the Kenyan Shilling.

The government reacted to the crisis by imposing controls on bank lending, licenses on foreign exchange transactions, import quotas, and price and interest rate controls. While restrictions on domestic credit were later lifted, the others were made even more stringent. These generated important distortions on economic activity and gave rise to pervasive rent seeking (Durevall and Ndung'u 1999). Real interest rates were negative from 1974-78, and domestic savings plummeted in 1975 and 1979 and never fully recovered. The coffee boom of 1976-77, while easing the economic crisis, was used to delay the necessary economic adjustment. Both fiscal and monetary variables expanded rapidly, and so did state-owned enterprises. Government expenditures rose by a staggering 37 percent in the two years between 1977-79. Money (M2) grew 18 percent and domestic credit 23 percent in one year 1978/77. Investment of state-owned enterprises rose a stunning 14 percentage points of gross domestic income between 1978 and 1982 from 17 to 31 percent, adjusted downward after 1982 and climbed back to 31 percent by 1990.

As state-owned banks financed low-productivity public investments, investment efficiency fell. Returns on public investment averaged a meager 0.2 percent as compared to a 15 percent return on private investments (GoK 1982). Real interest rates followed an upward trend from 1978 onwards and so did interest rate spreads reflecting the higher levels of uncertainty in the economy, the increasing number of non performing loans and low investors' confidence. Domestic savings came tumbling down from a high of 27 percent of GDP in 1977 to a low 3 percent in the year 2000 (compared to about 15 percent average in sub-Saharan

Africa). Gross capital formation followed a similar trend and from a high of 30 percent in 1978, fell to 12 percent in 2000.

The second oil crisis and the severe droughts of 1979/80 helped trigger reforms. The change in exchange rate policy from fixed to crawling peg was adopted to deal with the appreciation of the real exchange rate. The policy switch was accompanied by fiscal stabilization and interest rate adjustment. In one year 1981/80 deposit rates doubled, and the overall budget deficit was cut by 3 percentage points from 8 to 5 percent of GDP in 1982-83. Inflation fell from 21 to 11 percent (1983/82) and the external imbalance was brought to zero in 1983 from 8 percent of GDP in 1982. This is the time when Kenya started becoming a favorite among international donors. Aid inflows more than doubled during the 1980s from 6 to 13 percent of GNI.

Partly due to the new availability of external financing, the stabilization was short-lived. From 1986 onwards, fiscal expenditures kept rising and so did the debt. With deficits in between 5 and 9 percent of GDP a year, the external debt jumped from 64 percent of GDP in 1986 to 86 percent in 1992. By 1992, the economy in a recession and elections coming up in December, a shift in policy was required to try to bring the economy under control. Controls of foreign exchange transactions were relaxed. A floating exchange rate was adopted. The 81 percent devaluation of the Kenyan Shilling in 1993 resulted in an overnight jump of the external debt to 143 percent of GDP. Inflation fell back to pre-1970s levels. Fiscal adjustment, which started in 1994 with severe cutting of expenditures, successfully brought down the deficit to zero by 1999.

Economic performance in the 1990s and beginning of 2000 continued to be very poor. High real interest rates combined with high transaction costs and high business uncertainty resulted in low employment and slow output growth (IMF 2002). Weak macroeconomic management, slow progress in structural reforms and failure to address governance issues are some of the reasons behind the continued economic downturn. Further, these failures combined with the political upheaval that characterized the 1992 and 1997 elections deeply affected Kenya's credibility in the international community, as reflected in the fall of international aid back to pre-1980 levels. In addition, Kenya suffered repeated exogenous shocks. Among them are the severe droughts of 1984 and 1997-2000, the 1998 Niño floods and the rising HIV/AIDS virus prevalence, which have contributed to loss of livestock, crops and income, and threatened family structure and the viability of social services. Recent market-oriented policies that have encompassed financial, trade and agricultural market liberalization, as well as some divestment of state owned enterprises have yet to break the pattern of growth decline. Reputation and structural issues continue to tax Kenya's ability to attract foreign investment.

2.2 Real Exchange Rate and Aid Past Studies

Farid and Mazhar (2011) examined Remittances, Dutch disease and Competitiveness in Pakistan economy. They carried out Bayesian IV analysis using the Gibbs algorithm. Their result indicated evidence for both spending and resource movement effects, both of them in the short as well as in the long run. Remittances caused an appreciation of the real exchange rates and loss of competitiveness of Pakistan's exports sector along with a concomitant rise in the share of the non-traded goods sector in the economy.

Bourdet and Hans (2003) conducted a study on emigrants' remittances and Dutch Disease in Cape Verde and found out that remittances give rise to a sort of Dutch Disease effect and thereby have an adverse effect on the competitiveness of the tradable sector. The magnitude of this effect in Cape Verde was not that large. However, they suggested that changing orientation of official aid to more growth-oriented aid, combined with a more export-oriented domestic policy, had contributed to limiting the adverse impact of emigrants' remittances on the competitiveness of the Cape Verdean economy.

Obadan (1994) formulated a simple econometric model and empirically estimated it together with a random walk model of the real exchange rate determination. Both models were estimated in log-linear forms using the two-stage least squares regression methodology and data for the period 1970 – 1988. Although this study failed to test variables for stationarity and did not estimate the equilibrium real exchange rate, it found that both structural and short run factors are important determinants of variations in prevailing bilateral real exchange rates and multilateral real effective exchange rates. The study found that the most important factors are international terms of trade, net capital inflows, nominal exchange rate policy and monetary policy. He found that an improvement in terms of trade, appreciation of the nominal exchange rate and net capital inflow appreciate the real exchange rate, while expansionary monetary policy depreciates the real exchange rate.

Acosta *et al* (2009), investigated Remittances, Exchange Rate Regimes and the Dutch Disease and analyzed panel disaggregated sectorial data. They specified a dynamic panel model and estimated it using a Generalized Method of Moments estimator (GMM) which was tailored to deal with endogeneity in all explanatory variables. Their study results suggested that rising levels of remittances in emerging economies potentially possess an important spending effect that culminates in an increase in the relative price of non-tradable and real exchange rate appreciation. Their results also indicated that a resource movement effect that favors the non-tradable sector at the expense of the tradable goods followed an increase in remittances. The evidence showed that the share of services in total output rises while the share of manufacturing declines, these being characteristic of the Dutch disease.

Aron *et al* (2000) employed a cointegration framework with single equation equilibrium error correction models to investigate the short and long run determinants of the quarterly real effective exchange rate for South Africa, over the period 1970:1 – 1995:1. They found a cointegrated equilibrium from a theoretical model characterizing equilibrium as the attainment of both internal and external balance for sustainable capital flows and trade tax regimes, given terms of trade including the price of gold and technology.

Nyoni (1998) using an error-correction representation model of the real exchange rate for Tanzania during 1967–93, found out that aid was associated with RER depreciation. He presented figures indicating that the real exchange rate depreciated more sharply over the period 1985–93 than in the earlier nine year period, despite a significant increase in ODA flows.

Antonopoulos (1999) tested the so-called “Shaikh hypothesis”, which stated that the real exchange rate is fundamentally determined by the ratio of relative real unit labour costs (as a proxy for productivity differentials) of tradable goods between two countries. However, Antonopoulos’s model added capital flows to the “Shaikh hypothesis” and employed cointegration methodology on Greece’s data covering the period 1960 – 1990. The study provided evidence that real exchange rate movements cannot be explained by the Purchasing Power Parity hypothesis, that there is a strong role of the productivity of the export sector of Greece *vis-à-vis* that of the rest of the world, and that there is a less important role of net capital inflows. The evidence in this study suggested that an improvement in the relative productivity of Greece’s export sector and in capital inflows appreciates the country’s real exchange rate.

Ndung’u *et al* (2001) examined Kenya’s exchange rate movement 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. This partly explains the high volatility of exchange rate in the 1990s.

Bandara (1995) in an analysis of the impact of foreign capital on macroeconomic performance in Sri Lanka using a computable general equilibrium CGE model did not find support for the Dutch disease theory. He indicated that, despite the real exchange rate appreciation associated with foreign capital inflows, some tradable sectors may expand. The mixed results on countries' experiences with booms indicated that country-specific circumstances, including policies they implemented or could have implemented matter. A closer look at the Dutch disease model would help make clear what the model entails.

Adams and Bevan (2006) developed a CGE-model of aid and public expenditure where public infrastructure capital generates inter-temporal productivity spillover for both tradable and non-tradable sectors. The model also provides for a learning-by-doing externality, through which total factor productivity in the tradable sector is an increasing function of past export volumes. The model was calibrated to contemporary conditions in Uganda to simulate the effect of increased aid. The results show that public expenditures whose productivity effects are skewed towards the non-tradable sector deliver the highest growth in exports and total output. The bias in productivity effects increases the supply of non-tradable goods, which is sufficiently strong to almost entirely offset the demand effects of increased aid flows. The results also show that exchange rate appreciation is reduced or even reversed enhancing export sector performance.

Falck (1997) examined aid-induced real exchange rate appreciation in Tanzania. He computed twelve different real exchange rate indexes for Tanzania, applied a three-stage selection procedure to each one of them and estimated the model by the use of ordinary least squares. The results showed some similarities across the various equations with respect to the signs on the coefficient estimates. Notably, foreign aid causes the real exchange rate to appreciate.

Athukorala and Rajapatirana (2003) conducted a comparative study on capital inflows and the real exchange rate for the main capital importing countries in Asia and Latin America. Unlike the aforementioned studies, their study focused on the behavior of the real exchange rate in terms of private capital inflows, disaggregated into FDI and 'other capital flows', and a set of macroeconomic indicators. They found out that the real exchange rate appreciates with rising levels of 'other capital flows' whereas increases in FDI lead to a depreciation of the real exchange rate. They further observed that the degree of appreciation associated with capital inflows was lower in the Asian countries compared to the Latin American countries. The available empirical evidence suggested increases in capital inflows have for the most part caused the real exchange rate to appreciate.

Elbadawi (1999) investigated whether external aid helped or hindered export orientation in Africa and estimated the relationship between ODA, real exchange rates and non-traditional exports for a panel of 62 developing countries including 28 from Africa. He found out a substantial partial real exchange rate overvaluation in many African and non-African countries. Moreover, exceptionally he found that high aid dependent African countries had either experienced or likely to experience overall real exchange rate overvaluation. Conditional on absence of real exchange rate overvaluation a proxy for good policy environment was of relevance to export performance. He also found a robust Laffer curve type relationship between aid and non-traditional exports through the misalignment of real exchange rates relative to its equilibrium.

Adenauer and Vagassky (1998) in an empirical analysis of the impact of aid on the real exchange rates in four CFA countries; Burkina Faso, Côte d'Ivoire, Senegal, and Togo during 1980–93, found the evidence of a direct relationship between aid inflows and real exchange rate appreciation. They suggested that, during the period when the four countries received large aid flows, their government deficits increased through high wage bills and para-public spending and their trade balances widened. These developments appear to lend support to the idea of Dutch disease.

2.3 Summary of Literature Review

It is self-defeating to come away from the vast literature covered in this chapter without more than a feeling that the main determinants of the long run real exchange rate in developing countries include changes in the terms of trade, productivity or technological progress and real interest rate differentials *vis-à-vis* trading partner countries, fiscal policy or sectoral composition of government spending, international transfers and capital flows, commercial policies and the extent of net foreign assets. However, shocks to nominal variables, such as changes in monetary and nominal exchange rate policies, may cause the real exchange rate to deviate from its long run path, but their effects will only be transitory. Thus, the real exchange rate is determined by both real and nominal variables in the short run, while only real variables influence the real exchange rate in the long run. With regard to the impacts of each of these variables on the real exchange rate, increases in the terms of trade and an expansionary fiscal policy have a theoretically ambiguous impact on the real exchange rate. However, the majority of empirical studies on developing economies reviewed in this study have found that both an improvement in the terms of trade and an increase in government consumption led to an appreciation of the real exchange rate.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter highlights the methodology of the study as well as the model of analysis. It reviews theoretical and empirical framework, model and technique of estimation, sources of data for the study, Real exchange Rate model, export performance model and data analysis techniques that were applied in the study.

3.2 Montiel's Model of the long run equilibrium real exchange rate

Montiel's model is an extension to Edwards' model and is based on the notion that the real exchange rate is an endogenous variable. In this model, the economy endogenous variables are determined by three types of variables: Predetermined variables, exogenous policy variables and other exogenous variables. Predetermined variables are endogenous variables that change slowly over time, such as the economy's capital stock, technology, net international creditor position and nominal wage. Exogenous policy variables include fiscal and monetary policy variables, trade policies and other variables under the control of domestic authorities. Other exogenous variables include observable variables, such as terms of trade, world interest rates e.t.c., and unobserved variables or random shock and bubble variables. Bubble variables are those that affect the economy through their influence on sentiment. Since real exchange rate (q) is an endogenous variable, Montiel (1999), in Montiel, 2003:316) expresses it as determined by the reduced form relationships:

$$q = F[X_1(t), X_2(t), X_3(t), B(t)] \dots \dots \dots (3.1)$$

Where X_1 represents the current values of a set of predetermined variables, X_2 represents the current and expected future values of a set of real policy variables, X_3 is the current and expected future values of a set of exogenous variables (observed and unobserved) and B indicates bubble variables. However, the long run equilibrium real exchange rate is not affected by all the categories of variables given in equation (3.1), but is affected only by the sustained values of the exogenous and policy variables called the long run fundamentals, as shown in equation (3.2) below

$$q^* = F(X_2, X_3^*) \dots \dots \dots (3.2)$$

Where (q^*) is the long run equilibrium real exchange rate, and X_2^* and X_3^* represent steady state variables or the long run fundamentals. The fundamentals must be identified before the long run equilibrium real exchange rate can be estimated. This is where this model comes in to attempt to identify the fundamentals. In this model, the equilibrium real exchange rate is defined as the value of the real exchange rate that is simultaneously consistent with internal and external balances, conditioned on sustained values of exogenous and policy variables.

By consolidating Edwards' (1989) model and Montiel's (1999) model, the variables that affect the real exchange rate include the terms of trade, fiscal policy or sectoral composition of government spending, value of international transfers, international financial conditions, the Balassa-Samuelson effect or differential productivity growth in the tradable goods sector, commercial policy, monetary policy, changes in foreign exchange reserves and nominal exchange rate policy.

3.3. Conceptual Framework

Independent variables

Dependent variables

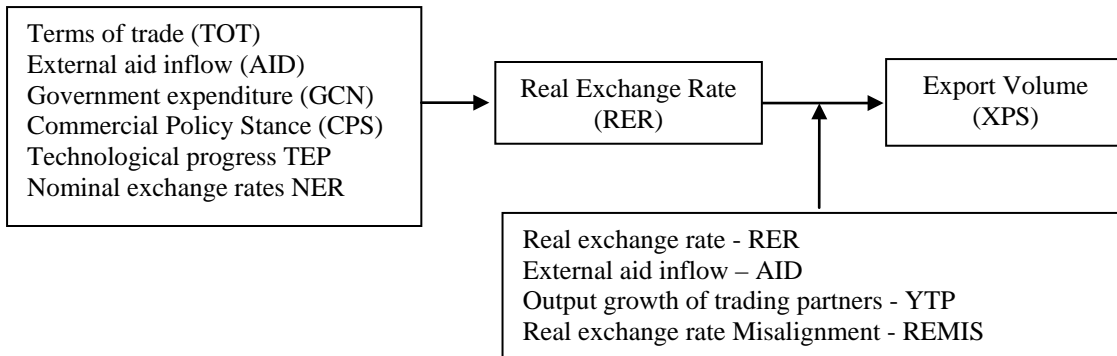


Figure 1: Conceptual Framework for Real Exchange Rate and Export Sector Performance

3.4 The Model

3.4.1. Model Specification

3.4.1.1 Real Exchange Rate model

$$\Delta \text{Log RER}^*_{t-i} = \beta_0 + \beta_1 \Delta \text{Log (TOT)}_{t-i} + \beta_2 \Delta \text{Log (AID)}_{t-i} + \beta_3 \Delta \text{Log (GCN)}_{t-i} + \beta_4 \Delta \text{Log (CPS)}_{t-i} + \beta_5 \Delta \text{Log (TEP)}_{t-i} + \beta_6 \Delta \text{Log (NER)}_{t-i} + \mu_t \dots \dots \dots 3.3$$

Where:

Log RER	-	Logarithm of equilibrium Real Exchange Rate
Log TOT	-	Logarithm of external terms of trade
Log AID	-	Logarithm of external aid inflows
Log GCN	-	Logarithm of government consumption of non-tradable
Log CPS	-	Logarithm of commercial policy stance
Log TEP	-	Logarithm of technological progress
NER	-	Nominal Exchange Rates

3.4.1.2 Export Performance Model

The export performance model is given by:

$$\text{Log EXP} = \alpha_1 \text{Log RER} + \alpha_2 \text{Log YTP} + \alpha_3 \text{Log REMIS} + \alpha_4 \text{Log AID} \dots \dots \dots 3.4$$

Where:

Log EXP	-	Logarithm of Growth of real exports
Log RER	-	Logarithm of Real Exchange Rates
Log YTP	-	Logarithm of output growth of the trading partners
Log REMIS	-	Logarithm of Real exchange rate misalignment
Log AID	-	Logarithm of external aid inflows.

3.5 Estimation Techniques

3.5.1 Error Correction Model (ECM)

Empirical studies have shown that the Error Correction Model is best suited model estimation when economic variables are individually non-stationary and cointegrated, i.e. when there is a meaningful long-run relationship between them. The error-correction methodology is appealing because of its ability to induce flexibility by combining the short-run dynamic and long-run equilibrium models in a unified system. At the same time, it ensures theoretical rigour and data coherence and consistency. This modeling strategy adopted in this study involved the following steps:

3.5.2. Stationarity/Unit Root Test

The classical regression technique, the Ordinary Least Square assumes that the variables under consideration are stationary which means, in simple words, their mean, variance and covariance are time invariant. It is found that almost all macroeconomic variables are non-stationary. Unfortunately, a regression carried out with such non-stationary series gives spurious results and is referred to as spurious or non-sense regression (Gujarati, 2003). A series is referred to as stationary if its mean and variance are constant over time and “the value of the covariance between the two time periods depends only on the distance or lag between the two time periods, not on the time at which the covariance is calculated” (Gujarati, 2003:797). A series that is not stationary is referred to as nonstationary.

3.5.3 Cointegration Test

Cointegration analysis was used to avoid spurious regressions while at the same time providing a means of explicitly distinguishing between long-run and short-run estimations through the error correction formulation. Cointegration tests are conducted in case of non-stationarity of the series to ensure long run relationships. If the variables are integrated of the same order, then Johansen – Juselius Maximum Likelihood method of cointegration is applied to obtain the number of cointegrating vectors. If the variables are cointegrated of the same order, an error correction model forms a linear combination of the variables included in the model (Johansen and Juselius 1990). The model was specified and estimated using standard methods and diagnostic tests.

3.6 Granger Causality Test

Once the long run relationship between Real Exchange Rate and its fundamentals was established the next logical step for purposes of this study was to examine the Granger causal relationship among the variables. X is said to granger cause Y if and only if the forecast of Y is improved by using the past values of X together with the past values of Y (Granger, 1969). Granger causality distinguishes between unidirectional and bidirectional causality. Unidirectional causality is said to exist from X to Y if X causes Y but Y does not cause X. If neither of them causes the other, then the two time series are statistically independent. If each of the variables causes the other, then a bidirectional or mutual feedback is said to exist between the variables.

3.7 Time Series Properties of Macroeconomic Data

The last three decades 1970 – 2000, witnessed a revolution in time series econometrics. This followed the classic work of Engle and Granger (1987) and its subsequent development by important contributors that include the econometric team in UK which was led by David Hendry. Their fundamental contribution was

to question the validity of the stationarity assumption of classical regression technique, in light of the time series property of macro-variables. The classical regression technique, the Ordinary Least Squares, assumes that the variables under consideration are stationary which means in simple terms, their mean, variance and covariance are time invariant. It is found that almost all macroeconomic variables are non-stationary. A regression carried out with such non-stationary series gives spurious regression results and is referred to as spurious or non-sence regression.

3.4.1 Sources of Data and Data Analysis

The data set comprised of annual time series data for Kenya over the sample period 1960 to 2010. The sources of data included IMF's International Statistics Yearbook, OECD's Geographical Distribution of Financial Flows to Developing countries, World Bank World tables, Kenya National Bureau of Statistics, Ministry of planning National Development, Ministry of Finance External Resources Department, United Nations Kenya's Development and Co-operation annual reports and Central Bank of Kenya. Data on exports of agricultural commodities and manufactured goods in US dollar terms were obtained from the Monthly Trade Reports of the customs department of the Kenya Revenue Authority. Inferential analysis technique was adopted in this study. This method was best suited for this study because it is used to draw conclusions concerning relationships and differences found in research results.

CHAPTER FOUR

EMPIRICAL ANALYSIS

4.0 Introduction

This chapter presents the research findings and their discussions as guided by the objectives of this study.

4.1. Unit Roots and Cointegration Test

The data was transformed into natural logarithms to account for the non-linearities in the relationships and also to achieve stationarity in variance.

Table 1: Unit Root Test for Real Exchange Rate Model Variables

Variable	Lags	Augmented Dickey – Fuller	Order of integration
Log RER	1	-1.562610	I(1)
Δ Log RER _{t-1}	1	-4.658320	I(0)*
Log TOT	1	-3.914031	I(1)
Δ Log TOT _{t-1}	1	-6.605113	I(0)*
Log AID	1	-2.590641	I(1)
Δ Log AID _{t-1}	1	-4.615532	I(0)*
Log GCN	1	-5.816247	I(1)
Δ Log GCN _{t-1}	1	-5.054172	I(0)*
Log CPS	1	-2.261134	I(1)
Δ Log CPS _{t-1}	1	-3.829783	I(0)*
Log TEP	1	-1.164171	I(1)
Δ Log TEP _{t-1}	1	-5.302551	I(0)*
Log NER	1	-1.480674	I(1)
Δ Log NER _{t-1}	1	-5.402865	I(0)*

(*) 1st Difference Variables

Source: Authors estimation results, 2013.

Table 2: Unit root test for Export Model variables

Variable	Lags	Augmented Dickey – Fuller	Order of integration
Log XPS	1	-1.115633	I(1)
Δ Log XPS	1	-5.354671	I(0)*
Log YTP	1	-1.722806	I(1)
Δ Log YTP	1	-5.634123	I(0)*
Log REMIS	1	-0.465412	I(1)
Δ Log REMIS	1	-5.286591	I(0)*
Log RER	1	-1.542612	I(1)
Δ Log RER	1	-4.758441	I(0)*
Log AID	1	-1.792934	I(1)
Δ Log AID	1	-4.604713	I(0)*

(*) 1st Difference variables

Source: Authors estimation results, 2013.

ADF Test was used to determine the presence of unit root. The MacKinnon critical values for rejection of null hypothesis of a unit root are -2.9472 at the 5percent level significance and -2.6118 at the 10 percent level of significance. For the first difference, the critical levels are -2.9499 and -2.6133 at the 5percent and 10percent significant levels, respectively. Using MacKinnon critical values for first difference it was noted that the variables were stationary when the first difference was taken since all values were less than -2.9499 at 5 percent level of significance and they were integrated of order zero I(0) showing (0) unit roots in the

first difference for all the predictors. ADF Test confirmed the stationarity of the parameters in their first difference form hence estimation was based on the 1st difference to avoid spurious regression results

4.2 Tests of co integration between RER and explanatory variables

Many time series are nonstationary individually, but move together over time, that is, there are some influences in the series, which imply that the two series are bound by some relationship in the long-run. This study sought to identify and distinguish those variables that have a long term relationship with the real exchange rate.

Table 3: Long run Test of Cointegration between RER and its determinants

DF test on residuals	-4.264324	ADF test on residuals	-4.472053	PP test on residuals	-4.325144
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Source: Authors estimation results, 2013.

Table 3 show results of DF, ADF and PP tests. A comparison of the computed Dickey Fuller and Augmented Dickey–Fuller test results with the Mackinnon critical values of about -2.947 and -2.612 at the 5 percent and 10 percent significant levels, respectively, tends to support co integration between the real exchange rate and its fundamentals. The existence of co integration is also upheld by the Phillips–Perron test, whose critical values at the 5 percent and 10 percent significant levels are -2.945 and -2.611, respectively.

Table 4: Short run Test of Cointegration between RER and determinants

DF test on residuals	-4.783656	ADF test on residuals	-4.386352	PP test on residuals	- 0.238547
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Source: Authors estimation results, 2013.

The results from tests for co integration on the residuals in the short run equation real exchange rate model attest to the existence of co integration. All three tests DF, ADF and PP show values that compare with their respective Mackinnon critical values to support co integration. Mackinnon Critical values for rejection of the null hypothesis of a unit root are -2.9472 at 5 percent level and -2.6118 at 10 percent level of significance. To ascertain the possibility of cointegration between exports and its determinants, DF, ADF and PP tests were performed on the residuals of the static export model. These are shown in Table 5 below.

Table 5: Test of Cointegration between Exports and explanatory variables

DF test on residuals	-4.614591	ADF	test on residuals	-5.625863	PP	-4.462763
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Source: Authors estimation results, 2013.

4.3. Granger Causality Tests for RER Model

Table 6: Pairwise Granger Causality Test for RER Model

Null Hypothesis	Lags	F-Statistics	P- Value
AID does not granger cause RER*	1	4.28134	0.01205
RER does not granger cause AID		0.31123	0.34122
TOT does not granger cause RER*	1	3.50025	0.12504
RER* does not granger cause TOT		0.41602	0.24123
CPS does not Granger cause RER*	3	3.12140	0.04915
RER does not Granger cause CPS		0.10632	0.42100
TEP does not Granger cause RER*	2	5.14061	0.01330
RER does not Granger cause TEP		0.12634	0.56917
GCN does not Granger cause RER	3	2.18052	0.13651
RER does not Granger cause GCN		0.21500	0.54424

Source: Authors estimation results, 2013.

Table 7: Pairwise Granger Causality Test for Export Model

Null Hypothesis	Lags	F-Statistics	P-Value
YTP does not Granger cause XPS	1	3.14132	0.21761
XPS does not Granger cause YTP		0.62057	0.55750
RER does not Granger cause XPS*	1	12.4275	0.00015
XPS does not Granger cause RER		0.52943	0.23431
REMIS does not Granger cause XPS*	1	10.4366	0.00012
XPS does not Granger cause RERMIS		0.24743	0.63208
AID does not Granger cause XPS*	1	11.3686	0.00055
XPS does not Granger cause AID		0.65332	0.47156

Source: Authors estimation results, 2013.

The outcome of the Granger causality test to ascertain the direction of causality between the real exchange rate and its fundamentals and export sector performance and its fundamentals is as shown in Table 6 and Table 7 above. A bivariate analysis was employed to test for causality. Null hypothesis is rejected at 5 percent level of significance ($P > 0.05$). The choice of the optimal lag length was based on the Schwartz Bayesian criterion. A P-Value of less than 0.05 ($P < 0.05$) indicated causality in the empirical results. Unidirectional causality was observed between aid (AID) and real exchange rate (RER) with a P-Value of 0.01205, commercial policy stance (CPS) and RER with P-Value of 0.04915, technological progress (TEP) and real exchange rate (RER) with P-Value of 0.0133. No granger causality was observed between government expenditure (GCN) and real exchange rate (RER) with a P-Value of 0.23651 and terms of trade (TOT) with a P-value of 0.12504. Because of the importance of the two parameters they were included in the model to capture the fiscal action of the government and its influence on RER and TOT included to capture economy's openness but the statistical significance of the two parameters were carefully observed during the estimation process. In the export performance model, causality was found to exist between exports and Real Exchange Rate (RER) with a p-value of 0.00156, Real Exchange Rate Misalignment (REMIS) with a p-value of 0.00126 and Aid (AID) with a p-value of 0.00273. The parameters granger causing exports volume exhibited unidirectional causality. Causality was not observed between Exports

(XPS) and output growth of trading partners (YTP) with a P-Value of 0.21761. The results of the Granger causality test and the unit root test allow for the direct estimation of the co integration regression using Ordinary Least Squares (OLS).

4.4. Estimation of the Empirical Model

Table 8: Long-run Cointegrated equilibrium Model results

Dependent variable: Log RER Method: Ordinary Least squares Sample: 1960–2010				
Variable	Co-efficient	Standard error	t-statistics	Probability
C	3.626702	0.523100	6.933095	0.0000*
$\Delta \text{Log TOT}_{t-1}$	0.404622	0.299082	1.352879	0.0065*
$\Delta \text{Log AID}_{t-1}$	-0.231233	-0.176242	1.312019	0.0004*
$\Delta \text{Log GCN}_{t-1}$	-0.556046	-0.301600	2.759163	0.0008*
$\Delta \text{Log CPS}_{t-1}$	-0.320067	-0.024575	13.024089	0.0000*
$\Delta \text{Log TEP}_{t-1}$	-1.245013	-0.104858	11.873323	0.0000*
R-squared	0.911032		Adjusted R-squared	0.937182
Durbin–Watson stat	1.435031			

* 1% ** 5% and *** 10% Level of Significance

Source: Authors estimation results, 2013.

Table 9: Short-run Parsimonious RER Model results

Dependent variable: Log RER Method: Least squares Sample: 1960–2010				
Variable	Co-efficient	Standard error	t-statistics	Probability
C	1.343122	0.462401	2.904669	0.0068
$\Delta \text{Log AID}_{t-1}$	-0.487251	-0.156231	3.118785	0.0004*
Log AID	-0.265823	0.203892	1.303744	0.0051
$\Delta \text{Log RER}$	-0.234625	-0.732534	0.320292	0.0006
$\Delta \text{Log GCN}_{t-1}$	-1.410147	-0.694015	2.031868	0.0081*
LogGCN	-0.213205	-0.337513	0.631694	0.0354
$\Delta \text{Log CPS}_{t-1}$	-0.527102	-0.135709	3.884060	0.0786***
Log CPS	-0.830614	0.603392	1.376574	0.0006
$\Delta \text{Log TEP}_{t-1}$	-2.965452	-0.803212	3.691991	0.0230***
Log TEP	-0.644536	0.441718	1.459157	0.0050
$\Delta \text{Log NER}_{t-1}$	0.318720	0.238649	1.335178	0.0023*
Log NER	-0.976753	0.665756	-1.467133	0.0079
R-squared	0.747644		Adjusted R-squared	0.706250
Durbin–Watson stat	2.342641			

* 1% ** 5% and *** 10% Level of Significance

Source: Authors estimation results, 2013.

Table 10: Results of the Export Performance Model

Dependent variable: $\Delta \text{Log XPS}_{t-1}$				
Method: Least squares				
Sample: 1960–2010				
Variable	Co-efficient	Standard error	t-statistics	Probability
C	-0.704186	-0.323617	2.175986	0.0557
$\Delta \text{Log RER}_{t-1}$	0.435711	0.267368	1.629630	0.0356**
Log RER	-0.650173	-0.171218	3.797340	0.0065
$\Delta \text{Log XPS}$	0.615054	0.624213	0.985327	0.0008*
$\Delta \text{Log YTP}_{t-1}$	2.671235	1.073213	2.4890073	0.0341**
Log YTP	0.153525	0.150615	1.019321	0.4085
$\Delta \text{REMIS}_{t-1}$	-0.061173	0.003432	-17.824300	0.0003*
REMIS	-0.025414	0.020157	-1.260803	0.0682
$\Delta \text{Log AID}_{t-1}$	0.175157	0.086131	2.033611	0.0653***
R-squared	0.807214	Adjusted R-squared		0.516037
Durbin–Watson stat	1.756965			

* 1% ** 5% and *** 10% Level of Significance

Source: Authors estimation results, 2013.

4.5 Diagnostic Tests

4.5.1 Co-efficient of Multiple Determinations (R^2)

Multicollinearity test was done to establish whether the explanatory variables were stochastic or non-stochastic. High R^2 but few significant t-ratios are classic symptoms of multicollinearity. The existence of multicollinearity does not affect the BLUE (Best Linear Unbiased Estimates) property of estimates. A multivariate analysis was carried out to establish the relationship between RER and its explanatory variables. The data analyzed indicated that the fitted model had a high explanatory power with R^2 of 0.911 in the Long run cointegrated model indicating that independent variables explained dependent variable 91 percent. In the short run parsimonious model R^2 of 0.7063 indicated an explanatory power of 70.6 percent. In the export sector performance model the empirical results indicated 80.7 percent explanatory power i.e. R^2 of 0.807214. High explanatory power in the three models coupled with very many significant t-ratios indicated the absence of multicollinearity between independent variables.

4.5.2 Durbin Watson Statistics (DW-Statistics)

Economic time series often display the characteristic feature of inertia or sluggishness, this tendency generates a momentum which propels it in its upward movement until such a movement is slowed down by a change in one or more of the estimators in the economy. This means that in time series regression successive observations are likely to be interdependent giving rise to autocorrelation. A test to determine the existence of autocorrelation was done to show whether the successive values of the error term were sequentially independent as stipulated in the assumptions of the Classical Linear Regression Model (CLRM). The most celebrated test to determine the existence of serial correlation the Durbin Watson test was employed. The DW result of 1.4350, 2.34264 and 1.7569 in the Long run cointegrated, short run parsimonious and export sector models respectively indicated the absence of autocorrelation between independent variable and stochastic term in the three models.

4.5.3 t-test

Statistical significant was confirmed by positive values of t-statistics estimated at 1 percent ($P < 0.01$) level of significance in the Long run cointegrated Real exchange rate Model. In the short run parsimonious model, fundamentals were estimated at 1 percent and 5 percent level of significance. Foreign Aid, Government expenditure, Technological progress and Nominal exchange rates were statistically significant at 1 percent level of significance ($P < 0.01$) and Commercial Policy Stance measured at 5 percent level of significance. In the export sector performance model, Real exchange rates, output growth of trading partners and Foreign Aid were found to be statistically significant at 1 percent and 5 percent level of significance. Real exchange rate misalignment was statistically insignificant in the export model with (–ve) t-statistics estimated at 1 percent level of significance.

4.6 Interpretations of the co-efficients

Government Expenditure (-)

The study result shows a negative relationship between government expenditure and real exchange rates. The impact of government expenditure on the real exchange rate depends on whether such spending is predominantly on tradable goods or non-tradable goods. An increase in government spending on tradable goods creates a trade deficit, which requires a real depreciation in the exchange rate in order to maintain external balance. The real depreciation in the exchange rate induces an increase in the production of tradable goods, allowing an increase in total spending on tradable goods. In contrast, an increase in government spending on nontradable goods leads to an increase in their relative price in order to maintain equilibrium in the nontradable goods market. An increase in the relative price of nontradable goods, in turn appreciates the real exchange rate.

Foreign Aid (-)

Likewise to government expenditure, real exchange rate appreciates with an increase in foreign aid inflow. Foreign aid inflow was treated as an exogenous variable in the study it proxied monetary policy stance in the economy. A negative sign attached to the co-efficient of Foreign Aid ($\beta_2 = -0.231233$) which is significant at 1 percent level of significance indicates appreciation of Real exchange rates. The study findings show that Exchange Rate appreciates with increase in foreign aid inflows which increases aggregate demand and exert upward pressure on prices of non-tradables, thus causing an appreciation of the real exchange rate. Increases in foreign aid inflows leads to accumulation of international reserves at the central bank and a monetary expansion (M_3).

Technological Progress (-)

Technological progress was proxied by index of agricultural production; it is an indicator of real economic growth. In the empirical results its co-efficient is negative ($\beta_5 = -1.245013$) and statistically significant at 1 percent level of significance. Its effect on the real exchange rate depends on how technological progress affects the prices of non-tradables. On one hand, productivity shocks increase incomes and raise demand in the economy. Empirical results show that it exert pressure on prices of non-tradable to rise thus causing an appreciation of the currency. This was depicted by a negative sign attached to its co-efficient (-1.245013). However, there is also a possibility that the productivity shock could raise supply of non-tradable goods and therefore lower prices thus ultimately causing a depreciation of the currency.

Terms of trade (+)

Consistent with theoretical expectations terms of trade leads to real exchange rate depreciation. This was exhibited by positive co-efficient of 0.404622 at 1 percent level of significance. The positive sign on terms of trade variable implies that the substitution effect associated with such improvements dominate the income effect. An improvement in the terms of trade implies more favorable export prices. The increase in export earnings leads to a rise in aggregate demand thus resulting in price increases. Since the prices of tradables are determined in the international markets, the increase in prices will mainly affect non-tradable leading to a depreciation of the domestic currency.

Commercial Policy Stance (-)

According to empirical results commercial policy stance or trade policy is another variable that leads to real exchange rate appreciation. A negative co-efficient of Commercial Policy Stance indicates an appreciation of real exchange rates. An increase, for example, in an import tariff can increase the domestic price of imports, which are part of tradable goods. This, in turn, shifts domestic demand towards nontradables, which will lead to an increase in their price beyond those of tradable, resulting in a real appreciation of the exchange rate. The increased demand for foreign currency, following an increase in the domestic price of imports, also appreciates the real exchange rate. An increase in export subsidies also creates a balance of payments surplus which requires an appreciation of the real exchange rate to correct. Thus, commercial liberalization or more open economy is likely to be associated with a more depreciated real exchange rate.

4.6 Export Sector Performance Model

The result of the study show that increases in output i.e. income of trading partners positively affect the performance of exports this is shown by the positive co-efficient of Output growth. Income of trading partners was found to be paramount in explaining increase in export volumes. The results confirm the role played by economic prosperity of the export destination countries as demonstrated by the significant positive co-efficient of output growth of trading partners. Output growth of trading partners is a foreign economic activity, proxied by export destination countries for Kenya's tea, coffee, and horticulture. Kenya's agricultural exports consisting of coffee, tea, and horticulture are usually sold to Europe, Egypt and Pakistan while manufactured goods are sold to neighboring countries i.e. Uganda, Tanzania and Rwanda. Changes in the real exchange rate variable also bear the expected positive sign. Generally, depreciations in the real exchange rate positively affect export performance. The negative coefficient on the real exchange rate misalignment term proxied by the black market premium highlights the adverse effect this has on export performance. For the policy environment proxy i.e. foreign aid, a positive relationship is seen to exist as indicated by positive co-efficient of Aid. This suggests that improvements in the policy environment elicit a favorable response from exports.

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

5.0: Introduction

This chapter covers discussions on conclusions, recommendations and policy implications of the study. Section 5.1 conclusions and section 5.2 give the recommendations.

5.1 Conclusions

The empirical estimation concluded that terms of trade, aid inflows, government consumption, commercial policy stance and technological progress are salient variables in the long-run equilibrium real exchange rate model for Kenya. In the short run, however, pertinent variables as far as the parsimonious model is concerned are nominal exchange rate, together with all the real fundamentals with the exception of terms of trade. Foreign aid inflows have an appreciating effect on the real exchange rate this is shown by the negative co-efficient of Aid in the long run Real exchange rate model. In the export sector performance model the study found that aid, Output growth of trading partners, Real Exchange Rate depreciation have positive influence on the export sector and Real exchange Rate Misalignment has a negative influence on the export sector. Global trends show that there is a tendency towards reduced aid inflows from the donor community. For developing economies like Kenya, this trend has serious implications for development activities. In order for the economy not to be overtaken by events, it is appropriate to adopt strategies for reducing aid intensity and hence dependence by continuously improving the institutional mechanisms of foreign aid delivery.

In summary, while Kenya has judiciously avoided acute overvaluation over the years, the empirical literature has become increasingly favorable to the view that undervalued exchange rates are good for growth. However, the real exchange rate is only one of many determinants of export performance and in Kenya, the issue of appropriate policy assignment is important. Fiscal policies are far more prominent than monetary policies in determining the real exchange rates in the medium to long run, and within the domain of monetary policy, regulatory policies should not be overlooked in the midst of debate over policies that operate directly on the exchange rate. Real exchange rate has a profound effect on export performance and the potential for export supply response is evident from the study results. While maintaining a stable exchange rate is important, strategies that lead to a relatively overvalued exchange rate could be a disincentive to export, implying that flexibility in the exchange rate movements, in line with the fundamentals of the economy might be beneficial.

5.2 Recommendations

The results of this study have a number of policy implications: First, the presence of long run co-integrated movements between the real exchange rate and its determinants found in this study implies the effectiveness of targeting all variables influencing the long run behaviour of real exchange rate. Second, the real exchange rate is shocked by factors that are outside the direct control of policy makers, such as the terms of trade. The policy implication is that the authorities' ability to influence the movements in the real exchange rate is limited. The authorities may however reduce the impact of this shock, in the long run, by utilizing policies to promote the diversification of traded goods and acting on other fundamentals. Third, liberalizing trade to ensure more openness is one of the tools in the policy maker's arsenal to avoid overvaluation both in the short and long run. With the rising level of globalization, openness through an export-led growth strategy is inevitable. However, to compete globally, costs including transaction costs should be minimal. That notwithstanding, trade liberalization or openness might also be associated with increased volatility, especially for commodity exports, therefore justifying the need for strategic supportive domestic policies to help those sectors that might not be able to cope with the wave of globalization. With

advances in economic integration, particularly the East African Community and Common Market for East and Southern Africa, together with African Growth Opportunity Act (AGOA), there is a potential export opportunities that can be explored to Kenya's advantage, including promotion of the non-traditional exports and tourism industry.

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