

THE EFFECTS OF REAL EXCHANGE RATE MISALIGNMENT ON ECONOMIC GROWTH: A CASE STUDY OF KENYA

THERESA WATWII NDAVI

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Supervisor: Prof. Matthew Ocran

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STUDENT DECLARATION

FULL NAME: Theresa Watwii Ndavi

STUDENT NUMBER: 205071716

QUALIFICATION: Magister Commercii (Economics)

In accordance with Rule G4.6.3, I hereby declare that the above-mentioned dissertation is my own work and that it has not previously been submitted to another University for another qualification.

Signature:

Date:

ABSTRACT

This paper investigates the effects of real exchange rate misalignment (REM) on economic growth in Kenya over the period 1964-2009. The real exchange rate misalignment is defined as the difference between the equilibrium exchange rate and the actual real exchange rate (RER). The equilibrium real exchange rate was obtained by using the purchasing power parity (PPP) approach. To this effect, the study examined the existence or absence of the cointegration between the REM and economic growth, using the autoregressive distributed lag (ARDL) bounds testing approach. The ARDL approach is employed to determine both the long-run and short-run dynamics of the model.

The results suggest that no long-run relationship exists between economic growth and the REM in Kenya. The short-run model is then estimated, using the OLS (ordinary least squares) method. From this model, it is determined that trade openness has a positive impact on economic growth, while foreign aid has a negative impact on economic growth; and both are considered empirically significant. The inflation rate and REM both negatively impact economic growth, but are empirically insignificant. All variables corroborate the a priori expectations.

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LIST OF ACRONYMS

3SLS – Three Stage least Squares

ADF - Augmented Dickey Fuller

ARDL - Autoregressive Distributed Lag

AREAER - Annual Report on Exchange Arrangements and Exchange Restrictions

BOP - Balance of Payments

CBK - Central Bank of Kenya

CBR - Central Bank Rate

CEEC - Central and Easter European Countries

CPI - Consumer Price Index

CUSUM - Cumulative Sum of Recursive Residuals

CUSUMSQ - Cumulative Sum of Squares of Recursive Residuals

DFE - Dynamic fixed Effects

DOLS- Dynamic Ordinary Least Squares

EAC - East African Community

EACB - East African Central Bank

ECM - Error Correction Model

ERS - Economic Recovery for Wealth and Employment Creation Strategy

GDP - Gross Domestic Product

GMM - Generalized Method of Moments

GNP - Gross National Product

GOK- Government of Kenya

IFI - International Financial Integration

IMF - International Monetary Fund

KPSS - Kwiatkowski-Phillips-Schmidt-Shin

Ksh - Kenyan Shilling

LDC - Least Developed Country

MG- Mean Group

NAIRU - Non- Accelerating Inflation rate and Unemployment

OLS - Ordinary Least Squares

OMO- Open Market Operation

PMG - Pooled Mean group

PPP - Purchasing Power Parity

REER - Real Effective Exchange Rate

REM - Real Exchange Rate Misalignment

REPO- Repurchase agreements

RER - Real exchange Rate

SDR - Special Drawing Rate

SSA - Sub-Sahara Africa

Std. Dev. - Standard Deviation

Sum Sq. Dev. - Sum of Square Deviations

TFP - Total Factor Productivity

TOT - Terms of Trade

USD - United States Dollar

US\$ - United States Dollar

VEC - Vector-Error Correction

WC - Washington Consensus

WPI - Wholesale Price Index

CHAPTER 1

INTRODUCTION

1.1 BACKGROUND AND PROBLEM STATEMENT

An understanding of the real exchange rate (RER) has become more important in recent times because of the pivotal role that exchange rate misalignment has assumed in explaining the uneven development performance of various countries. The argument is that chronic misalignment in the real exchange rate has been a major source of slow growth in Africa and Latin America, while prudent macro-economic, trade and exchange rate policies have fostered growth in Asia (Yotopoulos and Sawada 2005:2).

In fixed exchange rates and adjustable systems, misalignments are reflections of poor policy fundamentals that prevent exchange rates from adjusting to changes in economic fundamentals. Whereas in a floating exchange rate system the primary causes of misalignments are factors, such as speculative attacks that move the exchange rate too much in relation to economic fundamentals. In fact, misalignments are used to evaluate the need to adjust the exchange rate in countries with less flexible regimes, and as a tool to predict future exchange rate shifts among floaters (Zakaria 2008:2).

There are different ways in which RER misalignments can influence growth. According to Razin and Collins (1997:3), one major influence can be domestic and foreign investment; and this can influence capital accumulation, while another influence is on the tradables sector. This can influence its competitiveness in comparison with the rest of the world.

Kenya is considered to be a small developing country. Real gross domestic product (GDP) for the year 2009 amounted to USD 18 billion, and was 3.5 percent above the output of USD 17.4 billion recorded in 2008 (Central Bank of Kenya, Monthly Economic Review). This growth is attributed to the recovery from the effects of the post-election violence of 2008. The country is heavily dependent on tourism and agriculture, as the pivotal sectors of the economy. The global financial crisis, the continuous severe drought in the country and the 2007/2008 post-election violence that almost brought the country to a standstill affected the 2008/2009 fiscal year adversely.

Economic growth in the country slumped to 1.7 percent in 2008, from 7.1 percent in the year 2007. The suppressed growth reflected adversely the after-effects of the post-election crisis, and the high international crude oil prices, which eventually stifled the transport sector and increased the cost of fuel and energy resources utilized in several other sectors (Central Bank of Kenya [CBK] 2009 Annual Report:9).

The CBK 2009 annual report stated that high global commodity prices, including oil and the global financial crisis, which set in during the fourth quarter of 2008, decreased tourism and export demand in Kenya. In 2008, the tourism sector declined by 35.9 percent from 16.3 percent growth in 2007, following insecurity in the first quarter of 2008, and subsequent travel bans, which drastically reduced the number of international arrivals by 30.4 percent from 1,048,732 visitors in 2007 to 729,490 visitors in 2008.

Recovery was expected in the fourth quarter of 2008, but the global financial crisis set in, thereby dealing another major blow to the industry. The agricultural sector also performed poorly in the fiscal year of 2008/09 – due to adverse weather and the post-election crisis contracting by 5.4 percent, compared with a positive growth of 2.1 percent in 2007.

In 2009, compared to the other five member states of the East African Community (EAC), Kenya had a GDP of USD 18 billion. Tanzania had the highest GDP that year with USD 18.7 billion. Tanzania has a natural harbour that caters to other countries in the region; and it is the third largest producer of gold, after South Africa and Ghana respectively. Uganda, recorded a GDP of USD12 billion. These are the original member states of the EAC. In 2007, Rwanda and Burundi joined the community; and in 2009; these recorded GDP figures of USD 3.3 billion and 1 billion respectively.

Until 1974, the exchange rate was pegged to the dollar, but after discrete devaluations, the peg was changed to the Special Drawing Rate (SDR). Between 1974 and 1981, the movement in the nominal exchange rate in relation to the U.S. dollar was unpredictable; the nominal exchange rate depreciated by about 14%; and this depreciation accelerated in 1981/82 with further discrete devaluations.

Between 1980 and 1982, the Kenyan shilling was devalued by about 20% in real terms measured against the SDR. After these devaluations, the exchange rate regime was changed to a crawling peg by the end of 1982. This regime lasted until 1990, when a dual exchange rate system was adopted that lasted until October 1993 – when, after a series of devaluations, the official exchange rate was abolished. That is, the official exchange rate was merged with the market rate; and the shilling was allowed to float (Ndung'u 1999:3).

The recurring policy objectives in Kenya have been: i) To maintain an exchange rate that would ensure international competitiveness, while maintaining the domestic rate of inflation at low levels; ii) to conduct a strict monetary stance; and iii) to sustain positive real interest rates. This has been difficult in practice, and made even more difficult by a floating exchange rate that occasionally moves out of line with its fundamentals in the short run (Ndung'u 1999:6). Following the discussions above, the questions that arise include: i) How has the exchange rate policy in Kenya evolved over the years? ii) What is the relationship between the real exchange rate and economic growth in Kenya?

1.2 OBJECTIVES

The principal objective of this research is to study the misalignment of the Kenyan Shilling (ksh) and how it has affected the economic growth in Kenya. However, the specific objectives are as follows:

- i) To review monetary and exchange rate policies and macro-economic performance in Kenya from 1964 to 2010.
- ii) To examine the effect of real exchange rate misalignment (REM) on economic growth in Kenya from 1964 to 2009.
- iii) To make policy recommendations based on the findings of the study.

1.3 RELEVANCE OF THE STUDY

For developing countries that have relatively thin financial markets, misalignment can be quite a serious issue. If a country chooses a floating exchange rate, it is possible that rates would be excessively volatile, due to speculative influences (Dubas 2009:1612). This suggests that not all currencies are meant to be floating ones. For some developing nations, a pegged currency may decrease the extent of misalignment. But the disadvantage is that the growth of which the economy is capable would be limited; and government intervention would be needed to restore the economy to equilibrium, rather than it automatically restoring itself.

Measures of misalignment are used to i) assess the need for devaluation where the exchange rates are fixed by government, ii) predict future depreciation, where rates are fluctuating in the market, and iii) assess the links between exchange rates and economic performance in a wide range of settings (Masters and Ianchovichina (1998:465). According to MacDonald and Vieira (2010:2), a reason for the growing interest in real exchange rate misalignment and growth is the experience of real exchange rate appreciation or depreciation, when considering the fiscal and current account deficits.

Rodrik (2008:2) argues that just as overvaluation hurts growth, undervaluation facilitates it. For most countries, high-growth periods are associated with undervalued currencies. An increase in undervaluation boosts economic growth, as well as a decrease in overvaluation. But this relationship holds only for developing countries. This suggests that more than just macro-economic stability is at stake.

Kenya's exports consist of primary products, which include tea, coffee, horticultural products and petroleum products. This being the case, Williamson (2008:1) points out that most development economists tend to dismiss the importance of exchange rates by the mere fact that developing countries are – and are likely to remain – principally exporters of primary products, whose demand is typically inelastic. Alfred Marshall and Abba Lerner stated that in order for currency devaluation to have a positive impact on the balance of trade, the sum of the absolute price elasticity of exports and

imports must be greater than one. In general, when considering a floating exchange rate regime, if the balance of payments (BOP) is in disequilibrium, it should be automatically resolved without the need for government intervention.

For a LDC (Least Developed Country) like Kenya, this does not apply. With the price being inelastic, exports and the independent and flexible monetary policy that is being implemented by the CBK should attempt to maintain a consistency with the exchange rate management that is unique to the country. The exchange rate should thus be maintained, so as to avoid fluctuations, and so positively affect the balance of payments (BOP). This would not only measure how competitive the Kenyan economy is globally, but also how well it performs domestically, thus improving the living standards.

The mitigation in fluctuations will prevent the inelastic export prices from being affected, and overall providing a steady contribution to the GDP of the country. The results of this study will help Kenya formulate exchange rate policies that are in line with its economic growth expectations, bearing in mind that agriculture and tourism are the two major sectors of the economy; and these are both affected by any fluctuations in the exchange rate.

Again Ndung'u (1999:1) points out that despite the importance of monetary policy and exchange rate policies in economic management, few studies have been done in Kenya to assess the relationship between them, while even fewer studies have been conducted to explain the exchange rate movements in the country.

1.4 STRUCTURE OF THE DISSERTATION

The rest of the dissertation is organised as follows: Chapter Two focuses on the evolution of the monetary policy in Kenya, as well as exchange rate management and economic growth in Kenya. Chapter Three examines the literature on the different economic growth models available, as well as issues pertaining to RER misalignment. Chapter Four concentrates on the research methodology adopted for the dissertation. The main findings of the dissertation and the discussions are presented in Chapter Five. Chapter Six presents the conclusions and some policy recommendations.

CHAPTER 2

MONETARY AND EXCHANGE RATE POLICIES:

POST- INDEPENDENCE TO 2010

2.1 INTRODUCTION

In this section, the first part presents a brief discussion on monetary policy in general. The second part tackles exchange rate policy. Exchange rate regimes are discussed in general, with a list of the countries that adopt the exchange rate regimes being provided. Finally, the evolution of monetary policy, the exchange rate policy, as well as the macro-economic performance of Kenya post-independence to 2010, is presented here in detail.

2.2 MONETARY POLICY FRAMEWORKS

Monetary policy is pursued by the monetary authorities, in order to accomplish macro-economic stability. Each country has certain macro-economic variables that it targets – depending on its monetary policy regime. Monetary policy regimes encompass the constraints or limitations imposed by custom, institutions and nature – on the ability of the monetary authorities to influence the evolution of macro-economic aggregates (Bordo and Schwartz 1997:1).

There are different monetary policy regimes that differ, according to the target instruments and long-term objectives of each of them. These regimes include: inflation targeting, monetary aggregates/targeting, exchange rate targeting, nominal GDP targeting and interest rate targeting. Inflation targeting has a long-term objective of maintaining price stability, while exchange rate targeting involves maintaining a stable currency. Monetary aggregates target the growth in money supply, while nominal GDP targeting focuses on growth of the total output/ income of an economy. The interest rate targeting focuses on the interest rate as a monetary policy tool.

Inflation targeting is characterised by the announcement of official target ranges for the inflation rate, at one or more time horizons, with the primary goal of maintaining low and stable inflation (Tawadros 2009:326). Lin and Ye (2009:118) point out that one main argument in favour of inflation targeting is that an official announcement of an inflation target makes a central bank's policy more credible, which helps to alleviate the dynamic inconsistency problem; and this should lead to lower (expectations of) inflation and inflation variability. Tawadros(2009:327) continues by mentioning that inflation targeting should focus on domestic economic conditions, while being able to respond to external shocks, to use

all the available information to determine the best settings for the instruments of monetary policy, be easily understood by the general public, and therefore highly transparent; and finally, because an explicit numerical target for inflation increases the accountability of the central bank. Inflation targeting has the potential to reduce the possibility that the central bank would need to implement time-inconsistent monetary policies.

Real exchange rate targeting usually aims at controlling the level of the real exchange rate, either in an effort to keep it at a constant level in the face of domestic or external shocks, or to achieve a different and typically more depreciated-level (Calvo, Reinhart and Vegh 1995:98). A real exchange rate targeting policy is considered influential, because once implemented it may lead to higher growth, a lower trade deficit-output ratio; and it should moderate the pressure on domestic inflation (Erol and van Wijnbergen 1997: 1724).

In developing countries, policymakers often link the rate of devaluation of the domestic currency to the level of the real exchange rate, with the intention of maintaining a desired level of competitiveness in foreign markets (Uribe 2003:137). Although Calvo et al. (1995:127) point out that a policy that aims at depreciating the real exchange rate is accompanied by a mix of higher inflation and rising real interest rates – with the latter being dependent on the lack of capital mobility. On the other hand, when there is perfect capital mobility in inflation-prone countries, authorities engage in real exchange rate targeting, by managing the nominal exchange rate – with the aim of maintaining international competitiveness through realistic real exchange rates. Erol et al. (1997:1717) have pointed out that these aims, together with better trade and capital account balances, are in turn, essential to finance the often high existing official foreign debt; and in turn they focus on the real exchange rate as a target.

An interest rate peg is desirable, because such a policy eliminates any distortion caused by sluggish portfolios, that is an interest rate peg allows labour — and thus output and consumption — to respond optimally to economic shocks (Carlstrom and Fuerst 1996:12). Implementing an optimal interest rate target leads to the variance of output being smaller at a small expense of inflation variability (Kobayashi 2004:727). Carlstrom et al. (1996: 2) point out that a constant interest rate is optimal when the interest rates act like a tax on labour; and constant taxes are preferable to variable taxes. Nominal interest rates are a tax on non-interest-bearing assets; and they mimic the effect of wage taxes; and with sluggish portfolios and constant money growth, interest rates can be quite variable. Thus, eliminating this variability is a form of welfare (Carlstrom et al. 1996:12).

Kobayashi (2004:726) suggests that the optimal value of the weight on an interest rate target is determined, so as to trade off between controlling the central banks, such that constraining the central bank's ability to set policy-reducing macro-economic volatility, by mitigating the effect the preference uncertainty has on interest rate settings, or by constraining the central bank's ability to set interest

rates, which would undermine its ability to offset demand shocks. This would raise macro-economic volatility, and by not controlling the central banks – resulting in lower social costs due to uncertain preferences for the central bank.

The author adds that interest-rate targeting should be included in monetary delegation schemes, since the gain of assigning an interest rate target stems from the fact that it leads the central bank to make smaller interventions, which limits the scope for the central bank's uncertain preferences to impact the economy (Kobayashi 2004:734).

Targets for nominal GDP might help policymakers balance the policy goals of sustainable economic growth and price stability, in such a way that with a good target variable, holding the variable on target should help stabilize real GDP in the short term, and also yield inflation consistent with the long-term objective of price stability (Clark 1994:11). Mitra (2003:197) mentions that two desirable features of nominal output targeting as a monetary policy strategy, include the fact that it automatically takes into account movements in both prices and real output, which in practice, are the two variables central banks care about most; and nominal GDP can serve as a long-run nominal anchor for monetary policy, given the common belief that monetary policy cannot affect the real economy in the long run.

McCallum and Nelson (1999:555) argued that keeping nominal GDP close to a target path that grows smoothly, at a rate equal to the long-run average rate of real output growth plus a target inflation rate, would keep inflation close to its desired value on average, and would perhaps diminish fluctuations in real cyclical aggregates. The authors consider nominal GDP targeting to be superior to monetary aggregates, because of the large and unpredictable changes in payments technology and financial regulations that have been experienced with monetary targeting; and also real fluctuations seem likely to be smaller than with pure inflation targeting, because of the implied response of the rule to implement very high or very low growth rates of output.

While nominal GDP targeting is unlikely to result in instability, this does not imply that it should be used in practice. Dennis (2001:111) does not argue that nominal GDP targeting is optimal in any sense, but rather that it is unlikely to be disastrous. By definition, nominal GDP equals the product of real GDP and the price level; and the growth of nominal GDP equals the sum of real GDP growth and inflation. Clark 1994:12 used these definitions to suggest that over short periods, changes in nominal GDP growth give rise to similar changes in real GDP growth – with little or no impact on inflation, while over long periods, changes in nominal GDP growth are closely linked to inflation, with no impact on real GDP. Thus, because in the long run real GDP grows at a fairly constant trend, long-run inflation would tend to equal nominal GDP growth minus the trend growth of real GDP.

Gebregiorgis and Handa (2005:119) say that money plays a fundamental role in the economy, so that both its macro-economic analysis and the pursuit of monetary policy presume a stable money

demand function, and a stable relationship between money and the nominal national income. Estrella and Mishkin (1997: 280) pointed out the potential uses of monetary aggregates in monetary policy; for instance, the aggregates may be used in an informal role as information variables to provide a guide for the conduct of monetary policy; more specifically, they could be used to signal the intentions of the central bank, so as to make it accountable for carrying out policies that are consistent with its basic mandates and to enhance its credibility and the public's expectations of the attainment of its goals, or using the monetary base to target nominal income growth. This poses the greatest demands on the performance of the aggregates, presupposing stable causal relationships with the ultimate policy goals.

Developed countries over the past twenty years have adopted various monetary policy goals, so as to achieve zero or low inflation, while others have gone further to take on inflation targeting as the primary goal (Gerrard, Lucas and Porter 2003:186).

For instance, since the breakdown of the Bretton Woods agreement in the early 1970s, to date developing countries have suffered more diverse effects than the developed countries. Gerrard et al. (2003:186) summarise these issues by stating that inflation rates have ranged from low to hyperinflation levels, while exchange rate regimes have varied from truly free through fixed or quasi-fixed to currency boards and dollarization. The reasons cited for these diverse effects are that the goals set are mutually inconsistent and incompatible with the exchange rate regimes in place. Moreover, the monetary framework is deemed to be incoherent.

Killick and Mwega (1990:3) recapitulated traditional monetary policy goals to include price stability, promoting growth, achieving full employment, smoothing the business cycle, preventing financial crises, and stabilizing long-term interest rates and the real exchange rate – not forgetting that while some goals are incompatible with each other, others actually clash.

2.3 MONETARY POLICY IN KENYA

The CBK was established in 1966 through an Act of parliament (the Central Bank Act-CAP 481). The reason for the establishment was a direct result of the then three East African States (Kenya, Uganda and Tanzania) wanting to have independent monetary and financial policies (The Central Bank of Kenya website).

With the Act in place, non-specific objectives were put that indirectly referred to price stability, such that Kinyua (2000:5) points out that the CBK was inclined to highlight its monetary policy strategy with controls on interest rates and the volume of credit expansion by banking institutions – as its operational targets, and money supply growth as its intermediate target.

From 1966 – 1970, the CBK pursued a rather passive monetary policy, partly because the Bank had not then acquired sufficient experience in the management of monetary policy. What was more

important, the Kenyan economy had no serious macro-economic problems to contend with during this period; and the CBK focused its efforts during the formative years (after independence) largely on laying down the necessary infrastructure for the effective management of monetary policy (Kinyua 2000:5). In this period, 1966 experienced the highest real GDP growth rate, export growth rate and inflation rate of 14.7%, 20.5% and 5%, respectively. On average, in this first decade, the GDP grew by 5.2%, the exports grew by 5.5% and the inflation rate was 2% (refer to Figure 3, Figure 1 and Figure 2 respectively.)

Between 1970 and 1980, both expansionary monetary and fiscal policies produced the economic crisis that was experienced during that decade. Moreover, a combination of policy errors and governmental controls did nothing to solve the problem. The policy-makers decided to introduce instruments that controlled, rather than liberalized, the economy. These included selective controls on bank lending, the licensing of foreign exchange transactions quota restrictions on most imports, direct price controls on goods, and controls on interest rates (Ndung'u 2004:3). As much as the policy-makers considered their response as being an easy way to solve the crisis (Ndung'u 2004:3), concludes that only major distortions emerged, such that rent-seeking activities surfaced in the public sector.

One major positive impact that was felt in the second decade was the commodity boom of 1976/1977 of the major export crops at that time, i.e. tea and coffee. Due to the sizeable increases in the coffee and tea world prices, there was an improvement in the terms of trade and an incredible growth of domestic credit and money supply aggregates (Kinyua 2000:7; Ndung'u 2004:3). Close to the end of this decade after independence, the economy experienced internal difficulties that were accompanied with a second oil shock, a decrease in the price of coffee, as well as severe drought. The main effects were a reduction in the terms of trade and an increase in the budget deficit; so the government decided to borrow; but this dependence on foreign loans could not evade import compression, mainly due to the scarcity of foreign exchange (Ndung'u 2004:3).

On average, the exports grew by a meagre 1.3%, due to the pressures towards the end of the decade, as seen in Figure 1, while the GDP, on the other hand, continued to grow – averaging 8.2%, as seen in Figure 3, while the inflation rate increased substantially averaging 12.1% (refer to Figure 2).

In the following decade of 1980 to 1990, the efforts to liberalize imports and to raise interest rates at the beginning of the 1980s proved unsustainable. Rising internal and external balances forced the government to tighten the fiscal policy; and so reduced government borrowing. In the first half of the decade, the rate of inflation decreased, while in the second half of the economy the economy experienced extreme inflationary pressures. Kinyua (2000:8) cites that the reason was partly due to rapid expansion in credit, mainly to the government, following a weakened budgetary position.

Luckily, there was another commodity boom in 1984 that contributed largely to the BOP surplus that was experienced, but as mentioned earlier, the budget was not tightened. Coupled with an

expansionary fiscal policy, government borrowing increased. This led to a decrease in the inflation rate (Kinyua 2000:8). The inflation rate decreased from 20% to 11.4% in 1985 (refer to Figure 2), while the export growth grew by 6.7% (as seen in Figure 1). Overall, the real GDP in this period decreased to an average 4.1% from the previous decade (as shown in Figure 3).

Kinyua (2000:9) concludes that monetary policy in the 1970s and 1980s was ineffective. Cited as a main reason, was the government's decision to use non-monetary policy recommendations, such that rather than allowing the money supply in general to contract during periods of BOP deficits, policy efforts were directed mainly towards controlling imports directly – using administrative controls under the Exchange Control Act.

In the 1980s, the Kenyan economy became very dependent on aid, such that there was an increase in international aid, which provided a large amount of external financing. This financing was used to by policy-makers and the government to set up programmes that were aimed at controlling the new problems that emerged. These problems stemmed from the same aid inflows that were flooding the economy. The major problem that emerged as a consequence was the level of external debt that continuously increased throughout this decade.

Initially, for a greater part of the 1990s, the conduct of monetary policy focused on the behaviour of the broad monetary aggregate, M2. The stability of the relation between M2 and nominal GDP came into question with the increased openness of the economy. By 1998, the Bank had shifted to a much broader monetary aggregate, M3, while the reserve money continued to be the operating target (Kathanje, Maana and Rotich 2007: 4).

When considering monetary policy instruments, the CBK initially managed monetary conditions in Kenya to obtain suitable growth in the money supply, by engaging in primary auctions of government paper. The volume of paper sold was in principle determined by both budgetary financing needs and monetary policy considerations. In addition, the reserve requirement and foreign exchange operations were actively used to influence monetary conditions. Later in the second half of the 1990s, further refinement was made in the monetary policy instruments, with CBK engaging in open market operation (OMO) through repurchase agreements (REPO), and a lower reliance on reserve requirements.

The reserve ratio requirement that was actively used before the mid-1990s was gradually lowered to the current level of 6 percent, from 20 percent in 1994 (Kathanje et al. 2007: 5).

Tight monetary policies were pursued to offset the inflationary pressures experienced in 1993. The CBK Act was amended in 1996 to allow the CBK greater operational autonomy in the conduct of monetary policy. The same Act stipulated the principal objective of the CBK as being the formulation and implementation of monetary policy, directed to achieving and maintaining stability in the general level of prices (Kathanje et al. 2007:3). Between 1997 and 1999, the economy experienced a

recession, such that even though the real GDP changed by 0.5 per cent in 1997 to 3.3 per cent in 1998; and finally in 1999, the real GDP change was recorded at 2.3 per cent (all shown in Figure 3). 1999 saw the lowest inflation rate of 5.75 per cent (as seen in Figure 2) compared to the last four years. This low inflation rate was due to the tight monetary and fiscal policies that the government had actively implemented.

For four consecutive years, the government continued with its stringent monetary policy, so as to keep the money supply at the same level, with the production of goods and services. In 1999, price and banking stability remained a top priority of monetary policy. Low levels of money supply and inflation were set, using indirect monetary policy instruments. Between 2004 and 2006, the economy recorded a growth of above 5 per cent. Real GDP expanded by 6.3 per cent in 2006 (refer to Figure 3). The inflation rate, on the other hand, decreased from 9.87 percent in 2005 to 6.04 per cent (which is represented in Figure 2); and this was despite the drought that prevailed in the first half of 2006 and the high international oil prices in the second half of the year.

In 2003, the monetary policy pursued at that time was aimed at realizing an inflation rate of 5 per cent, as spelt out in the Economic Recovery for Wealth and Employment Creation Strategy (ERS) paper of 2003 of the Ministry of Planning and National Development, Government of Kenya (GOK). This paper also aimed to maintain a competitive exchange rate consistent with an export-driven economic recovery (GOK-ERS 2003: 4). This paper points out that the plan is, therefore, the Government's social contract with the people of Kenya, such that its implementation will translate into sustained economic growth, wealth creation and poverty reduction, and a broad improvement in the wellbeing of Kenyans.

The economy in 2006 recorded an underlying inflation of 6.04 per cent (as seen in Figure 2), falling short of the target by 1.04 percent. This was blamed on the money supply (M3), which was a creation of the general public withholding. The main challenge to monetary policy implementation in 2006 was the expansion of money supply and reserve money, although there was a decrease in inflation (overall and underlying).

In 2009, the overall economy recorded a real GDP growth of 2.6 percent (represented in Figure 3) compared to the revised growth of 1.6 percent in 2008. The growth was mainly supported by the resurgence of activities in the tourism sector, resilience in the building and construction industry, and to government intervention through a stimulus package. The downfalls included a mixture of unfavourable weather conditions and slow internal and external demands. The global economic recession was felt mainly in the economy through a depressed demand for horticultural produce abroad and an inadequate recovery in tourism.

The overall annual inflation fell from 15.1 per cent in 2008 to 10.6 per cent in 2009 (as seen in Figure 2). This was mainly attributed to the decline in high global food and oil prices. Other reasons for the

decline were the reversal of slowed economic activities, caused by the aftermath of the 2007/2008 post-election violence, inadequate rains and overall discreet macro-economic policy management. In spite of the low inflation rate, the CBK's attempts to stimulate growth through an expansionary monetary policy, and almost all real interest rates, remained negative. The monetary policy stance in 2009 focused on achieving and maintaining price stability with an inflation rate of 5 per cent. The CBK sought to control inflation by limiting the growth of the broad money supply through the daily management of reserve money. The decade from 2001 to 2010 saw an increase in the growth of the real GDP and exports from 4.1 percent and 5.6 percent respectively from the previous decade, which recorded a growth of 2 percent and 2.1 percent, respectively (as seen in Figure 3 and Figure 1, respectively). The inflation rate decreased from 16.6 percent in the previous decade to 8 percent on the whole (refer to Figure 2).

Kinyua (2000:14) concludes that the success of the current monetary policy framework would continue to depend on a supportive fiscal policy, as the CBK continues to broaden its policy instruments to ensure an adequate fix without any fiscal support.

The CBK has managed to provide a comprehensive monetary policy that has been incorporated into the economic reforms being pursued by the government. This, when compared with the period right after independence, has contributed significantly to the macro-economic performance the country has experienced. There is still a lot more fine-tuning that can be pursued, so that the objectives of the monetary policy, as well as the exchange rate management are in line with each other.

Figure 1: Exports and the Shilling/US\$ exchange rate, 1964-2010

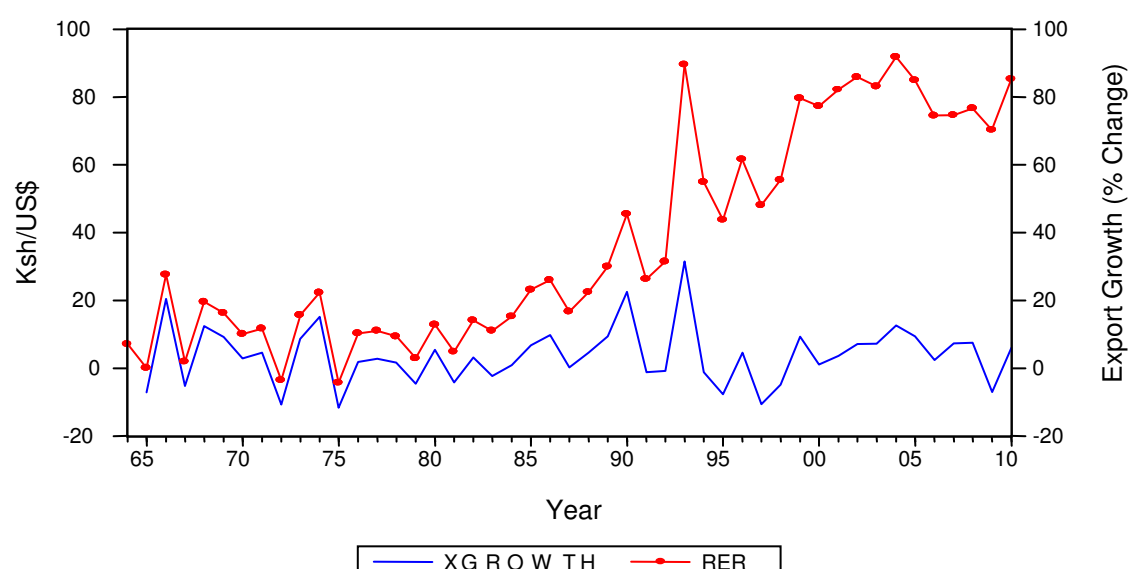


Figure 2: Inflation rate and the Shilling/US\$ exchange rate, 1964-2010

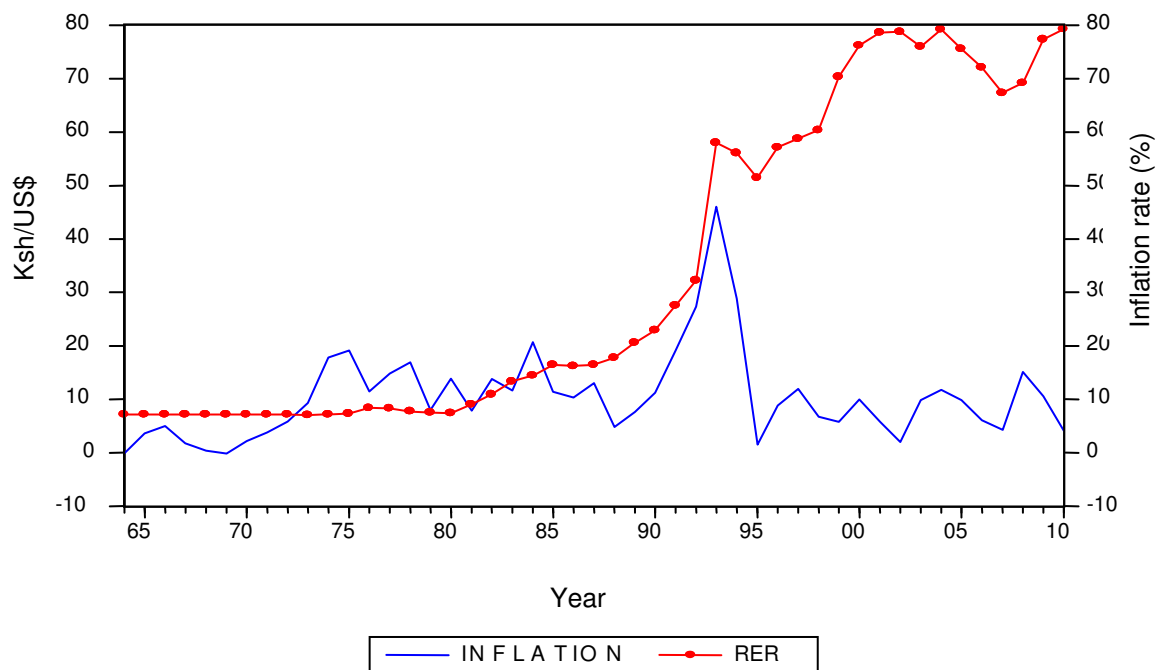
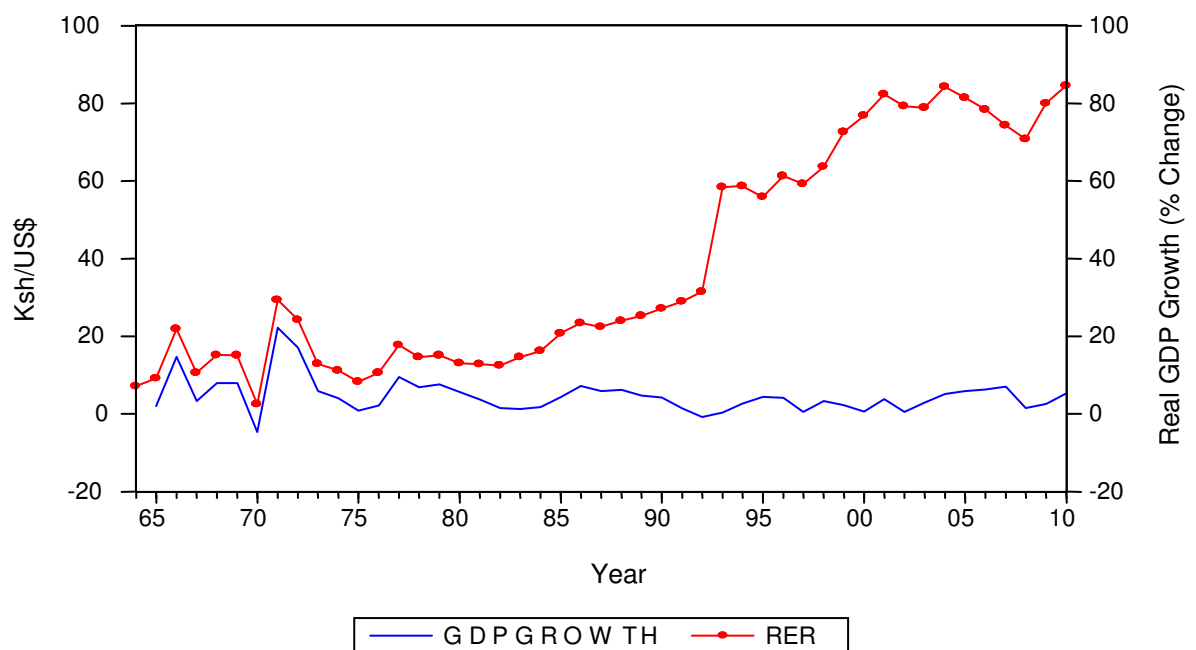


Figure 3: Real GDP growth and the Shilling/US\$ exchange rate, 1964-2010



2.4 EXCHANGE RATE REGIMES

The rate at which one currency is exchanged for another currency is known as the exchange rate; and the relation between a currency and other foreign currencies is overseen using an exchange rate regime.

According to Wolf (2002:39), a country's monetary history, size and sophistication, openness to trade, principal trading partners, and political destiny all assist in determining which of the available exchange rate regimes it does – and should – choose. Since the 1990s, many developing countries have experienced a shift from the fixed exchange rate regime to a flexible regime, focusing on inflation-targeting as the main goal.

The exchange rate regime in place at a particular time is linked to the monetary policy in place, as well. The fixed exchange rate dictates that the domestic currency is dependent on other currency/currencies, while the floating exchange rate relies on the market that deals with demand and supply of currencies. Between these two, there are intermediate regimes with various deviations of currency pegs. These regimes range from single currency, to crawling currencies, to free-floating currencies – such that the role of the monetary authority ranges from full control, to minimal control, to no control of the exchange rate.

Countries report their exchange arrangements to the International Monetary Fund (IMF), which publishes its regime classifications, based on these reports in the Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER):

Table 1: The IMF Classification of Exchange Rate Regimes

	Code Old classification: before 1998	New classification: since 1998
1	Single currency peg	No separate legal tender
2	SDR peg	Currency board arrangements
3	Other composite currency peg	Other conventional fixed pegs
4	Flexibility limited vis-à-vis a single currency	Horizontal bands
5	Flexibility limited vis-à-vis a group of currencies	Crawling pegs
6	Exchange rate adjusted according to a set of indicators	Crawling bands
7	Other managed floating	Managed floating with no pre-announced path for the exchange rate
8	Independently floating	Independently floating

Source: IMF, AREAER (various issues)

For the period 1977-1981, regime types 1, 2, 3, 5, 6, and 8 can be identified. For the period 1982-1995, all the eight regime types can be identified. For the period 1996-1997, regime type 6 is excluded from the classification. The new classification started on January 1, 1999, which was used as the classification for 1998 on December 31.

(Compiled by von Hagen and Zhou 2007:1076)

As of 31 December 2004, the de facto exchange rate arrangements, according to the IMF staff reports: Recent Economic Developments and International Financial Statistics, are as follows: there are forty-one countries in the world with no separate legal tender, of which the African countries include Benin, Burkina Faso, Côte d'Ivoire, Guinea-Bissau, Mali, Niger, Senegal, Togo, Cameroon, Central African Republic, Chad, the Republic of Congo, Equatorial Guinea and Gabon. Countries with currency board arrangements are seven, of which Djibouti is the only African country. Forty-one countries in the world have other conventional fixed peg arrangements, of which the African countries include Comoros, Eritrea, Botswana, Morocco, Libyan Arab Jamahiriya, Guinea, Lesotho, Namibia, Seychelles and Swaziland.

The pegged exchange rate within horizontal bands and the exchange rates within crawling bands have five countries, and one country respectively that follow this arrangement, of which there are no African countries in these categories. There are six countries worldwide that have crawling pegs, of which Tunisia is one. The managed floats are fifty-one in total, which include Egypt, Ghana, Mauritius, Sudan, Zambia, Ethiopia, Kenya, Mozambique, Rwanda, Algeria, Angola, Burundi, The Gambia, Mauritania and Nigeria; while the independently floating countries in the world are thirty-five, of which Malawi, Sierra Leone, South Africa, the Democratic Republic of Congo, Madagascar, Tanzania, Uganda, Liberia and Somalia are included as the African countries.

2.4.1 Floating Regime

With economic liberalization, the central bank is moving away from direct instruments of monetary control, such as credit ceilings and guidelines, interest controls, ceilings on lending rates, and fixed exchange rates – to more indirect instruments, like open market operations, flexible exchange rates and market-determined interest rates (Ndung'u 2004:1).

The reason why the exchange rate regime could matter is the presence of some form of price stickiness. In the early 1950s, Milton Friedman favoured flexible exchange rate regimes, based on the fact that, in a world with sticky prices, the nominal exchange rate could be used to insulate the economy against real shocks, such that countries that could change relative prices more, should have smoother adjustment of output (Broda 2004:32) The author continues to point out that Friedman summarised it in such a way, that in a world with sticky prices, the speed at which relative prices

adjust depends crucially on the exchange rate regime; and flexible regimes should have smoother quantity responses and quicker relative price adjustments to real shocks than do fixed regimes.

Exchange rate regimes affect a lot of macro-economic performances in the economy. Maitra (2010:112), for instance, states that theoretically the nature and direction of the relationship between money supply and exchange rate depends on the exchange rate regime; while Masson (2001:572) points out that exchange rate regimes are put in place, in accordance with the a country's particular needs at the time, such that, a peg may be adopted in order to halt a hyperinflation, but eventually it will need to be abandoned, due to a substantial loss of competitiveness – even though inflation has decreased.

Policy-makers' changing preferences are seen, through transitions between regimes, as a populist government may endeavour to stimulate output at the expense of exchange rate stability. This can only be achieved by a more conservative and stability-oriented administration (Masson 2001:573).

Frankel, Fajnzylber, Schmukler and Servén (2001:379) state that under floating regimes, governments do not assume a commitment to follow a certain exchange rate rule, because the central banks can either let the exchange rate move freely; or they can intervene with no specific rule, also known as managed floating. Hall (2008:73) points out that the only reason democracies have floating exchange rate regimes are simply because they are democracies. However an argument in favour of flexible exchange rates is its supposed equilibrating role in trade balances and its low inflationary pressures, such that it would free central banks from taking care of external balances, and allow them to direct monetary policy towards maintaining internal balances (Dash and Narasimhan 2011:2).

If a country chooses a floating exchange rate, it is quite possible that the rates could be excessively volatile, due to speculative bubbles or contagion (Dubas 2009:1612).

2.4.2 Fixed Regime

A country has a fixed exchange rate in a given calendar year, with its currency pegged to the currency of a base country; if its month-end official bilateral exchange rate stays within the same $\pm 2\%$ band for the entire year. This requires that a currency is within the same $\pm 2\%$ band at the end of each month for the full year (Klein and Shambaugh 2008:72). A fixed exchange rate is seen as a commitment device to mitigate inflation; and it is thus seen as a means of gaining credibility by policy makers, yet it should provide stability in both nominal and real exchange rates, especially for small economies (Theis and Arce 2009:1197). The author adds that they also serve as a signal to appease international lenders and foreign investor, while restoring – albeit temporarily – a country's investment climate; and overall business confidence points out that due to their nature, fixed exchange rates limit flexibility to engage in countercyclical monetary policy.

Where unrelenting inflation persists, a fixed exchange rate often causes the real exchange rate to become overvalued; and this turns out to be unsustainable in the medium term, leaving the regime vulnerable to speculative attack (Coudert and Dubert 2005:27).

2.4.3 Intermediate Regimes

According to Masson (2001:573), for many developing countries, free floating is not a viable option because of a lack of well-developed financial markets and institutions, including a deep foreign exchange market; while the hard constraints of currency boards are not politically acceptable. As a result, the exchange rate regime fluctuates among various alternative intermediate regimes, depending on the target of the macro-economic policy in place. von Hagen et al. (2007:1075) point out that classifying an exchange rate regime is taxing, as the regimes adopted by developing countries cover a wide range of alternatives, some of which do not fall neatly into the conventional fixed-or-flexible dichotomy.

The author further adds that while the difference between currency boards and freely floating regimes is obvious, that between adjustable pegs and managed floating regimes things tend to become blurred, especially when the adjustment is frequent under the former, or the management is tight under the latter, and the declared exchange rate regimes do not always correspond to actual exchange rate policies. In the case of currency pegs, the value of the domestic currency follows the exchange rates of the foreign currency/currencies to which it is pegged.

With simple pegs, the number of foreign currencies in the basket is equal to one; while with basket pegs, the number of foreign currencies in the basket is greater than one. Under target zones, a central parity is defined as a function of a single or multiple foreign currencies, and the exchange rate is allowed to float within a pre-specified band around this central parity. Whenever it hits the boundary, the government intervenes to keep the exchange rate inside the band (Frankel et al. 2001:361).

The 1997 Asian crisis attracted attention, so that the IMF accused “soft” pegs, of not really playing a part in the meltdown, but of amplifying the cost of the crisis (Allsopp, Hussain and Zurbruegg 2005:254). The 1997 Asian crisis featured as a large real exchange rate appreciation and ill-sequenced financial liberalization that was a consequence of the pegged exchange rate regimes in the region. The authors briefly explain that an overvalued currency implied falling exports and current account deficits, while the depletion of the foreign exchange reserves generated a liquidity crisis.

Market integration has led the majority of emerging market economies, including Asian economies, to view more flexible exchange rate arrangements as being more attractive. Hochreiter and Wagner (2002:173) and Coudert et al. (2005:875) point out that pegged exchange rates encouraged growth in unhedged foreign-currency debt, and a currency mismatch of balance sheets. Yet, having long supported fixed exchange rate regimes as a weapon in the fight against inflation, the IMF turned to

extreme solutions, based on hard pegs – currency boards or dollarization – or pure floats, in the late nineties; but their doctrine was once again tested with the Argentine crisis in 2001–2002; and since that time, the IMF has stopped recommending currency boards as a credible solution; and it has switched to its current doctrine of floating arrangements with inflation targeting (Coudert et al. 2005:875).

Theis et al. (2009:1193) explain that following the cessation of the Bretton Woods system in 1973 Latin American countries adopted floating exchange rate regimes. Later in the early 1990s, Argentina deviated from this regional norm by pegging their peso to the US dollar; and 10 years later, amid debt default and devaluation, the currency board system collapsed. Ecuador and El Salvador did not learn from this; and they took up the official dollarization system. Theis et al. (2009:1193) further explain that the reason why the hard peg regimes were taken up by these countries was due to the hope that had been pinned on fixed exchange rate system in the region that focused mainly on the promise of macro-economic stability in countries troubled by high inflation and recurrent balance of payments crises.

Hochreiter et al. (2002:172) add that the lesson of the 1990s seems to indicate that adhering to a pegged exchange rate regime can be a useful strategy for controlling inflation; but it may, at some point, contribute to financial instability in the future.

2.5 EXCHANGE RATE POLICY IN KENYA

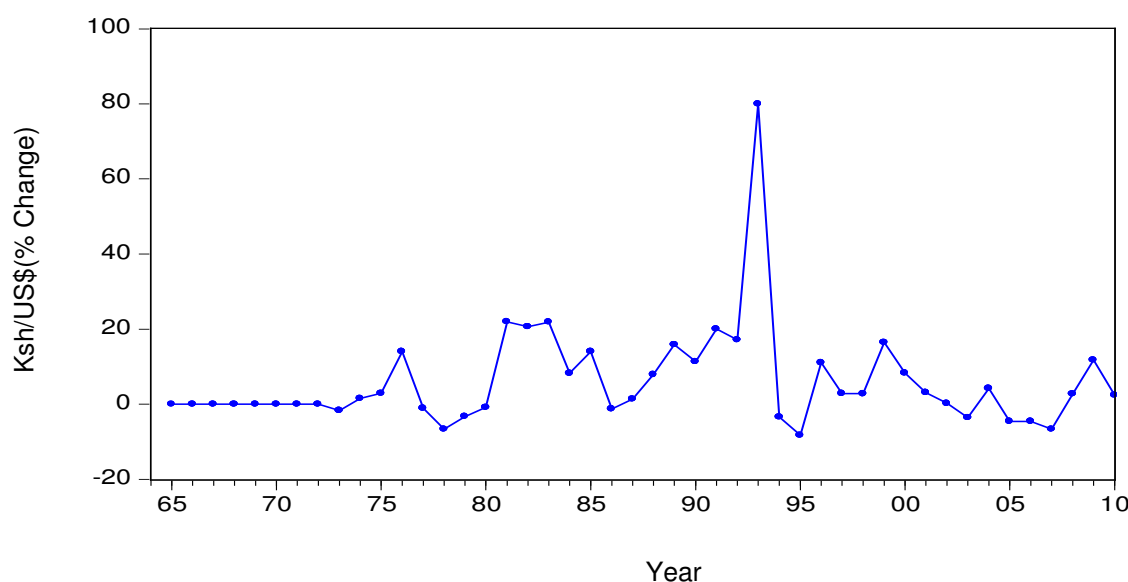
2.5.1 Introduction

In 1964, after the independence of Kenya, together with Uganda and Tanganyika (now main land Tanzania), there was a desire to establish a common East African Central Bank (EACB). Interim currencies, were therefore, introduced by the EACB to circulate within the region. For banknotes, the interim currency was commonly known as the Lake Victoria Money. There were also a number of coins minted and referred to as the “Uhuru” coins, since they too had no head or monarch on them. Kenya began printing and minting its own currency in 1966, under the mandate given to the CBK in the Central Bank of Kenya Act cap 491(Central Bank of Kenya).

Kenya has experienced a number of exchange rate regimes from 1964 to 2010, which have been summarised in the table below:

Table 2: The Evolution of Exchange Rate Policy in Kenya since Independence

Period Interval	Exchange rate regime pursued	Period averages RER % Change	Period averages of RER Ksh/US\$
1964-1974	Pegged to the Sterling pound then U.S. dollar	-0.01	7.13
1975-1982	Pegged to the SDR	5.98	8.32
1983-1990	Crawling peg	9.93	17.26
1991-1993	Dual exchange rate system	39.07	39.24
1994-1997	Independent float	0.57	55.83
1998-2010	Managed float	2.53	73.85

Figure 4: Percentage Change of the Kenyan Shilling, 1964-2010

2.5.2 Pound Sterling and US Dollar Peg: 1964-1974

Between the years 1966-1970, the Kenyan economy had no challenging macro-economic problems; moreover, the government had not yet attained adequate knowledge in managing the monetary policy; and it thus pursued a rather hands-off stance. It did this by first consolidating its role as the major holder of foreign exchange in 1967, as well as by introducing a liquidity ratio of 12% of all commercial banks' deposit liabilities in liquid form, in order to support government fiscal management. The year of 1967 saw the BOP crisis since independence. This was caused by the devaluation of the Kenyan shilling (which was pegged to the sterling pound) by 14.3% (Kinyua 2000:5).

Between 1964 and 1972, Ksh 7.14 was equivalent to the US\$. Hence, no change was experienced during this time. 1973 saw the first decrease in the RER by -1.7%.

2.5.3 Special Drawing Rate Peg: 1975-1982

With no sound policies in place at the time, increasing pressure was placed on the BOP and domestic credit in the first half of the 1970s. Kinyua (2000:6) cites the reasons as the oil crisis that immersed and the collapse of the Bretton Woods system of fixed exchange rates. This led to the slowing down of economic growth, and an increase in inflation. Legovini (2002:4) confirms the erratic behaviour by stating that starting in the 1970s, several factors started to negatively affect Kenya's growth potential. Among them, a series of trade shocks, poor macro-economic responses, and a change in the structure of the economy that saw the government become an increasingly dominating force.

The second decade also saw a series of devaluations of the exchange rate, including shifts in the pegging of the Kenyan shilling from the sterling pound against which it was pegged at Ksh 20 per pound to the U.S. dollar. This was because when the pound was devalued by 14.3%, there was no point in devaluing the Ksh; and so the best option was to peg it to the dollar. This pegging was not effective, as the appreciation of the dollar had adverse effects on Kenya's internal sector. So eventually, the Ksh was re-aligned to the special drawing rate (SDR) and devalued by 10.8%. The SDR comprised 16 currencies of countries contributing over 1% of the total world exports. The weights assigned to each currency in the basket depended on the country's share in total exports modified in the light of the currency weight in the world economy. The SDR was the most stable of the currencies during that time, such that the CBK saw this as the only way to cushion the effects of the fluctuations amidst the numerous floating exchange rates. Furthermore, this was coupled with an increase in the rate of inflation (Kinyua 2000:7; Ndung'u 2004:17). These changes contributed to the economic crisis that was experienced in that decade.

Ndung'u (2004:2) also noted that the commodity boom affected the exchange rate, in such a way that with the increase in revenue for both private and public sector, there was an appreciation of the exchange rate. Considering the fixed exchange rate regime that was in place, the domestic currency was thus considered to be over-valued. In 1976, the RER experienced the largest positive change of 14 percent and the following year, the change was in the opposite direction at -2 percent. The following year there was an increment in the change that lasted until the end of the decade. In 1981 the change in the RER increased drastically by 21 percent – changing from 7.42 Ksh/US\$ to 9.05 Ksh/US\$.

2.5.4 Crawling Peg: 1983-1990

As the third decade was commencing, the economy was feeling the effects of the reforms that were being put into place. These reforms were based on lessons learnt in the previous decade, such that

there was a level of stabilization that had been attained. But with the new decade also came some new problems that were remnants of the unsustainable policies, which had been put into place in the 1970s.

One main change was the exchange rate policy moving from a fixed to a crawling peg, in order to deal with the upward movement of the real exchange rate. This shift was accompanied by a constant fiscal stance that was achieved by the economy, as well as the regulation of the interest rate. Ndung'u (2004: 4) points out that the advantages of these particular reforms included the stabilization of the BOP, a decrease in the rate of inflation, an increase in the fiscal deficit, and a reduction in the excess liquidity caused by the coffee boom. The crawling peg, which was expected to lead to a higher inflation rate, did not do so; and this was attributed to the presence of controls on foreign exchange transactions and imports (Ndung'u 1999:8).

The fixed SDR peg was not considered practical in the 1980s, because of the improvement in the trading condition of the economy, such that significant competitiveness could not be maintained by it. Overall, the change in the RER during this period was slightly erratic, with constant increases and decreases. This was a sign of the shifting policies during the period and the fact that the economy was trying to stabilise after the previous period. The largest change was in 1985, when there was a positive change of 14 percent.

2.5.5 Dual Exchange Rate: 1991-1993

The 1990s saw an introduction of the floating exchange rate into the economy. Initially, the dual exchange rate was used from 1990; but in 1993 the inter-bank rate and an official exchange rate were used as the dual exchange rate, where these rates were merged together. With the merging, the introduction of the floating of the exchange rate was complete; and this is the regime that is still in place. Ndung'u (2004:17) cites this exchange rate policy as the most successful component of structural adjustment in Kenya.

There were advantages that were expected when the new exchange rate regime was in place. With the shifts and attempts to equilibrate the demand for and supply of foreign exchange, the new system would provide room for the continuous adjustment of the exchange rates, as well as change in the nominal exchange rate, rather than the level of the reserves, respectively. Kenya would also have an independent monetary policy consistent with the exchange rate management. Lastly, rather than being reflected in the reserve movements, external imbalances would be reflected in exchange rate movements (Ndung'u 1999:10; Ndung'u 2004:18).

In the 1990-1993 period, high inflation was experienced; and a near collapse of the shilling, which were due to the collapsed fiscal and monetary policies, as Kenya faced the first ever multiparty elections in 1992, as well as the discontinuation of aid coming into the country in 1991. With the near collapse of the shilling, there was a reluctance to use it as a medium of exchange – instead opting to transact business with foreign currency (Kinyua 2000:10).

In the early 1990s, many African countries had not realised their full potential due to obstacles to growth, including large budget deficits, high and volatile rates of inflation, financial repression and extreme government intervention.

In 1993, Kenya experienced high inflation of 46 percent, a substantial depreciation of the shilling, by 80 percent, and low investor confidence. This was partly due to the transition in the political system of the country.

Due to the new exchange rate regime, certain issues began emerging. There was a recovery in exports, such that there was an increase in foreign reserves. With increased inflows of foreign exchange, the exchange rate appreciated. This nullified the initial advantage of improved international competition, a stable exchange rate and the successful export promotion drive. Inflationary pressures and an appreciation in the real exchange rate were all experienced by Kenya between 1993 and 1995 (Ndung'u 2004:18).

2.5.6 Independent Float: 1994-1997

In 1994, the Kenyan economy recorded a GDP growth of 3 per cent. The main reasons include the favourable weather conditions that resulted in a good harvest, especially after the drought the country had experienced in 1992-1993. Also, the government implemented appropriate macro-economic reforms, some of which included a tight monetary policy and the liberalization of the foreign exchange and trade regimes. All these led to a decrease in the annual inflation rate to 28.8 percent, from 46 percent in 1993. Some of the reasons why the annual inflation rate decreased so much include an appreciation of the shilling from 58 Ksh/US\$ to 56.05 Ksh/US\$. This was caused by an increased inflow of forex, in response to the improved economic and political environment.

In 1996 and 1997, the high rise in inflation from 8.86 percent to 11.9 percent, was aggravated by a shortfall in agricultural output, caused by the widespread drought. There was a depreciation in the shilling from 57.1 Ksh/US\$ to 58.7 Ksh/US\$. This also played a part, coupled with the frequent price increases in petroleum and petroleum-related products.

2.5.7 Managed Float: 1998-2010

The weakening of the shilling in 1999 by 16.5 percent was partly due to the decline in foreign exchange inflow from coffee and tea; but towards the end of the year, there was a slight strengthening, because of the positive signals of aid continuation by the IMF and World Bank. In 2003, there was an appreciation in the shilling by 3.6 percent. This was partly due to the change in presidency after 24 years. After the next general election held in 2007, the Ksh shilling appreciated by 6.6 percent, due to that year being an election year.

Early 2008 saw the worst post-election violence ever experienced in Kenya. By the end of this year, the shilling had depreciated by 2.8 percent. In 2009, it depreciated even more by a further 11.8 per cent, and by the end of 2010 the Ksh had depreciated by 2.4 percent to 79.23 Ksh/US\$.

2.6 CONCLUSION

Overall, from 1966 to the present, the monetary authorities in Kenya have continued to pursue monetary aggregates, both actively and passively. This regime has been used to mainly targeting the growth in money supply, while maintaining a lower and more stable inflation rate. Between 1966 and 1984, the monetary policy in place was a domestic credit control; and this was during the fixed exchange rate regime. Between 1985 and 1992, the domestic credit control was still in place, but under a flexible exchange rate regime. From 1993 onwards, the CBK practised base-money targeting under the continued flexible exchange rate regime.

Currently the Central Bank's principal object is the formulation and implementation of monetary policy directed to achieving and maintaining stability in the general level of prices. The aim is to achieve stable prices – that is low inflation – and to sustain the value of the Kenya shilling. The Central Bank Rate (CBR) is the interest rate set by the monetary policy committee; and this rate signals the monetary policy stance of the Bank.

Kenya went through six exchange rate regimes between 1964 and 2010. Within the two fixed regimes, there was a slight depreciation from 7.13 to 8.32 Ksh/US\$. Total GDP, the inflation rate, as well as exports of goods and services all increased as well, although the inflation rate had the largest increase from 4% to 13%, while the exports only increased slightly. The change from the fixed regime to the crawling regime saw a large depreciation in the Kenyan shilling; while the inflation rate decreased by approximately 2%. This transition saw both the exports of goods and services and total GDP increase moderately.

From the crawling regime, Kenya adopted a dual exchange rate system; and it is in this transition that the inflation rate increased significantly from 11% to 30% approximately. The Kenya shilling continued to depreciate, while the exports of goods and services and total GDP increased moderately. After this regime, the independent float was adopted; and this brought a substantial decrease in the inflation rate from 30% to 12%, while the Kenyan shilling depreciated greatly, and the exports of goods and services, as well as the total GDP recorded the smallest increase amongst all the regimes.

In 1997, the monetary authorities adopted – and have since maintained – a managed float regime; and this saw a further decrease in the inflation rate, a depreciation of the Kenyan shilling and substantial increases in both the exporting of goods and services, as well as total GDP.

CHAPTER 3

THE LITERATURE REVIEW

3.1 INTRODUCTION

This chapter reviews the literature on real exchange rate misalignment and economic growth. The literature comprises both theoretical and empirical perspectives. The theoretical review looks at the competing theories that explain the relationship between RER and economic growth, while the empirical literature documents actual research that has been conducted.

3.2 THE THEORETICAL LITERATURE

When a country's currency is either overvalued – higher than the equilibrium exchange rate – or undervalued: lower than equilibrium exchange rate, it is said to be misaligned.

Allsopp et al. (2005:252) describe the purchasing power parity (PPP) as a method for calculating the correct value of a currency, which may differ from its current market value. The authors add that it indicates the appropriate exchange rate to use when expressing incomes and prices in different countries in a common currency; and it is therefore, helpful when comparing living standards in different countries; and that once the exchange rate is pushed away from its PPP, trade and financial deals flow in and out of a country. The currency can then move into disequilibrium, resulting in potentially substantial trade and current account deficits or surpluses.

Gyimah-Brempong and Gyapong (1993:72) used the black market exchange rate premium, because it is observable and easily calculated. They concluded that it affects the economic growth rate indirectly, through its negative impact on exports – and on investment through a transmission mechanism.

The real exchange rate misalignment is a key macro-economic policy variable, particularly in the case of developing countries, that is used to predict future exchange rate shifts and the need to adjust the exchange rate among countries with less flexible regimes (Ildiko 2008:4).

Some developing countries are plagued with unsuitable exchange rate policies; and these have caused them to experience poor economic performance over the years. RER misalignment decreases economic performance. It also causes macro-economic instability – mainly through undermining external competitiveness, the misallocation of resources, capital flight; and it negatively affects the domestic financial markets (Domaç and Shabsigh 1999:5).

Allsopp et al. (2005:258) point out that developing countries are characterized by more government intervention and trade restrictions than their developed counterparts; and therefore, it is expected that these developing countries will exhibit larger deviations of their exchange rates from PPP, although the counter argument is that the smaller deviations from PPP would be more likely in the case of developing countries, as a result of their tendency to apply capital controls. The authors maintain that this is because exchange controls have the effect of reducing speculation against the currency, thereby, generating lower exchange rate volatility levels.

Razin and Collins (1997:3), considered two possible channels through which RER misalignment might influence growth: firstly, RER misalignments could influence domestic and foreign investment, thereby, influencing the capital accumulation process; and secondly, the misalignments could affect the tradables sector and the competitiveness of the sector in comparison with the rest of the world. Misalignment is generally believed to be capable of reducing economic growth, export competitiveness, worsening terms of trade, and lowering the flow of foreign investment, among other effects (Aliyu 2008:3).

A country's choice of exchange rate regime may have consequences on economic growth – either directly through its effects on the adjustment to shocks, and/or indirectly through its impact on other important determinants of growth, such as investment, international trade, capital flows, and financial sector development (Bailliu, Lafrance and Perrault 2002:3).

By eliminating an important adjustment mechanism, fixed exchange rates can exacerbate protectionist pressures and reduce the efficiency of a given stock of capital, as well as result in misalignments that distort the efficient allocation of investment across sectors, since investment tends to be higher than the said exchange rate system – due to reduced policy uncertainty, real interest rates and exchange rate inconsistency (Bailliu et al. 2002:7).

Sissoko and Dibooglu (2006:155) point out that while a fixed exchange rate system can help maintain price stability by limiting monetary discretion, these systems fail to insulate against external disturbances, resulting thereby in a loss of competitiveness, as there is also no fiscal fine-tuning. The authors add that in flexible exchange rate systems, real exchange rate variability is mostly driven by trade balance and terms of trade disturbances, although monetary disturbances can affect the real exchange rate movements – indicating thereby greater monetary discretion, afforded by the presence of some price rigidities. Bailliu et al. (2002:5) corroborate this by saying that flexible exchange rate arrangements foster higher growth, since they enable economies characterized by nominal rigidities to absorb and adapt to economic shocks more easily, because exchange rate movements can act as shock absorbers; and with an independent monetary policy, they also allow countries to accommodate domestic and foreign shocks; and since the adjustment to shocks is smoother, one would expect growth to be higher, given that the economy is, on average, operating closer to capacity.

Due to sticky prices and increased international interdependence in the fixed exchange rate regimes, reduced uncertainty and transaction costs would increase output volatility, as compared with the situation in flexible exchange rates regimes. Moreover, the effects of the exchange rate system depend on structural characteristics, such as openness, capital mobility, and the existence of rigidities, as well as the sources of shocks impinging on the domestic economy (Sissoko et al. 2006:144).

An economy must have a reasonably well-developed domestic financial system to benefit from a flexible exchange rate regime, since the exchange rate regime could influence growth through its effects on the level of development of financial markets, as these exchange rate arrangements are generally associated with increased nominal exchange rate volatility. This can have damaging effects on the real economy, unless the financial sector can absorb exchange rate shocks and provide agents with appropriate hedging instruments (Bailliu et al. 2002:9).

Limiting exchange rate variability limits the incentive to invest in the relevant hedging markets and instruments, leaving banks and firms defenceless in the face of a spike in volatility – although keeping the exchange rate competitively valued and limiting volatility can be mainly useful for jump-starting growth, since once growth has started, domestic demand for the products of the modern sector develops; and it would no longer be necessary to rely on export demand to the same extent. Resistance may mean that the adjustment ultimately comes about via a costly and financially disruptive inflation (Eichengreen 2008:20).

3.3 THE EMPIRICAL LITERATURE

Cottani, Cavallo and Khan (1990) have empirically examined the correlation between RER behaviour and economic performance in 24 LDCs over the period: 1960-1983. According to the study, the simple comparison of the PPP rates over time is not a good indicator of disequilibrium situations affecting growth. Per capita income growth is correlated with a regression-based index of misalignment, which had to be estimated. The authors conclude that as an exogenous variable, the RER reflects shocks that have wider implications on performance than those directly attributed to the RER.

Razin et al. (1997) empirically implemented a methodology for constructing the RER misalignment for 93 countries over 16 to 18 year periods since 1975. A stochastic version of the Mundell-Flemming open economy model is implemented. The RER misalignment indicator is based on an IS-LM model. The indicator is then added to the explanatory variables used in the growth model. The explanatory variables are based on initial conditions, the external environment and the fiscal policy stance. The results suggest that there are important non-linearities in the relationship between misalignment and

growth; and in particular, only very high overvaluations appear to be associated with slower economic growth.

Rodrik (2008) provides sufficient evidence that undervaluation of the currency stimulates economic growth. He estimates a time-varying index of RER undervaluation, based on the Penn World Tables data price levels in 184 countries over 5-year time periods, from 1950-1954 through to 2000-2004. The index of undervaluation is technically RER adjusted for the Balassa-Samuelson effect.

Elbadawi Kaltani and Soto (2009) provides new evidence on the impact of aid and the overvaluation on growth and exports, using a sample of 83 countries from 1970-2004. The conclusions drawn by the authors suggest that aid fosters growth, but induces overvaluation, while overvaluation reduces growth, but that effect is recovered by financial development. A final conclusion drawn is that there is a negative impact of overvaluation on export diversification and sophistication.

The authors use three econometric error-correction estimations, namely: the pooled mean group (PMG) estimator, the mean group (MG) estimator – which is a more general version – and the dynamic fixed effects (DFE) estimator. This embodies a choice, that is a trade-off between consistency and efficiency.

Domaç et al. (1999) explored the effect of RER misalignment on the collective economic growth of Egypt, Jordan, Morocco and Tunisia between 1970 and 1995. The authors estimated three measures of misalignment, based on the PPP, a black market exchange rate and a model-based measure using official exchange rates. This aims to capture policy-induced misalignment. The economic growth equation is estimated by using iterative three-stage least squares (3SLS), and it includes growth in real GDP per capita, the RER variability, investment in the GDP ratio, the terms of trade growth and population growth and the misalignment measure.

The main conclusion drawn from the results is that the decline in the rate of economic growth in the relevant countries can be attributed more to economic mismanagement than to a decline in the external terms of trade.

Toulaboe (2006) uses data from 33 developing countries to investigate the relationship between the mean growth rate of per capita GDP and RER misalignment. The RER misalignment is estimated by using pooled data. Stemming from the notion that the equilibrium RER responds to changes in different variables – fundamentals – a simplified model is used to derive it. The author concludes that from the results, average RER misalignments are negatively correlated with economic growth, and so inappropriate exchange rate policies, therefore, contribute to the poor economic performance that many developing countries have experienced.

Gyimah-Brempong et al. (1993) investigated the effects of exchange rate distortions on economic growth in Ghana (LDC). The authors used time series data from Ghana and a five equation simultaneous model.

The RER misalignment indicator is measured by the black market premium. The negative effect experienced is expressed through reduced investment and a constriction of international trade. The results imply that liberalized exchange rate policies would enhance the growth prospects of LDCs, especially those in SSA.

MacDonald et al. (2010) have investigated the role that RER misalignment has on long-run growth for ninety countries by using time series data from 1980 to 2004. Panel data techniques, including fixing and random effects, panel cointegration and system GMM (generalized methods of moments) are employed in this study. The major contribution from these authors is the testing of different model specifications for the equilibrium RER that are used to estimate the RER misalignments, and from there to assess how significant the results are when included as an explanatory variable in the panel growth model.

The main policy recommendation drawn is that developing and emerging market economies should avoid periods of long-lasting exchange rate appreciation; and instead they should adopt economic policies that are able to keep the RER at a competitive level.

Abounoori and Zobeiri (2010) have examined the effect of the exchange rate gap on economic growth in Iran during 1961 and 2007, based on the Error-correction model (ECM), using time-series data. The Johansen cointegration technique was used to estimate the relationship between the gap and economic growth. The long-run relationship between the gap and economic growth suggests that adopting a suitable exchange rate policy to adjust the real exchange rate may have an important role in increasing output capacity; and thereby, might achieve higher economic growth.

Aguirre Calderón (2005) have evaluated the growth effects of RER misalignments and their volatility for 60 countries over 1965-2003, using panel and time-series cointegration methods. The dynamic panel data techniques used prove that RER misalignment hinders growth, but the effect is non-linear. Sarkar and Amor (2009) have identified the determinants of the equilibrium RER in 10 selected countries of South and South East Asia between 1979 and 2004; and they estimated the RER misalignment by testing the effect of international financial integration (IFI) on economic growth. A simple model is used to determine the equilibrium RER, and a dynamic model of endogenous growth that traces the effect of the misalignment. The authors applied the techniques of non-stationary dynamic panel, the tests of panel cointegration and the method of least squares dynamics (DOLS) to estimate the relationship of cointegration.

The technique of Generalized Moments Method (GMM) is used in the system, as applied panel data to estimate the equation of dynamic growth. The results confirm that the evolution of the RER misalignment was persevering and recurring. They also justify the non-linear effect and a non-uniform relationship between the RER misalignment and economic growth. Their main recommendation for the relevant region is to reduce the adverse effects of the RER variability on growth by lowering the dimension of overvaluation – with the adoption of a more flexible exchange rate regime, and by following a sequential strategy of financial integration that is compatible to the exchange rate regimes.

Pick and Vollrath (1994) assessed the impact of RER misalignment on agricultural export supply for selected commodities in 10 developing countries between 1971 and 1988 – by using a structural modelling approach. The authors adopted the Edward's method to measure the equilibrium RER. This method defines the equilibrium RER in terms of economic fundamentals, resulting in the simultaneous attainment of internal and external equilibria. The indicator of misalignment is then added to the export supply equation. The conclusion drawn is that RER misalignment is an important factor that adversely affects economic growth and export performance.

Gala and Lucinda (2006) have focused their study on the impacts of overvaluation on growth for 58 developing countries over 1960 and 1999. The old evidence estimates, using PPP comparisons, try to capture the influence of RER levels on per capita growth rates, especially when corrected for the Balassa-Samuelson effect. The GMM is used to estimate the growth model, with income per capita as the measure for growth, when considering the new evidence.

The general findings show a negative relationship between growth and overvaluations.

The study of Munthali, Simwaka and Mwale (2010) focuses on the impact of RER on savings rate and economic growth, while further exploring the savings transmission mechanism, through which such a link took place in the Malawi between 1970 and 2007. The RER misalignment was obtained by modelling the real effective exchange rate (REER) in terms of the trade index, the openness of the economy, national output and behaviour on national government expenditure on the consumption of non-tradables and tradables.

The REER volatility is proxied by the conditional variance of the REER. The conclusions drawn by the authors are that an undervalued REER would promote growth in Malawi. Moreover, the relative impact of RER on economic growth suggests that eliminating RER volatility could have strong growth-enhancing effects. The Malawian government has a variety of instruments to influence the level and reduce the RER volatility – one of which includes currency intervention, thereby increasing the foreign exchange reserves and eliminating institutional and marketing failures.

Ildiko (2008) investigated any kind of existence of a relationship between RER misalignment and economic growth in four Central and Eastern European Countries (CEEC). The BEER is used to estimate the equilibrium RER, while the Johansen cointegration determines the long-term relationship

between the real exchange rate and its fundamental factors, and the vector error correction (VEC) model that is used to find out the speed of adjustment of the RER to their equilibrium values.

The correlation between their RER misalignment and economic growth is tested by using time series and panel data analysis – and in particular the GMM technique. The country-by-country analysis conflicts with the panel data analysis, but in both cases, the results suggest that an increase in the RER misalignment that could easily slow down economic growth. The main conflict appears after the separation of the RER misalignment into over- and undervaluation indicators. A negative correlation was found between overvaluation and economic growth, while it was difficult to highlight any direct correlation between the undervaluation indicator and economic growth.

In the Appendix Table 8, a summary of the statistical studies of the RER misalignment and economic growth relationship is provided.

3.4 ECONOMIC GROWTH

Growth models are used to determine the sustainability of growth in different countries, and thus draw conclusions on the economic growth of these countries.

The classical theory of economic growth was introduced by Adam Smith, Karl Marx and David Ricardo. Meacci (2004:465) notes that the history of the theory of growth has its beginning firmly rooted in Adam Smith's theory of capital, where it focuses on the causes of growth in general (accumulation of capital and technical progress as a by-product of the former), and on the effects of growth on the distribution of wealth. The author continues by mentioning that while Smith regards the endogeneity of technical progress, as being distinct from growth, and thus as a matter of fact, Karl Marx regards it as a matter of his own theory of surplus value (exploitation), such that Marx's theory of the breakdown of capitalism is based on the idea that technical progress is indeed endogenous, but that growth – which is mostly the result of the forms taken by technical progress itself, is by no means inevitable. According to Day and Zhang (1996:1969), the classical model of economic growth, provides a fundamental insight into the relationship between productivity, generational welfare, and population, such that in a simpler form, the classical theory holds that the population would tend to grow exponentially fast, unless it were to be constrained by the means of subsistence or other exogenous forces.

Old neoclassical models focused on savings and investment; and since these were closed-economy models, that there was no role for the real exchange rate, defined as the ratio of the relative prices of non-traded goods (Eichengreen 2008:1). The convergence property has been exploited in the neo-classical model, in such a way that if all economies were inherently the same, excluding starting capital intensities, then convergence would apply in an absolute sense; that is, poor places would

tend to grow faster per capita than rich ones; but if economies differed greatly, for instance in propensities to save and have children, the willingness to work, access to technology, and government policies – then the convergence force would pertain only in a conditional sense (Barro1996 :4).

The author summarizes it so that the lower the starting levels of real per capita GDP, the higher is the predicted growth rate.

Solow (1956:66) summarises the economic growth process, as follows: with the available labour supply and stock of capital, the real return of factors will adjust to bring about full employment of labour and capital, so as to find the rate of output. Together with the propensity to save, indicating the amount of net output saved and invested the net accumulation of capital can be determined. When this is added to the already accumulated stock, this gives the capital available for the next period, where the whole process repeats itself. The Solow model focuses on four variables: output (Y), capital (K), labour (L) and “knowledge” or the “effectiveness of labour” (A). The output changes over time only if the inputs to production change. A and L enter multiplicatively, so that AL is referred to as effective labour, so that technological progress here is known as labour augmentation (Romer 2001: 9).

Solow reconciled the steady-state rate of growth of per capita output with constant capital/output and capital/labour ratios by introducing a labour-augmenting technological progress, and measuring the physical labour time in efficiency units (Qayum 2005:75). Solow sorted out the structural adjustments in Harrod’s knife-edge model by relaxing the rigidly fixed capital coefficient, and using a homogenous production function of degree one, so that the model allows output, capital and labour to be measured in efficiency units, and to move toward a steady state (Qayum 2005:76).

In the Solow-Swan growth model, steady state growth depends on technological progress and population growth, both of which are exogenous to the model, so that in the absence of technological progress, steady state per capita output does not grow (Ghura and Hadjimichael 1996:607).

According to Mulder, De Groot and Hofkes (2001: 152), the Solow-Swan model aims to provide a theoretical framework for understanding world-wide growth of output and the persistence of geographical differences in per capita output. Aggregate output (Y) depends on capital (K) and labour (L), according to a constant return-to-scale production function. Technological progress is introduced in terms of an aggregate parameter (A), reflecting the current state of labour, thereby augmenting technological knowledge. Mulder et al. (2001: 153) point out that an economy, regardless of its starting point, converges to a balanced growth path, where long-run growth of output and capital are determined solely by the rate of labour-augmenting technological progress and the rate of population

growth – bearing in mind there are diminishing returns to the accumulation of capital at the economy-wide level.

An important prediction of neoclassical growth models is that the output level of countries with similar technologies should converge to a given level in the steady state, while endogenous models are able to generate a linkage between public policies and growth in the long run, by assuming aggregate production functions that exhibit non-decreasing returns of scale (Ghura et al. 1996:607). Endogenous growth models assign an important role to investment in the short term and long term, because private investment is often seen as the engine that drives a country's economy, while public investment provides the necessary infrastructure (M'Amanja and Morrissey 2006:3).

Lau (2008:649) points out that researchers and policy-makers are interested in whether a permanent change in economic fundamentals would affect long-run economic growth, so that a distinction could be made between endogenous and exogenous growth models, since the change leads to a growth effect in the former as opposed to the latter, where there is only evidence of a level effect.

The endogenous growth model attempts to show that economic growth is due to factors that impact it from within, rather than to anything from without, like endogenous technical change and innovation, unlike the Solow model, which focuses on exogenously growing variables and the unexplained technological progress in the model (Qayum 2005:78). The endogenous growth model seeks to explain the underlying mechanism between technological progress and long-run economic growth (Griffiths 2002:332). Jones and Manuelli (1997:7) characterise endogenous growth as exploring economic models that endogenize the Solow source of exogenous technological change.

According to Grossman and Helpman (1993:29), improvements in technology are the best chance to overcome the apparent limits to growth, because if greater output requires greater tangible inputs, then it seems more than likely that the fixity in the supplies of several of the earth's resources would eventually mean an end to rising per capita incomes. But if mankind continues to discover ways to produce more output or better output, while conserving on those inputs that cannot be accumulated or regenerated, the authors conclude that there seems no reason why living standards cannot continue to rise for many centuries to come.

According to Lucas (1988: 39), there are two kinds of capital, or state variables, in the system: physical capital that is accumulated and utilized in production under a familiar neoclassical technology, and human capital that enhances the productivity of both labour and physical capital. The author continues by mentioning that this productivity is accumulated, according to a 'law' that has the crucial property and that at a constant level of effect, it produces a constant growth rate of the stock, independent of the level already attained.

Instead of assuming that growth is determined exogenously, the endogenous growth theory theorists posit a mechanism that generates a positive relationship between scale and productivity, such that the impact of the posited mechanism is to offset, and in most cases to outweigh, the impact of diminishing returns. The most direct way to incorporate this sort of positive feedback mechanism in the neoclassical growth model is to assume that productivity depends on capital per worker (Maré 2004:7).

Kurz and Salvadori (1993:150) cite that in the von Neumann growth model, the rate of growth is endogenously determined and full employment of labour is not assumed, while there is no endowment of the economy with a given quantity of capital that constrains productive capacity and provides the basis for a determination of the rate of interest. The authors ascertain that leaving the latter causes aside and incorporating diminishing returns, one infers the ultimate convergence of population to a stationary state – at a ‘subsistence’ or ‘natural’ wage for labour, the latter being a culturally determined standard of living associated with a zero population growth rate. The von Neumann model admits joint production and does not completely specify output decisions; so that the question of convergence of paths from specified initial conditions does not arise (Burmeister and Dobell 1970:210).

Due to the availability of data, information necessary to isolate determinants of economic growth can be provided. Barro (1996:70) lists some of these determinants, as follows: i) government policies: growth in real per capita GDP is enhanced by better maintenance of the rule of law, lower government consumption and lower inflation; ii) an increase in political rights, so that growth would increase initially, but later on stagnate once a moderate level of democracy has been attained; iii) greater starting levels of life expectancy, male schooling, lower fertility rates and improvement in terms of trade.

There are many growth theories that have been studied. The standard growth model analyses how the steady state balanced growth path is determined by the level of the efficiency of labour, the growth rate of the efficiency of labour, the economy's savings rate, the economy's population growth rate and the capital stock rate (DeLong 2002:97).

Qayum (2005:75) notes that Harrod and Domar have formulated one of the first definitive growth models where they used the fixed coefficients of constant capital/output ratio, savings rate and the population growth rate and managed to reflect the condition of time. Jones (1975:43) concludes that the Harrod and Domar models both begin with a Keynesian framework, but later progress into the long run, by avoiding Keynes's assumption that the rate of investment does not increase the size of the capital stock. Both models generate an equilibrium condition, implying a constant proportional rate of growth of the economy, both models imply long-run difficulties in attaining equilibrium growth at full employment, both models assume the equivalent of a constant capital-output ratio. Although Domar considers it a fit assumption to the constancy problem of technology, while Harrod suggests there are

possible variations in the magnitude of the interest rate, both models have an element of instability. For Harrod, this stems from the interaction of the investment function and the fundamental equation with entrepreneurial expectations, while in the Domar model, investment incentives are continually weakened – although the mechanism for this phenomenon does not seem to be very clear.

3.4.1 Exchange Rate and Economic Growth

For most African countries, the domestic markets are small; their production base is not well-diversified; and human capital levels and the adoption of technology is low. It is because of these reasons that for Elbadawi et al.(2009:5), the external sector is vital; and so economic growth depends largely on the fate of exporting sectors, which provide the main source of foreign currency, contribute substantially to government finances, attract foreign direct investment, and eventually, lead to productivity gains that are at the heart of all sustained growth.

A country's choice of exchange rate regime may have consequences on economic growth: either directly through its effects on the adjustment to shocks; and/or indirectly through its impact on other important determinants of growth, such as investment, international trade, capital flows, and financial sector development (Bailliu et al. 2002:3).

Within the neoclassical model, capital variability is expanded so that it includes physical goods and human capital, which is in the form of education, experience and health (Barro1996:5).

Mankiw, Romer and Weil (1992:408) augment the Solow model by including the accumulation of human and physical capital, because as they continue to explain, for any given rate of human capital accumulation, higher savings or lower population growth both lead to a higher level of income and; thus to a higher level of human capital; hence, the accumulation of physical capital and the population have greater impacts on income when accumulation of capital is taking into place.

Bhatt (2008:260) states that when nominal and real exchange rates appreciate, export price competitiveness improves, but the competitiveness of profitability deteriorates. The real exchange rate is best thought of as a facilitating condition because, keeping it at competitive levels while avoiding excessive volatility facilitate efforts to capitalize on growth fundamentals such as education and training, savings and investment and technological progress (Eichengreen 2008:20).

When considering investment, exchange rate fluctuations have a larger impact on domestic firms that undertake global investment than on domestic firms that limit their investment to domestic markets, as was mentioned in Torau and Goss (2004:258). Exchange rates affected the timing of the United States direct investment in Mexico. A sluggish economic growth and slow import demand, accompanied by the depreciation of a domestic currency all lead to an export surplus in the domestic country, as was experienced in China between 1978 and 1989 (Zhu and Kotz 2011:21).

The nature of the exchange rate regime can influence economic growth directly, if it affects the volume or composition of international capital flows, since international capital flows are seen to promote growth by increasing the domestic investment rate, by leading to investments associated with positive spillovers, and/or by increasing domestic financial intermediation(Bailliu et al. 2002:8).

Sub-Saharan African countries rely on few export commodities, and as such terms of trade fluctuations feature prominently in the economic performance of the countries, and as such, terms of trade shocks play a greater role in explaining the fluctuations in aggregate output in Africa than financial shocks (Sissoko et al. 2006:143).

Bailliu et al. (2002:5) point out that flexible exchange rate arrangements foster higher growth, since they enable economies characterized by nominal rigidities to absorb and adapt to economic shocks more easily, because exchange rate movements can act as shock absorbers, and with an independent monetary policy they also allow countries to accommodate domestic and foreign shocks. Since the adjustment to such shocks is smoother, one would expect growth to be higher, given that the economy is, on average, operating closer to capacity.

An economy must have a reasonably well-developed domestic financial system to benefit from a flexible exchange rate regime, since the exchange rate regime could influence growth through its effects on the level of development of financial markets, as these exchange rate arrangements are generally associated with increased nominal exchange rate volatility, which could have damaging effects on the real economy, unless the financial sector can absorb exchange rate shocks and provide agents with appropriate hedging instruments (Bailliu et al. 2002:9).

Limiting exchange rate variability limits the incentive to invest in the relevant hedging markets and instruments, leaving banks and firms defenceless in the face of a spike in volatility, although keeping the exchange rate competitively valued and limiting volatility are mainly useful for jump-starting growth, so that once growth has started, domestic demand for the products of the modern sector develops, and it would no longer be necessary to rely on export demand to the same extent. Resisting may mean that the adjustment ultimately comes about via a costly and financially disruptive inflation (Eichengreen 2008:20).

3.4.2 Exchange Rate Misalignment and Economic Growth

The link between economic performance and RER misalignment is undeniable. Cottani et al. (1990:61) have pointed out that in many African countries persistently misaligned local currencies have harmed the expansion of agriculture and so reduced domestic food supply. Pick et al (1994:556) state that in developing countries, exchange rates are usually overvalued, as a result of inappropriate and often inconsistent government policies.

Gyimah-Brempong and Gyapong (1993:59) importantly point out that inappropriate exchange rate policies negatively affect exports, imports, investment, technology transfer – and, ultimately economic growth in small open economies, such as those in SSA.

RER misalignments influence economic behaviour, so that overvaluation slows down economic growth, while undervaluation aids it (Razin et al. 1997:1; et al. 2005:1; Elbadawi et al. 2009:4; Rodrik 2008: 2; Berg and Maio 2010:6; Ildiko 2008:5; Munthali et al. 2010:303). Rodrik (2008:2) emphasises the fact that the differences in reaction of overvaluation and undervaluation in the economy hold only for developing countries, and not for the richer, more developed ones.

In the Washington consensus (WC) manifesto of Williamson (as cited in Berg et al. 2010:3), in the case of a developing country, the real exchange rate needs to be sufficiently competitive to promote a rate of export growth that would allow the economy to grow at the maximum rate permitted by its supply-side potential, while keeping the current account deficit to a size that can be financed on a sustainable basis.

In LDCs, misalignment particularly overvaluation, affects the economy detrimentally. According to the World Bank, overvalued exchange rates in many African countries have resulted in a dramatic deterioration in their agriculture, as well as in their external accounts (Edwards 1989:3). Rodrik (2008:2) confirms this by stating that overvalued exchange rates are associated with shortages of foreign currency, rent-seeking and corruption, unsustainable large current account deficits and BOP crises, just to name a few. Overvaluation hurts trading activities and affects growth, since productivity improvements tend to be concentrated in export and import-competing industries (Cottani et al. 1990:62).

Overvaluation may lead to tight monetary and fiscal policy – in an attempt by the monetary authorities to defend the currency - together with capital flight in anticipation of devaluation, severe decline in foreign direct investment and technological transfers, and overall a chronic economic recession (Toulaboe 2006:63).

Domaç et al. (1999:5) indicated that misalignments adversely affect economic growth by undermining external competitiveness through overpricing exports, misallocating resources, by distorting the prices of domestic goods relative to each other and to international prices, as well as adversely affecting domestic financial markets by increasing uncertainties in financial markets and encouraging speculation against the domestic currency.

Due to the undeniable influence that the RER has on economic growth and macro-economic stability in developing countries, the RER misalignment is considered a significant macro-economic policy variable, especially when looking at export-led growth. Numerous empirical studies have attempted to solidify the link between RER misalignment and economic growth, while avoiding the notion of the

level or the variability of the RER. The impacts of the RER misalignment on economic growth, especially in LDCs, are mainly linked externally to competitiveness and internally to the allocation of domestic resources.

3.5 THE CONCEPT OF THE EQUILIBRIUM EXCHANGE RATE

Ildiko (2008:8) likens the equilibrium real exchange rate (RER) to the potential or non-accelerating inflation rate of unemployment (NAIRU), so that all these variables are unobservable variables. This is the reason why calculating the true value of the RER misalignment is considered a difficult task.

Real exchange rates should be determined by basic relationships with certain macro-economic fundamentals. When they diverge from this equilibrium, a country's currency is said to be misaligned (Dubas 2009:1612).

According to the WC, the RER misalignment can be measured by comparing the actual RER with the exchange rate that would be consistent with the medium-term fundamentals driving the equilibrium exchange rate, such as the fiscal policy and the terms of trade (Berg et al. 2010:3).

Equilibrium RER is not a steady-state value, as it is influenced by certain fundamental factors. Edwards (1987:9; 1989:5) stated that the equilibrium RER is itself a function of a number of a number of variables, so that when there are changes in any other variables that affect a country's internal and external equilibriums, the equilibrium RER will also change. Other implications presented by the author include the fact that there is no single equilibrium RER, but a path of equilibrium RERs through time; and the path would not only be affected by the current values of the fundamental determinants, but also by their expected future evolution.

The fundamental idea of equilibrium RER is inter-temporal, as the path of the equilibrium RER is assumed to be influenced by both the current value of the fundamentals and the anticipations regarding the future evolution of these variables (Elbadawi et al. 2009:8). This also implies that the equilibrium RER is not stationary, but is sensitive to a wide range of variables; thus it moves as its economic fundamentals move over time.

With RER misalignment identified as the deviation of the actual RER observed from the equilibrium level, Edwards (1987:8) described the equilibrium RER as the relative price of tradables to non-tradables that result in the simultaneous attainment of internal and external equilibrium. The internal equilibrium holds when the non-tradables goods market clears in the current period, while expecting to be in equilibrium in the future periods, and while the external equilibrium balance refers to the

current account balances, both current and future, which are compatible with the long-run sustainable capital flows (Edwards 1987:8; Toulaboe 2006:59).

There are justified and unjustified changes in the RER. These are distinguished by Edwards (1987:5). Justified changes occur in response to technological progress, shifts in the external terms of trade and other real world events; and so these changes are considered to be equilibrium occurrences that do not result in misalignment, while unjustified changes refer to departures of the actual RER from the equilibrium RER, and it is this departure that is termed the misalignment (Pick et al. 1994:557).

Edwards (1987:5) further explained that justified changes are an equilibrium phenomenon; and they do not usually require government intervention, while unjustified changes represent a situation that is unsustainable in the long run, which is costly; and this requires government intervention.

Edwards (1989:5) pointed out the fundamental determinants of the equilibrium RER as those real variables, which in addition to the RER, play a large role in determining the country's internal and external equilibrium. The author categorises these fundamentals in two classifications, whereby the external RER fundamentals include: (a) International prices, that is international terms of trade; (b) international transfers, including foreign aid flows; and (c) world real interest rates, while the domestic RER fundamentals can be divided into those variables that are policy-related and those that are independent of policy decisions.

The policy related RER fundamentals include: (a) Import tariffs, import quotas, and export taxes; (b) exchange and capital controls; (c) other taxes and subsidies; and (d) the composition of government expenditure. Among non-policy fundamentals, technological progress is deemed to be the most important.

3.5.1 Measuring the Exchange Rate Misalignment

According to Razin et al. (1997:1), an exchange rate is labelled “undervalued” when it is lower than the equilibrium exchange rate, and “overvalued” when it is higher. Such misalignments are widely believed to influence economic behaviour. In particular, overvaluation is expected to hinder economic growth, while undervaluation is sometimes thought to provide an environment conducive to growth.

Masters et al. (1998:465) point out that such measures of misalignment are used to assess the need for devaluation. Where exchange rates are fixed by the government, they predict future depreciation; where rates are fluctuating in the market, they can be used to assess links between exchange rates and economic performance.

For policy and analytical purposes, Edwards (1987:26; 1989:11) distinguished between two types of real exchange rate misalignments: the first type is the macro-economic induced misalignment, which

occurs when, because of inconsistencies between macro-economic (and especially monetary) policies and the official exchange, these cause the actual RER to depart from its equilibrium value. The second type described is the structural misalignment, which takes place when changes in the real determinants (or fundamentals) of the equilibrium RER are not translated in the short run into actual changes of the RER.

RER misalignment can be classified into three measures. The first measure is based on the PPP. Within the PPP-theory, the misalignment is calculated as the deviations of actual RER from a certain base year, in which the RER is assumed to be in equilibrium. The PPP measure relies on the law of one price, which states that in an efficient market, when measured in a common currency, freely traded commodities should cost the same everywhere-this is referred to as international arbitrage. The PPP theory involves comparing past movements in prices or costs at home and abroad, and taking into account changes in nominal exchange rates, the focus is thus on developments in a country's real exchange rate; whereby, if there is a substantial gain or loss in competitiveness relative to a base period that indicates an equilibrium, the assumption is that the exchange rate is no longer consistent with the underlying external position of the country (Hansen and Roeger 2000:24).

Aguirre et al. (2005:3) point out that with this measure, the PPP only accounts for monetary sources of exchange rate fluctuations; and it does not capture the exchange rate fluctuations attributed to real factors. Pick et al. (1994:558) noted that a problem with this measure is the selection of the historical year on which the equilibrium will be based; while Zhang (2001:83) states that inadequate consideration is given to changes in the equilibrium RER caused by fundamentals. For instance, terms of trade, capital inflows, technology, trade policies, since this approach assumes an unchanged equilibrium RER throughout the period.

PPP in its simplest form equilibrates exchange rates and national price levels, and according to (Allsopp et al. 2005:253), this theory is usually presented in two versions. It states that for the relative PPP, a change in the exchange rate is equal to the inflation differential, while for the absolute PPP the exchange rate is equal to the ratio of domestic to foreign price levels.

The second measure is based on the black market exchange rate premium. This misalignment is calculated as the difference between the black market and the official exchange rates. Domaç et al. (1999:13) indicated that this particular measure intends to capture distortions in the foreign exchange market, as well as the extent of exchange control and import rationing in the economy. Despite the black market premium better capturing the degree of foreign exchange controls, it may not be capturing misalignments in an era of increasing international financial integration (Aguirre et al. 2005:4).

The third measure on RER misalignment is the model-based measure, whereby the actual RER deviates from the RER equilibrium path. The main advantage of this measure that sets it apart from

the previously mentioned measures is that it is capable of incorporating and capturing equilibrium exchange rates that are allowed to change over time, based on economic fundamentals and domestic macro-economic, trade and exchange rate policies (Pick et al. 1994:558; Zhang 2001:83; Domaç et al. 1999:13).

3.6 CONCLUSION

The analytical framework has provided a basis, so that the conclusion drawn is that the overvaluation of a currency is detrimental to the economic growth of a country, while undervaluation encourages exports; and overall, it promotes growth. A number of authors have used similar variables that only vary slightly due to the unique situations of each study, but eventually confirmed their hypothesis that REM negatively affects economic growth. The differences in the studies range from the variables applied when determining the equilibrium RER, in addition to the economic growth model and to the methodologies used.

The neoclassical growth model has been adopted for this study. With the aim of providing efficient allocation of scarce resources, the neoclassical growth model highlights equilibrium as a fundamental. This growth model focuses on both capital widening and deepening, as well as technological innovation and improvements – all of which are considered to be exogenous. The REM is estimated as the difference between the equilibrium real exchange rate and the RER over a given period of time. The misalignment captures the deviations of the RER from the preferred stable equilibrium exchange rate.

The analytical framework used is the ARDL approach. This approach investigates both long-run and short-run dynamics of a model built from a small sample size of the data. At the end of this study, the effects of REM on economic growth in Kenya, a LDC, will have been investigated; and from this appropriate conclusions and recommendations will be drawn. These conclusions and recommendations are intended to benefit Kenya and LDCs, especially those that face similar situations as Kenya.

CHAPTER 4

RESEARCH METHODOLOGY

4.1 INTRODUCTION

The purpose of this chapter is to present the theoretical model that serves as a base for the empirical analysis. This will be accompanied by the PPP framework used to determine the RER misalignment (REM). The REM will be used to augment the economic growth model to be estimated.

The chapter is divided into three parts. The first part comprises the theory underlying the augmented economic growth model and the theoretical framework, which focuses on the PPP approach. The second section introduces the models that will be used in the research, as well as the cointegration technique used in estimating the models. The last section deals with the data issues, including defining the variables, the data sources, the data analysis and expectations, according to the theoretical background.

4.2 THE THEORETICAL FRAMEWORK

The modelling effort of this research is based on the neoclassical growth theory. Traditional neoclassical growth models focus on only exogenous variables as the explanatory variables, while newer versions, such as the endogenous neoclassical growth model include variables that are considered to be endogenous in nature. The neoclassical growth model attempts to include variables that represent structural policies that are in place; for instance, the stock of human capital, exports and government size, as well as the external shocks that affect the economy. For instance, this may be represented by the terms of trade, the stabilization policies that have been implemented – which may be indicated by the RER misalignment – and the initial steady state of the economy.

The Cobb-Douglas function is used to represent the neoclassical growth model; and it may be given as:

$$Y = K^{\theta} (AN)^{1-\theta} = A^{1-\theta} K^{\theta} N^{1-\theta} \quad (1)$$

Where Y = Output

K = Capital

N = Labour

A = Level of technology

θ = Capital share

When considering total factor production (TFP), as a measure of technical progress, it cannot be directly observed as compared with output and other inputs. The Solow residual thus comes into place, so that:

$$\frac{\Delta A}{A} = \frac{\Delta Y}{Y} - \left[(1 - \theta) \times \frac{\Delta N}{N} \right] - \left[\theta \times \frac{\Delta K}{K} \right] \quad (2)$$

The Solow residual thus represents the changes in TFP (Dornbusch, Fischer and Startz 2004:58).

The dependent variable is economic growth measured as real GDP per capita (G) in per cent; and this is obtained from the World Bank's world development indicators. The independent variables include trade openness ($Open$), foreign aid (Aid), inflation rate (Π) and the real exchange rate misalignment (REM).

Aguirre et al. (2005:12) indicate that as a proxy of lack of price stability, the inflation rate is included in the growth model. Toulaboe (2006:65) points out that the inflation result echoes the view that inflation control, as a part of a broad macro-economic stabilization policy, is an important precondition for economic growth. The variable is measured in per cent as the average annual consumer price index (CPI) inflation rate of Kenya, and is obtained from the IMF: international financial statistics. The inflation rate is expected to negatively impact economic growth.

Trade openness is measured as the ratio of the sum of the volume of exports and imports (Constant 2000 US\$) from the GDP (Constant 2000 US\$). This is computed with data obtained from the World Bank's: world development indicators. Ildikó (2008:38) suggests that trade openness accounts for the national structural policies, while Sallenave (2010:72) points out that a positive trade openness variable suggests that a country is outward-oriented, and thus the more it contributes to favourable to economic growth.

Foreign aid is measured as the net official development assistance and official foreign aid received (Constant 2009 US\$) as a ratio to GDP (Constant 2000 US\$) of Kenya; and this is obtained from the World Bank's: world development indicators. Elbadawi et al. (2009:24) argues that on one hand the linear positive effect of aid on growth supports the notion that recipient countries having access to foreign resources are likely to use aid to finance investment, improve policies and raise aggregate efficiencies; while on the other hand, the negative effect shows that aid has decreasing growth benefits, reflecting misuse and/or weakening the absorptive capabilities of larger aid flows. Gomanee,

Girma and Morrissey (2005:21) show that despite large aid inflows, SSA countries experience very little economic growth; and this may be due to aid ineffectiveness.

M'Amanja et al. (2006:4) quote Elbadawi (1999), who argued that in Sub-Saharan African countries foreign aid causes exchange rate appreciation, thereby dampening the growth of exports and consequently economic growth. Therefore, for most SSA countries foreign aid either has a small positive impact or a more negative impact on economic growth. Elbadawi et al. (2009:25) suggest that for developing countries, the negative growth impact of real exchange rate misalignment is intensified by aid, but weakened by financial development; hence, aid lowers growth in a macro-economic environment that allows RER overvaluation.

In order for there to be positive economic growth, the a priori expectations are:

Table 3: A priori expectations

Variable	<i>Open</i>	<i>Aid</i>	Π	<i>REM</i>
Relationship	+	-	-	-

4.2.1 Estimation of Exchange Rate Misalignment

PPP is the rate of currency conversion that equalizes the purchasing power of different currencies, and so has the dimensions of an exchange rate, as well as a price index (Vachris and Thomas 1999:4). An important determinant of exchange rate movements should be the difference between the domestic rate of inflation and the inflation rates in the rest of the world (Sadoulet and de Janvry 1995:804). The authors continue to explain that the purchasing power parity (PPP) theory asserts that this effect should be the main explanation for exchange rate movements; and thus correspondingly, one can define the PPP equilibrium exchange rate in any year in relation to a base year equilibrium exchange rate as:

$$e^*(PPP) = e_0^* \frac{p^d / p_0^d}{p^s / p_0^s} \quad (3)$$

Where e_0^* represents the equilibrium exchange rate in the base year

p_0^d represents the domestic price index

p_0^s represents the foreign price index

p^d represents a price deflator for the domestic currency

p^s represents a general index of dollar prices on the world market

When the real exchange rate is at its equilibrium level, the rate of inflation in the home country will equal that abroad, once the changes in the nominal exchange rate are accounted for (Akram 2003:55).

Based on this and following Cottani et al. (1990) and Domaç et al (1999), the equilibrium PPP is calculated as:

$$e^*(PPP) = e^*_{2005} \left(\frac{CPI_{KE} / CPI_{2005}}{WPI_{US} / WPI_{2005}} \right) \quad (4)$$

where, e^*_{2005} represents the equilibrium exchange rate in the 2005(base year)

CPI_{KE} represents Kenya's Consumer Price Index (CPI) in the current period

WPI_{US} represents US Wholesale Price Index (WPI) in the current period

CPI_{2005} represents Kenya's CPI in 2005

WPI_{2005} represents US WPI in 2005

Once the equilibrium exchange rate has been calculated, the REM is measured as:

$$REM = \left(\frac{e^*(PPP) - RER}{RER} \right) \quad (5)$$

where REM represents the real exchange rate misalignment

RER represents the actual real exchange rate

$e^*(PPP)$ represents the equilibrium exchange rate

4.3 EMPIRICAL MODELS AND ESTIMATIONS

4.3.1 Introduction

This section includes the augmented growth model that incorporates the REM as a variable, as well as the model used to determine the equilibrium RER , and consequently the REM .

4.3.2 The models

Based on the argument presented in the literature review, an augmented growth model that incorporates the REM has been adopted for the present study. This augmented growth model is presented below:

$$G = \beta_0 + \beta_1 Open + \beta_2 Aid + \beta_3 \Pi + \beta_4 REM \quad (6)$$

Where, G = Real GDP per capita growth rate

$Open$ = Trade openness

Aid = Foreign aid as a ratio of real GDP

Π = Inflation rate

REM = Real exchange rate misalignment

4.3.3 Cointegration analysis

Cointegration is a technique used to explore common trends in multivariate time series; and it provides a reliable methodology for modelling both long-run and short-run dynamics in a system. The empirical model is estimated using cointegration analysis. The cointegration approach will thus assist in examining the presence or absence of a long-run relationship between economic growth and exchange rate misalignment.

The economic implication of cointegration is that if two or more series are linked to form a long-run equilibrium relationship, despite containing stochastic trends thus being non-stationary, the series will move closely together over time, while their residuals continue to maintain stability (Harris 1995:22).

The test for cointegration will largely be considered in this study. According to Zhang (2001:85), one determines if the co-integrating relationship exists by testing for the stationarity of a linear combination of the variables of interest.

The cointegration tests that are frequently used are the Engel-Granger two-stage (E-G 2-stage) method, the Johansen procedure and the Phillips-Ouliaris cointegration test.

The Engel-Granger two-stage method will be used because of its simplicity. This simplicity is brought about because the intended purpose of the study is to estimate the relationship between the economic growth rate and exchange rate misalignment, that is $\dot{G} = \beta_1 + \beta_2 REM$. This single equation would verify this; but this is not the case for this study, as a multivariate model is used. This method involves forming an error correction model (ECM).

ECMs are useful for determining the effect of one-time series on another, of which the data can be integrated or stationary. However, according to Mungule (2004:11), the long-run parameter of the co-integrating vector estimated from this approach can be severely biased in finite samples.

The test for the EG 2 stage cointegration is effectively a test of the stationarity of the residuals, whereby if the residuals are stationary, then the variables of interest are said to be co-integrated (Hill, Griffiths and Lim 2008:339). The augmented Dickey-Fuller (ADF) unit root test is the basic procedure performed to test for stationarity in the residuals, and is based on the test equation:

$$\Delta \hat{e} = \gamma \hat{e}_{t-1} + v_t \quad (7)$$

Where $\hat{e}$ = errors

$$\Delta \hat{e}_t = \hat{e}_t - \hat{e}_{t-1}$$

Cointegration implies that the variables of interest share similar stochastic trends; and since the residual e_t is stationary, they never diverge too far from each other ((Hill et al. 2008:339).

An advantage of the Johansen procedure is that it reveals the number of co-integrating relationships, so that although this makes the interpretation of cointegration more difficult, there are statistical procedures which allow one to identify the co-integrating vectors (Clark and MacDonald 1998:18).

While Vacek (2002:24) notes that first of all there is no need to choose the variable to be the regress; and in cases where there are more than two variables appear in a co-integrating relationship, this is a considerable advantage, as the OLS estimation of the co-integrating parameters is sensitive to the choice of normalization; and secondly, the Johansen cointegration method also enables one to determine more cointegration vectors that can arise, if there are more than two variables in the estimate. The Johansen procedure is mainly used for data with a large sample space.

Therefore, for the sake of this research, the ARDL (Autoregressive Distributed lag model) is used, as it is the most appropriate. According to Liu (2009:1849), the ARDL cointegration approach is suitable, even if the sample size is small, while other cointegration techniques are sensitive to the size of the sample.

The ARDL estimation technique is employed by the ARDL approach to cointegration – to examine the long-run relationship between the explanatory variables for economic growth in Kenya.

Unlike the more popular Engel-Granger two stage test and the Johansen tests, the ARDL approach can be applied, regardless of the stationary properties of the variables in the samples; and it allows

for inferences on long-run estimates. This avoids problems resulting from non-stationary time series data. The ARDL approach provides robust results for a smaller sample size of cointegration analysis. Moreover, a dynamic error correction model (ECM) can be derived from ARDL through a simple linear transformation. The ECM integrates the short-run dynamics with the long-run equilibrium, without losing long-run information (Majid and Yusof 2009:131).

A major advantage in the ARDL approach lies in the fact that it obviates the need to classify variables into $I(1)$ or $I(0)$. Moreover, as compared with standard cointegration, there is no need for unit root pre-testing (Akinlo 2006:447). According to Hye and Wizarat (2011: 200), econometric advantages in favour of the ARDL approach include firstly, endogeneity problems and the inability to test hypotheses on the estimated coefficients in the long run associated with the Engle Granger method are thereby avoided. Secondly, the long-run and short-run parameters of the model are estimated simultaneously; and thirdly, all the variables are assumed to be endogenous.

The ARDL approach is used to establish the existence of long-run and short-run relationships. Waliullah Kakar, Kakar and Khan (2010:8) points out that the ARDL approach is extremely useful, because it allows one to describe the existence of an equilibrium/relationship in terms of long-run and short-run dynamics without losing long-run information. The ARDL approach consists of estimating the following equation:

$$\begin{aligned} \Delta G = & \alpha_0 + \sum_{i=1}^n \delta_i \Delta G_{t-i} + \sum_{i=0}^n \varphi_i \Delta Open_{t-i} + \sum_{i=0}^n \gamma_i \Delta Aid_{t-i} + \sum_{i=0}^n \beta_i \Delta \Pi_{t-i} + \sum_{i=0}^n \lambda_i \Delta REM_{t-i} \\ & + \eta_1 G_{t-1} + \eta_2 Open_{t-1} + \eta_3 Aid_{t-1} + \eta_4 \Pi_{t-1} + \eta_5 REM_{t-1} + \varepsilon_i \end{aligned} \quad (8)$$

The first part of the equation with δ_i φ_i γ_i β_i and λ_i represents the short-run dynamics of the model, whereas the parameters η_1 η_2 η_3 η_4 and η_5 represent the long-run relationship. The null hypothesis of the model is,

H0: $\eta_1 = \eta_2 = \eta_3 = \eta_4 = \eta_5 = 0$ (There is no long-run relationship.)

H1: $\eta_1 \neq \eta_2 \neq \eta_3 \neq \eta_4 \neq \eta_5 \neq 0$

The ARDL model testing procedure starts by conducting the bound test for the null hypothesis of no cointegration. The calculated F-statistic is compared with the critical value tabulated by Narayan (2004). If the test statistics exceed the upper critical value, the null hypothesis of no long-run relationship can be rejected, regardless of whether the underplaying order of integration of the variables is zero or one. Similarly, if the test statistics fall below a lower critical value, the null hypothesis is not rejected. However, if the test statistics fall between these two bounds, the result is

inconclusive. When the order of integration of the variables is known and all the variables are I (1), the decision is made on the upper bound.

Similarly, if all the variables are I (0), then the decision is made based on the lower bound.

In the second step, if there is evidence of a long-run relationship (cointegration) among the variables, the following long-run model is estimated:

$$G = \alpha_1 + \sum_{i=1}^n \lambda_i G_{t-i} + \sum_{i=0}^n \delta_i Open_{t-i} + \sum_{i=0}^n \beta_i Aid + \sum_{i=0}^n \phi_i \Pi_{t-i} + \sum_{i=0}^n \psi_i REM_{t-i} + \varepsilon_i \quad (9)$$

If there is evidence of a long-run relationship, the error correction model (ECM) is estimated, which indicates the speed of adjustment back to long-run equilibrium after a short-run disturbance. The standard ECM involves estimating the following equation:

$$\begin{aligned} \Delta G = & \alpha_0 + \eta_i (ECM)_{t-1} + \sum_{i=1}^n \beta_i \Delta G_{t-i} + \sum_{i=0}^n \lambda_i \Delta Open_{t-i} + \sum_{i=0}^n \phi_i \Delta Aid_{t-i} \\ & + \sum_{i=0}^n \gamma_i \Delta \Pi_{t-i} + \sum_{i=0}^n \delta_i \Delta REM_{t-i} + \varepsilon_i \end{aligned} \quad (10)$$

To ascertain the goodness of fit of the ARDL model, diagnostic and stability tests are conducted. The diagnostic test examines the serial correlation, functional form, normality, and the heteroskedasticity associated with the model. The structural stability test is conducted by employing the cumulative residuals (CUSUM) and the cumulative sum of squares of recursive residuals (CUSUMSQ).

CHAPTER 5

EMPRIRICAL RESULTS AND DISCUSSIONS

5.1 INTRODUCTION

In this chapter, the empirical results that stem from the theory provided in the previous chapter are presented. Two tests of stationarity have been conducted. Thereafter, the test for cointegration using the ARDL bounds test was carried out. The long-run coefficients and the short-run dynamics, using the ECM have been estimated. All the results will thus be commented on.

5.2 UNIT ROOT AND STATIONARITY TESTS

Prior to testing for cointegration, the augmented Dickey Fuller (ADF) test and the Kwiatkowski-Phillips-Schmidt-Shin (KPSS) test were used to test for stationarity, and thus determine the order of integration of the variables. The former tested the null hypothesis of a unit root test, while the latter tested the null hypothesis of trend stationarity/level stationarity. These tests will assist in determining whether or not to use the ARDL model. In Table 4, economic growth, foreign aid and the inflation rate are all integrated to the order of zero $I(0)$, while trade openness and REM are integrated to the order of one $I(1)$ while the results in Table 5 indicate that, economic growth and the inflation rate are all integrated to the order of zero $I(0)$, while trade openness, foreign aid and REM are integrated to the order of one $I(1)$. Since the results for both tests show there is a mixture of both $I(0)$ and $I(1)$ of the underlying regressors, the ARDL testing follows.

Table 4. The ADF unit-root test results

Variables	Levels	First Difference
Real GDP per capita growth	-4.381**	-7.958**
Trade openness	-1.714	-5.525**
Foreign aid	-3.262**	-6.445**
Inflation rate	-3.210**	-6.480**
Real exchange rate misalignment	0.037	-4.759**

Notes: ** Represents significance at 5%

Table 5. KPSS test for stationarity results

Variables	Levels	First Difference
Real GDP per capita growth	0.360	0.021
Trade openness	0.813**	0.404
Foreign aid	1.089**	0.129
Inflation rate	0.337	0.049
Real exchange rate misalignment	1.031**	0.252

Notes: ** Represents significant at 5%

5.3 BOUNDS TEST FOR COINTEGRATION

The main assumption of ARDL is that the variables included in models are either $I(0)$ or $I(1)$ or both. This lends support for the implementation of bounds testing, which is a three-step procedure. In the first step of ARDL analysis, the presence of the long-run relationship in equation (9) is tested using equation (10). A maximum lag of 2 is selected because the data are recorded annually. In the next step, the ARDL cointegration method is used to estimate the parameters of equation (10) with a maximum order of lag set to 2, so as to minimize the loss of degrees of freedom.

Table 6 reports the results of the calculated F- Statistics, when each variable is considered as a dependent variable (normalized) in the ARDL-OLS regressions.

The calculated F-statistics $F_{Open}(Open / G, Aid, \Pi, REM) = 24.221$, $F_{Aid}(Aid / G, Open, \Pi, REM) = 11.376$, and $F_{REM}(REM / G, Open, Aid, \Pi) = 15.468$ are all higher than the upper bound critical value 5.019 at the 1 per cent level. Thus, the null hypotheses of no cointegration are rejected; implying long-run cointegration relationships amongst the variables when the regressions are normalized on Open, Aid and REM variables. However, the calculated F-statistics $F_G(G / Open, Aid, \Pi, REM) = 2.146$ and $F_{\Pi}(\Pi / G, Open, Aid, REM) = 2.463$ are lower than the lower bound critical value 3.674 at the 1 per cent level. Thus, the null hypotheses of no cointegration are not rejected, implying that there is no long-run cointegration relationship amongst the variables when the regressions are normalized on G and Π . However, based on the growth theory, G is used as the dependent variable.

Table 6: ARDL bounds test results

Equation	Lags	Calculated F- Statistic	Outcome
$F_G(G / Open, Aid, \Pi, REM)$	2	2.564	No cointegration
$F_{Open}(Open / G, Aid, \Pi, REM)$	2	24.221*	Cointegration
$F_{Aid}(Aid / G, Open, \Pi, REM)$	2	11.376*	Cointegration
$F_{\Pi}(\Pi / G, Open, Aid, REM)$	2	2.463	Cointegration
$F_{REM}(REM / G, Open, Aid, \Pi,)$	2	15.468*	Cointegration

Notes: Asymptotic critical value bounds are obtained from Tables A1 in Appendix A Case II: intercept and no trend for k=5, n=45 (Narayan 2004: 26).). Lower bound I (0) = 3.674 and Upper bound I (1) = 5.019 at 1% significance level.

As there is no cointegration detected when economic growth is normalized, a short-run relationship is thus estimated without an error-correction term, as this term is only used to determine the rate of convergence to equilibrium, where a long-run relationship has been detected.

5.4 RESULTS OF THE SHORT-RUN DYNAMIC MODEL

The significant coefficients in the short run include the first lag of economic growth, the first lag of trade openness, and the second lag of foreign aid. Foreign aid impacts economic growth negatively, as is expected, while trade openness impacts economic growth, as is expected. A 1 percent increase in trade openness increases economic growth by 0.4 per cent, while a 1 percent increase in foreign aid decreases economic growth by 0.7 per cent. The regression for the short run equation does not fit, as well as could have been expected at $R^2 = 0.485$, while the p-value of the F-statistic suggests that the model is significant.

The inflation rate and the real exchange rate misalignment both affect economic growth negatively, as is expected. However, with regard to their p-values, these two variables are considered insignificant. These results are shown below in Table 7.

Table 7. Short-Run Dynamic Model: Dependent Variable ΔG

Variable	Coefficient	t-Statistic	Prob.
C	-0.108	-0.154	0.878
$\Delta G(-1)$	-0.339**	-2.608	0.013**
$\Delta open(-1)$	0.355**	2.968	0.005**
$\Delta Open(-2)$	0.151	1.236	0.225
$\Delta Aid(-1)$	0.466	1.576	0.124
$\Delta Aid(-2)$	--0.697**	-2.308	0.027**
$\Delta \Pi(-1)$	-0.068	-0.744	0.462
ΔREM	-1.893	-0.280	0.781
R-squared	0.485	AIC	5.957
Adjusted R-squared	0.382	SBC	6.285
F-Statistic (prob.)	4.717** (0.001)**	Durbin Watson stat.	1.823
Short-Run Diagnostic Tests			
Serial Correlation LM Test		7.643 (0.022)**	
Heteroskedasticity-White Test		42.081(0.191)	
Ramsey RESET Test		7.585 (0.009)**	
Jaques-Bera Test		47.450 (0.000)**	

Note: p-values are given in parentheses.

Diagnostic Tests

With reference to the diagnostic tests in Table 7 above, serial correlation exists, while there is no heteroskedasticity present. There is a misspecification in functional form, and the error term is normally distributed. The cumulative sum (CUSUM) plot from the recursive estimation of the model indicates stability of long-run coefficients over the sample period, because the graph of cumulative sum (CUSUM) does not exceed the critical boundaries at a 5% level of significance (see APPENDIX 1 in Figure 5). The cumulative sum of squares (CUSUM sq) plot from recursive estimation of the

model, on the other hand, indicates that there is no stability of long-run coefficients over the sample period, because the graph of cumulative sum of squares (CUSUMsq) partially exceeds the critical boundaries at a 5% level of significance (see APPENDIX 1 in Figure 6).

5.5 CONCLUSION

According to the results above, economic growth in Kenya is significantly affected by trade openness, foreign aid and real exchange rate misalignment. The results suggest that there is no long-run equilibrium relationship between economic growth and trade openness, foreign aid, the inflation rate and the real exchange rate misalignment. However, in the short run, trade openness positively impacts economic growth, while foreign aid, the inflation rate and real exchange rate misalignment negatively impact in Kenya. All variables have fulfilled their priori expectations. However, trade openness and foreign aid are considered significant, while the inflation rate and real exchange rate misalignment are considered insignificant.

This study differs from other studies in different ways. This study focuses on the PPP, as the equilibrium exchange rate, while others have focused on the model-based equilibrium exchange rate; for instance, Razin et al. (1997), Sallenave (2010), Toulaboe (2006), Ildiko (2008) and MacDonald and Vieira (2010). Those who did use the PPP include Cottani et al. (1990) and Domaç et al. (1999). Some studies that used the parallel or black market exchange rate included that of Abounoori et al. (2010) and Gyimah-Brempong et al. (1993).

The method of estimation used differed, as well, from for instance, MacDonald et al. (2010) focused on the GMM method; and so did those of Ildiko (2008) and Sallenave (2010). Domaç et al. used the iterative three-stage least squares method, while Gyimah-Brempong et al. used the two-stage least squares estimation technique. Domaç et al. concluded that using the PPP as the equilibrium exchange rate to calculate the REM had the effects of a negative relationship to economic growth, the R^2 was really small, and the REM variable was considered insignificant, while when the model-based approach was used, the negative REM was considered significant and the economic growth model had a larger R^2 value.

Based on these noticeable differences between this study and other similar studies, the results of this study also differ significantly.

CHAPTER 6

CONCLUSIONS AND RECOMMENDATIONS

6.1 CONCLUSION

The goal of this study has been to investigate the impact of the real exchange rate misalignment (REM) on economic growth in Kenya during the period 1964-2009. The REM was used as a proxy of the real exchange rate and stabilization policies, and the impact on economic growth was investigated. As the REM is not observable, equilibrium exchange rates were estimated by relying on the PPP approach. The misalignment series was then obtained by the deviation of the observed real exchange rate from its equilibrium PPP. The REM is not the only variable that affects economic growth; therefore, trade openness which proxies national structural policies, foreign aid which proxies assistance from the developed world; and the inflation rate, which proxy's lack of price stability were introduced as additional explanatory variables.

The impact of the misalignment on economic growth (measured in percent by real GDP per capita growth) was assessed using the ARDL cointegration technique. The ARDL cointegration method was used because of the small sample's annual data that was under consideration. The two stationarity tests conducted concluded that the variables were a combination of $I(0)$ and $I(1)$ which further justified the use of the ARDL method. When considering the cointegration test, the F-statistic of the long-run relationship concluded that there was no long-run relationship between economic growth and its explanatory variables. That being said, no long run model was estimated. However, a short-run dynamic model was estimated, using the OLS technique; and the results suggested that trade openness impacted economic growth positively, while foreign aid, the inflation rate and the real exchange rate misalignment all impacted economic growth negatively.

This has been concluded, bearing in mind that the results suggested that trade openness and foreign aid were significant, while the inflation rate and misalignment were insignificant. The reason they may be insignificant is because there was no long-run relationship detected; and thus only the short-run effects were investigated.

Razin et al. (1997), Sallenave (2010), Toulaboe (2006), Ildiko (2008) and MacDonald et al. (2010) focused on the model-based approach in calculating the equilibrium exchange rate, while this study focused on the PPP as the equilibrium exchange rate, as did Cottani et al. (1990) and Domaç et al. (1999). Abounoori et al. (2010) and Gyimah-Brempong et al. (1993) used the parallel or black market exchange rate as the measure for the equilibrium exchange rate. This study focused on the ARDL-OLS method of estimation, while MacDonald et al. (2010) focused on the GMM method, and so did Ildiko (2008) and Sallenave (2010). Domaç et al. (1999) and Gyimah-Brempong et al. (1993) used the

iterative three-stage least squares method and the two-stage least squares estimation technique respectively. Cottani et al. (1990:72) concluded that using the PPP as the equilibrium exchange rate to calculate the REM had the effects of a negative relationship to economic growth, the R^2 was really small and the REM variable was considered insignificant, while when the model-based approach was used, the negative REM was considered significant and the economic growth model had a larger R^2 .

Sallenave (2010) and Ildiko (2008) both include trade openness as an explanatory variable when investigating the impact of REM on economic growth. Sallenave (2010:72) concludes that trade openness in the G20 countries enhances economic growth; Ildiko (2008:47), on the other hand, concludes from the empirical study done on the Czech Republic, Hungary, Poland and Romania, that the overall effect of opening up national economies to the external trade on economic growth is negative. Macdonald et al. (2010) include the inflation rate as an explanatory variable, when considering the impact of REM on economic growth; and the empirical results confirm that inflation rate has a negative impact on economic growth. Elbadawi et al. (2009:2) investigate the impact of aid and misalignment on economic growth in 83 countries; and they conclude that aid fosters growth with decreasing returns, but induces overvaluation, which then reduces growth.

The Kenyan economy relies on agriculture and tourism. These sectors are dependent on the exchange rate; thus, the Kenyan economy is dependent on the exchange rate. Trade openness is expected to have a positive impact on economic growth because, as Ildiko (2008:47) mentions, the sustainability of economic growth relies on constantly growing exports. This suggests that since the trade openness variable is positive and significant, Kenya has an outward-oriented economy, which is encouraged for developing countries. It also suggests that there is improved resource allocation when referring to comparative advantage. This also suggests that positive trade openness gives access to imported capital goods that promote technological progress – and thus contribute to investment of both skill and innovation and competition – both within and outside Kenya.

Foreign aid is expected to have a negative impact on economic growth in Kenya, as it has a negative impact on the economic growth of other LDCs, especially in SSA, as these countries are considered low-to-middle income countries. This is definitely the case in Kenya, as noted in the empirical results. A large part of Kenya's foreign aid is used by the public sector, so that foreign aid contributes to government expenditure. In any economy, an increase in government expenditure leads to a decrease in economic growth. Kenya has experienced donor cuts, due to the fact that the aid conditions have not been adhered to. They were not adhered to because the aid is used for other purposes, such as financing the public sector rather than being used for development and decreasing poverty-supplementing domestic sources of finance, such as savings, among others. The misappropriation of funds from the donor community has contributed negatively to economic growth in Kenya.

According to the empirical results, economic growth in Kenya was negatively affected by the inflation rate, although the inflation rate is considered to be an insignificant variable. The inflation rate has a negative impact on economic growth, as it reduces investment, as well as the efficiency of productive factors in any country. According to Andrés and Hernando (1997:3), a high level of inflation induces a frequent change in prices, which although it may be costly for firms, reduces the optimal level of cash holdings by consumers, generates large forecast errors by distorting the information contents of prices, encouraging economic agents to spend more time and resources gathering information and protecting themselves against the damages caused by price instability, hence endangering the efficient allocation of resources.

The real exchange rate misalignment affects economic growth in Kenya negatively. This suggests that the Kenyan shilling is overvalued, hence impacting the economic growth negatively. This may be because although there is no deterioration in external competitiveness, as seen through trade openness, the misallocation of domestic resources may be a factor. Another reason may be the fact that the exchange rate policies in Kenya are inappropriately formulated and implemented.

6.2 RECOMMENDATIONS

With the results above, the Kenyan government should focus on implementing monetary and trade policies that appropriately suit the Kenyan economy. Also the exchange rate policies should be revisited, as they are not benefiting the economy. Suitable exchange rate policies may decrease the overvaluation of the Kenyan shilling; and this may result in the proper allocation of resources. An advantage that the policy-makers have is the fact that the exchange rate is a managed one, but if the exchange rate were less managed and thus floated more, there would be ample information and time to stabilize the exchange rate. The use of donor aid appropriately may also contribute to economic growth and a competitive currency, as beneficial trade policies could then be implemented. The inflation rate should be managed more vigorously, as this contributes as well to economic growth.

6.3 LIMITATIONS AND DIRECTIONS FOR FUTURE RESEARCH

When calculating the real exchange rate misalignment, the PPP method does not provide a suitable estimate, as the PPP approach does not allow for the continuous change of the equilibrium exchange rate, so as to reflect the changes in the economic fundamentals, and macro-economic and trade policies. For this research to be improved, a model approach could perhaps be used in place of the PPP approach. Other variables could also be included, for example variables pertaining to agriculture and tourism, as they are the major sectors in the Kenyan economy.

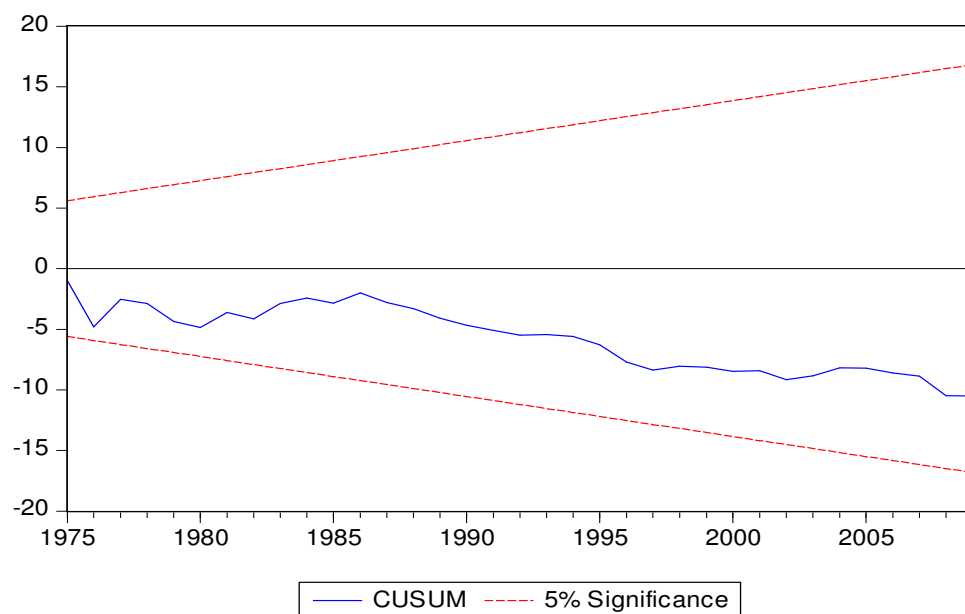
APPENDIX

Table 8: Summary of statistical studies of the RER misalignment and Economic growth relationship

Authors	Sample	Performance indicator	RER indicator	Estimation technique	Impact of misalignment on economic performance.
Abounoori and Zobeiri (2010)	Iran, 1961-2007	GDP, government investment, private investment, TOT, liquidity growth	Parallel	Johansen Cointegration	Negative
Cottani, Cavallo and Khan (1990)	24 Developing countries, 1960-1983	GDP per capita, Investment, Incremental capital output ratio, Export growth, agriculture growth	PPP, Model	Cross-section OLS	Negative
Domaç and Shabsigh (1999)	Egypt, Jordan, Morocco, Tunisia, 1970-1990	GDP per capita, RER variability, Investment, TOT, population growth	PPP, Black, Model	Iterative 3 stage least squares	Negative
Razin and Collins (1997)	93 countries, 1975-1992	GDP per capita, government consumption, TOT, human capital, primary and secondary school enrolment	Model	Panel Data, 5-year average.	Negative
Sallenave (2010)	G20 countries, 1980-2006	GDP per capita, real GDP, government balance, investment share, TOT, trade openness, population growth, secondary school enrolment	Model	Generalized-Method-of Moment	Negative
Toulaboe (2006)	33 developing countries, 1985-1999	GDP per capita, Initial GDP per capita, life expectancy at birth, secondary school enrolment,	Model	Cross-Section OLS	Negative

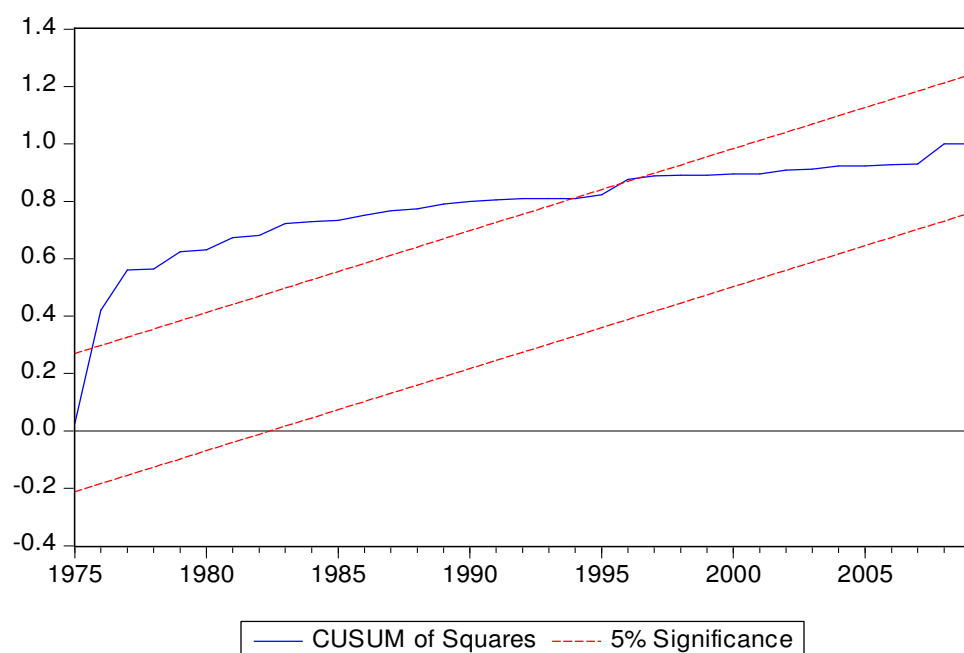
		TOT, government consumption, inflation, population growth, investment.			
Gyimah-Brempong (1993)	Ghana, 1958-1988	Real GNP, imports, exports, investment, population growth, interest rate, excess credit, TOT	Black	Two stage least squares	Negative
Ildiko (2008)	Czech Republic, Hungary, Poland, Romania	Real GDP, output gap, trade openness, TOT	Model	Generalized Method Moments of	Negative
MacDonald and Vieira (2010)	90 countries, 1980-2004	Real GDP per capita, initial income, education, inflation, law	Model	Generalized methods of Moments	Negative

Figure 5: Plot of Cumulative Sum of Recursive Residuals



The straight lines in the above figure represent critical bounds at 5% significance level.

Figure 6: Plot of Cumulative Sum of Squares of Recursive Residuals



The straight lines in the above figure represent critical bounds at 5% significance level.

Descriptive Statistics

	Economic Growth	Trade Openness	Foreign Aid	Inflation Rate	REM
Mean	1.309	57.575	10.650	11.327	0.258
Median	0.697	55.129	10.750	10.132	0.311
Maximum	17.929	95.294	22.476	45.979	0.664
Minimum	-7.916	33.564	3.296	-0.172	-0.351
Std. Dev.	4.321	16.674	4.395	8.812	0.211
Skewness	1.634	0.484	0.456	1.540	-1.066
Kurtosis	7.430	2.402	2.915	6.675	4.230
Jaques-Bera	58.090	2.481	1.610	44.064	11.607
Sum	60.217	2648.439	489.907	521.039	11.879
Sum Sq. Dev.	839.998	12511.110	855.188	3494.132	2.010
Observations	46	46	46	46	46

Correlation matrix

	Economic Growth	Trade Openness	Foreign Aid	Inflation Rate	REM
Economic Growth	1.000				
Trade Openness	0.302	1.000			
Foreign Aid	-0.012	-0.006	1.000		
Inflation Rate	-0.322	-0.391	0.015	1.000	
REM	-0.078	-0.271	0.492	0.106	1.000

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