2002 Annual Forum

at Glenburn Lodge, Muldersdrift

Exchange Rate Policy and Trade Facilitation in Regional Integration Agreements: The Case of Southern African Economies

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

AGOA	African Growth and Opportunity Act
ARDL	Autoregressive Distributed Lag
BOP	Balance of Payments
COMESA	Common Market for East and Southern Africa
CPI	Consumer Price Index
GDP	Gross Domestic Product
GNP	Gross National Product
IMF	International Monetary Fund
LDCs	Less Developed Countries
LIDCs	Low Income Developing Countries
NECF	National Economic Consultative Forum
OECD	Organisation for Economic Cooperation and Development
RER	Real Exchange Rate
SACU	Southern African Customs Union
SADC	Southern African Development Community
SAPs	Structural Adjustment Programmes
SSA	Sub-Saharan Africa
UK	United Kingdom
UN ECA	United Nations Economic Commission for Africa
US	United States
WEF	World Economic

ABSTRACT

The major objective of this study is to evaluate the role of exchange rate policy in determining trade flows with respect to Southern African economies. The study provides a structural analysis to the empirical strength of the influence of exchange rate movements on trade flows for small low-income countries on the basis of the prevalence of export demand pessimism, import demand pessimism and export supply pessimism. Through an empirical estimation of real exchange rate and output elasticities of import and exports of eight SADC economies, namely Zimbabwe, Zambia, Botswana, Malawi, Lesotho, Swaziland, South Africa, Mauritius, the main findings of the study indicate that exchange rate policy has not played an active role as a trade facilitation tool in regional economies. Moreover, the tendency of the pervasive effects of distorted macroeconomic and structural macroeconomic fundamentals is reflected in some inconsistent results as well as the statistical insignificance of some of the elasticities.

Overall, the analysis shows that output elasticities are generally large and well-determined. By contrast, the real exchange rate elasticities are less-well determined and generally quite low. Hence although there is considerable evidence that the real exchange rates do affect trade volumes in the expected directions, the results are in most cases quite pessimistic as regards the size and effectiveness of the underlying elasticities. Thus the main conclusions of the study point towards the general overview that trade and exchange rate policy implementation in regional economies is highly constrained by the underlying structural features of the economies which make import substitution difficult while exhibiting inelastic export response both on the demand and supply side.

High degrees of import compression, excessive dependence on a few traditional export products while importing manufactured goods and machinery that are critical inputs in the production process has perpetuated the low responsiveness of imports and exports to changes in the real exchange rates in SADC economies. Thus in light of the findings, sustained exchange rate policy implementation which hinges on extensive institutional and technological capacity as well as maintaining comprehensive coherent macroeconomic packages remains a critical factor in ensuring that exchange rate policy performs its central role as a trade facilitation tool.

1. INTRODUCTION

1.1 Background and Objectives of the Study

The incidence of severe macroeconomic problems such as falling export earnings, worsening balance of payments, mounting debts, and declining economic growth forced many African countries to undertake economic reform programmes. However, by the third decade since the onset of the implementation of the IMF-World Bank Structural Adjustment Programmes (SAPs) in the early 1980s, most of the economic ills facing Southern African economies have not abated. The challenges of African development continue to be compounded by the globalisation and liberalisation of the world economy, as well as increased economic integration of financial and money markets.

Within this framework of global development, the exchange rate, as a price of the domestic currency in terms of foreign currency constitutes one of the most important prices in an open economy. It exerts a major impact on resource allocation and influences the use of productive resources between tradable and non-tradable goods and services. The exchange rate is a major determinant of the balance of payments (BOP) position and external competitiveness of a country. It affects decisions to save and invest and hence influences the nature and direction of trade flows across countries.

In light of the highly significant role that is played by exchange rates in facilitating economic growth and stability, the major objective of this study is to evaluate the role of exchange rate policy in determining trade flows with respect to Southern African economies. The study provides a structural analysis to the empirical strength of the influence of exchange rate movements on trade flows for small low-income countries, on the basis of the following elasticity pessimisms:

- "import demand pessimism" based on the view that the import structure in less developed countries (LDCs) is such that most imports are production inputs whose elasticity of substitution and domestic value added is very low or essentially zero.
- "export supply pessimism", holds that low income developing countries (LIDC) exports are concentrated in a few products with very low domestic supply response so that changes in relative prices do not induce domestic producers to change marketed output by much.
- "export demand pessimism", which maintains that world demand is inelastic, with respect to both income and prices, for the products in which LIDC exports are concentrated (Hinkle and Montiel, 1999: 494-495).

In addition to the above limitations imposed on exchange rate policy implementation, is the fact that trade facilitation through regional cooperation and integration has in general, produced very limited results for the Southern African region. Most of the economies remain relatively underdeveloped and stagnant while trade liberalization and promotion instruments do not seem to have had a major impact in boosting intra-regional and intra-African trade. Through an empirical estimation of real exchange rate and output elasticities of import and exports of selected regional economies, the study will seek to address the critical issue of whether BOP should be tackled through structural policies rather than exchange rate adjustments or a combination of both.

2. STRUCTURAL ISSUES IN TRADE FACILITATION AND EXCHANGE RATE POLICY IMPLEMENTATION IN SOUTHERN AFRICA

2.1 Regional Exchange Rate Policy Implementation Experience

There exists mixed progress with respect to exchange rate policy determination in Southern African economies. Like the majority of Sub-Saharan economies, most regional economies required a real depreciation of their exchange rates to compensate for the worsening terms of trade in the 1980s. The fact that many countries started with large premiums in the parallel foreign exchange market and needed massive devaluations of the official exchange rate, have been one of the main factors behind the observed exchange rate trends in the region. Although almost all regional economies with the exception of South Africa, entered the 1980s with fixed exchange rate regimes, the need to restore favourable terms of trade and improve their balance of payments positions provided sufficient justification to the incorporation of exchange rate reform as a major package of structural adjustment programmes (SAPs).

In the region, only South Africa, has followed an independent floating exchange rate system for the past three decades. Because of its size, and the fact that it is the biggest, most advanced and highly diversified economy in the region, the South African Rand has emerged as a major benchmark currency against which most regional economies have maintained a fixed peg. Countries that have maintained a one-to-one fixed peg with the Rand rate include Swaziland, Lesotho, and Namibia. Botswana, has maintained a conventionally pegged arrangement with the Pula being determined with reference to a weighted basket of currencies comprising the SDR and the South African Rand.

Like South Africa, other countries that have since adopted independently floating exchange rate arrangements include Mauritius, Angola, Mozambique and Zambia. Angola and Mozambique however represent recent policy shifts with Angola having moved from a crawling peg in 1999, while up to 1997, the Mozambican currency was still pegged to the US dollar. Zambia has on the other hand, maintained a market determined exchange rate regime since the early 1990s. Mauritius also moved to a market-determined exchange rate during the same period after having operated on a managed float that was based on trade-weight with its major trading partners. Malawi is perhaps the only country in the region that is administering a managed float arrangement. Though with no pre-announced path for the exchange rate, the exchange rate of the Malawi Kwacha is managed in a flexible manner, with an intervention policy limited to smoothing out fluctuations while also maintaining international reserve targets.

Although Zimbabwe is one of the five countries that is operating on a conventionally pegged exchange rate arrangement in the Southern African region, its exchange rate policy developments have been characterised by inconsistencies that have also included a high degree of Central Bank intervention. On March 31, 1999, the exchange rate was pegged, defacto, at Z$38 per US$1, as the result of an agreement

between the monetary authorities and the main commercial banks. In August 2001, a crawling peg arrangement was announced. However, the crawling peg was abandoned within weeks after adoption. From the first devaluation of the currency on August 1, 2000 whereby the nominal value of the currency moved from Z$38 to Z$50, the currency slightly crawled from $50 to $55 in October 2000, and has not been adjusted thereafter. The Zimbabwe dollar is still pegged at this level and the government has since made a public commitment to maintain the fixed peg. The movement to a fixed peg that bears no relationship to any particular trade weighted basket as was the case up to 1991 is currently not based on any specified economic fundamentals. It represents a case of strong real exchange rate overvaluation and the corresponding loss of competitiveness, a factor that has characterised the economy since the crash of the Zimbabwe dollar in 1997. Consequently, Zimbabwe's exports have declined significantly from US$2 496 million in 1996 to US$1 574 million in 2001 (RBZ, 2002)[1]. This is despite the fact that the country made a commitment to liberalise the foreign exchange rate market and to move to a market determined exchange rate during the adoption of the economic reform program in 1991.

Overall, the pattern of exchange rate policy developments in Southern Africa has generally been in line with that adopted by most developing countries after the collapse of the Smithsonian agreement in March 1973. However, due to widespread global and financial instability that was triggered by the 1997-1998 Asian crisis, with its offshoots in Eastern Europe and South America, regional economies have also experienced marked exchange rate instability. Furthermore, the largely, small and open nature of their economies with high degrees of external dependence on manufactured imports has rendered mixed progress with respect to workable exchange rate regimes. According to World Bank (1994), most Sub-Saharan adjusting countries with fixed exchange rates became less competitive internationally as their terms of trade worsened. In line with the need to maintain competitiveness, African-countries that exported primary products but entered the 1980s with low parallel market premiums depreciated their exchange rates by 60% on average between 1980 and 1990.

Although this group of countries excludes most Southern African economies, the extent to which they devalued their exchange rate strongly suggests the magnitude by which African economies needed to depreciate in order to remain competitive in international markets. However, the real depreciation in Africa's fixed exchange rate economies-just
5 % on average between 1980 and 1990-91, which caters for most regional economies, fell well short of that mark. A few countries even had a real appreciation (Ibid pp: 51-57.). Given that exchange rate overvaluation is one of the most critical determinants of poor balance of payments performance, most regional economies have, despite implementing economic reforms, suffered from very poor level of export competitiveness. Figure 1 illustrates the trends in nominal exchange rates for eight selected Southern African Economies, with the exception of Angola and Mozambique.

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[1] Reserve Bank of Zimbabwe Weekly Economic Highlights, 22 July 2002.

Figure 1: Nominal Exchange Rate patterns for Selected Southern African Economies

BOTSWANA NOMINAL EXCHANGE RATE (1972-2001)

SWAZILAND NOMINAL EXCHANGE RATE (1972-2001)

LESOTHO NOMINAL EXCHANGE RATE (1972-2001)

MALAWI NOMINAL EXCHANGE RATE (1972-2001)

SOUTH AFRICA NOMINAL EXCHANGE RATE (1972-2001)

ZAMBIA NOMINAL EXCHANGE RATE (1972-2001)

Figure 1 (Continued)

Zimbabwe Nominal Exchange Rate (1972-2001)

Namibia Nominal Exchange Rate (1972-2001)

NAMIBIA NOMINAL EXCHANGE RATE (1972-2001)

Mauritius Nominal Exchange Rate (1972-2001)
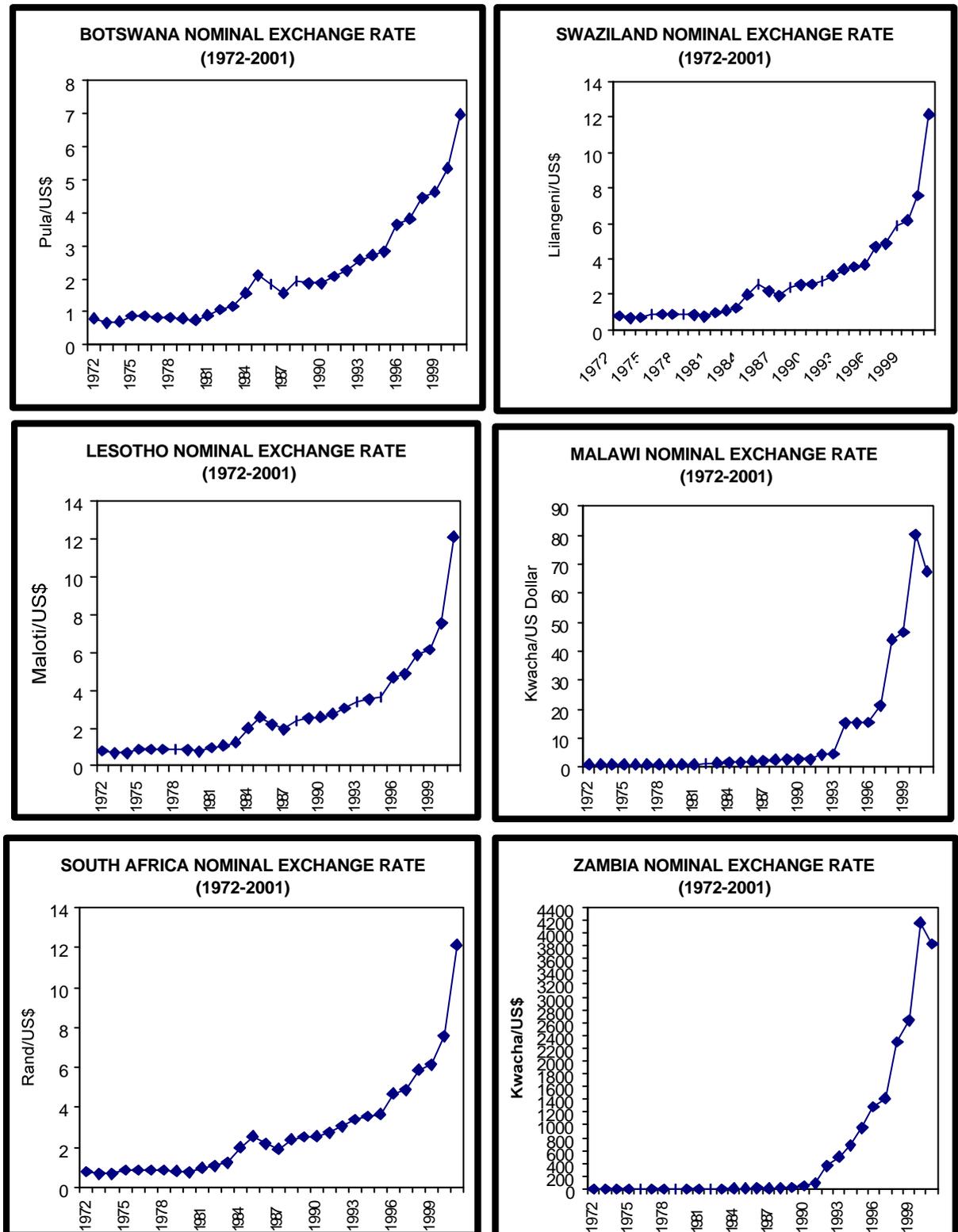
As illustrated in Figure 1, the ten selected economies of Botswana, Swaziland, Lesotho, Malawi, South Africa, Mauritius, Zambia, Zimbabwe and Namibia exhibit a similar pattern of nominal exchange rate developments, reflecting a general upward depreciation trend over time. Identical time series trends are apparent for Botswana, Swaziland, South Africa and Lesotho. The exchange rate pattern shown by the countries indicates that nominal exchange rates followed a stationary trend with minimal fluctuations from 1972 to 1981. The upward trend that is evident from 1983 to 2001 is a manifestation of the impact of global economic changes that were triggered by the 1982-84 world recession. This was later followed by a build up of balance of balance of payment pressures that emanated from the general decline in international commodity prices that forced many developing countries to devalue their exchange rates.

The same pattern is however not evident for Zimbabwe, Malawi and Zambia during the 1980s as these countries maintained fixed exchange rate regimes. In addition, periods that coincide with the shift to market determined exchange rates are marked by sharp devaluation periods, which are also a reflection that most developing countries, including Southern African economies entered into SAPS with highly

overvalued exchange rates. This is most pronounced in the case of Zambia, followed by Malawi while for Zimbabwe, efforts to arrest the sharp upward trend were initiated through reverting to a fixed exchange rate policy in 2000. Mauritius has on other hand undergone stable exchange rate developments with the Rupee showing minimal deviations during the review period. Although not illustrated in Figure 1, Mozambique and Angola, have, in particular, up to the late 1990s, experienced severe crisis of devaluation due to of civil war, drought and famine that has impacted negatively on economic development trends in these countries.

2.2 Response of Trade Flows to Real Exchange Rate Movements

2.2.1 Import Response to a Real Devaluation

Import demand pessimism as defined by Hinkle and Montiel (1999) states that the import structure in less developed countries is such that most imports are inputs into production and that the elasticity of substitution in production between imports and domestic value added is essentially zero. In addition to the nature of the import composition, the prevalence of import demand pessimism can be attributed to the role of "import compression" (or rationing) syndrome. Given that the supply of imports represents the willingness of the rest of the world to sell goods to a given country, developing countries face low or infinitely elastic import supply curves. Hence, devaluation leads to a rise in the border price of imports in domestic-currency terms, and in the absence of a simultaneous reduction on trade restrictions, there will be a corresponding increase in the internal price of imports.

However, although a devaluation, would have led to a reduction in imports, where import restrictions are imposed or tightened in response to a balance-of-payments deficit, a devaluation that is followed by a subsequent removal of import restrictions may not lead to a reduction of imports. Due to exchange rate overvaluation, imports become relatively cheap, thus prompting developing countries to resort to rationing of imports through quantitative restrictions, exchange controls or both. Hence, an overvalued exchange rate may lead to apparently "cheap" imports at border prices and the official exchange rate while import rationing (either through foreign exchange controls or quantitative restrictions) actually makes imports quite expensive domestically by generating rents for those controlling rationed imports. A devaluation may not increase (and even may decrease) the "true" price of importables (that is, including the implicit rationing premium) if accompanied by reductions in rationing that lower the implicit premium (Ibid pp 471-473).

In the case of Southern African economies, indications towards the prevalent role of import demand pessimism have been fuelled by the high degree of openness and external dependence of Southern African economies as reflected by the significant increase in trade with other regions (UN ECA, 1991:5). The manufacturing and the services sectors are also the largest import sectors, a reflection of lop-sided dependence of the economies on external factor inputs for the region as a whole (Ndlela, 2001:2).

This critical nature of the demand for imports, which is inelastic with respect to price changes will lead to sustained import flows despite efforts to correct balance of payment disequilibria through exchange rate devaluation. Overall, imports to regional

economies have been on the increase within the past decade. Since 1990, imports from Asia have grown at an average rate of 12.6% a year in nominal terms, and constituted about 25% of total-SADC imports in 1997. The rest of the African continent however accounted for a marginal 0.5% of total SADC imports excluding SACU. Germany, the United States, the United Kingdom, Japan and France emerged as the top origins of imports (WEF, 2000).

The case for the existence of the role of macroeconomic policies in promoting import demand pessimism is further confirmed by some empirical studies that have been applied to developing countries. Janine and Ayogu (1995) show that in the case of South Africa, reforms aimed at removing tariffs and eliminating trade restrictions were consistent with a more depreciated RER. This is an illustration that in such cases, the extent of the devaluation is not sufficient to offset the import rents that will have accrued due to restrictive trade policies, thus fostering import demand pessimism.

2.2.2 Export Demand Pessimism

According to the theory of "export demand pessimism", world demand is inelastic, with respect to both income and prices, for the products in which low-income developing countries exports are concentrated (Hinkle and Montiel, 1999). Export demand pessimism is based on the following reasons:

- Traditional exports of LIDCs are concentrated in products with low world price and income elasticities of demand and hence they face declining long run terms of trade. These exports with low elasticities of demand include agricultural commodities such as wheat, cotton, tea, cocoa, and coffee.
- The expansion of nontraditional exports in LIDCs is constrained by trade barriers in industrial countries. Such barriers which include high tariff and non-tariff barriers such as restrictive import quotas are further supplemented by a wide range of phytosanitary regulations and agricultural subsidies that impose competitive and market access barriers to exports from less developed countries.

Excessive dependence on a few key commodity exports that face inelastic aggregate world demand has been blamed for the poor export performance of most sub-Saharan African countries. The relative prices of these commodities, measured as the ratio of world prices to domestic prices have been for the past three decades resulting in a considerable fall in export earnings of most SSA countries. These declines have engendered considerable pessimism about prospects for export-led growth in developing countries. Moreover, SADC economies have shown a strong tendency towards heavy reliance on the export of primary commodities as their sources of foreign exchange.

The fall in global commodity prices, particularly in minerals, has therefore had a significant impact on the exports of these countries resulting in the worsening of their balance of payments deficits. Most SADC economies are dominated by mineral extractive industries, which means that mineral production and exports contribute a large proportion of their GDP, especially for Botswana, Namibia and South Africa.

Thus the composition of trade between SADC (excluding Sacu) and the rest of the world is typical of many other developing regions where primary products account for the largest share of exports, while imports are largely dominated by capital goods (WEF[2], 2000).

In addition, industrial country trade barriers have imposed significant obstacles to exports of a few selected products from developing countries that include sugar and bananas, nonprimary exports of textiles and footwear. For countries relying heavily on these products, such barriers can be a significant constraint to expansion of these particular exports, and the price elasticity of demand for such exports may be low.

2.2.3 The Export Supply Response to Real Exchange Rate Movements

One of the major constraints facing developing countries in their efforts to ensure appropriate responses to exchange rate adjustment as a trade facilitation tool is the role of export supply pessimism. According to the Structuralist view of developing country trade assessments, the theory of "import demand pessimism", holds that low-income country exports are concentrated in a few products with a very low domestic supply response so that changes in relative prices will not induce a significant change in domestic output.

Empirical evidence with respect to regional economies, as provided by Ndlela (2000), points to the fact that in the case of Zimbabwe, the dominant features influencing changes in exports are supply-side determinants, namely: export prices, production capacity and to a lesser extent, domestic prices. This reinforces the assumption that in countries, which rely on a small range of undifferentiated primary commodities, the demand for exports is perfectly elastic, that is, the countries are price takers on the international market, thus implying that the quantity of exports is determined by supply elasticities. In addition, the export elasticities obtained that were in the range of range of 0.02 to 0.25 and illustrate that Zimbabwe's main exports are relatively price inelastic, both in the short run and in the long run. Furthermore, the continued reliance on a few export commodities (tobacco, cotton and ferro-alloys), coupled with declining export prices and the corresponding fall in export proceeds render insufficient capacity for developing countries to generate the desired increases in export levels through price responses, that will be adequate to improve the country's trade balance provides (Ibid.).[3]

The theoretical support for this view is based on the fact that for a real exchange rate adjustment to affect exports, it must first alter the relative profitability of factors that include for example, land, labor and capital in producing exportables relative to other domestic goods. However, there are some instances in which devaluation may not improve the relative profitability of exports. Devaluation increases the border price of

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exports crops in domestic currency terms[4], but, if the increase in border prices is not passed through the marketing system to producers, it will not trigger any supply response.

Thus in terms of export composition, factors that could point towards a dominant role of export supply pessimism in regional economies, are mainly the fact that mineral exports are around two-thirds of SADC's exports with only South Africa and Zimbabwe having sizable manufactured goods mainly going to other countries of the region (Ndlela, 2001). In general intra-SADC trade is also characterised by unprocessed primary commodities going to South Africa and Zimbabwe, and manufactured goods and semi-processed intermediate goods going the other direction. In 1997, petroleum and petroleum products, non-ferrous metals, non-metallic minerals, gold and coal were the leading export categories, together accounting for almost 40% of total SADC (excluding SACU) exports in that year. Although there is also considerable cross-border trade in tourism and business services mainly in favour of South Africa, the strongest growth in exports between 1990 and 1997 however emanated from products within the agro-industrial sectors. These included, for example, beverages, animal and vegetable oils and fats, miscellaneous edible products and preparations, and live animals (WEF, 2000: 69-70). Overall, while the value of exports of agricultural and mining products has tended to be greater than imports, the opposite is true of manufacturing sector (Valentine 1998: 6).

However, despite the strong case of export elasticity pessimism that continues to cloud efforts towards successful exchange rate policy implementation, evidence shows a positive trend in regional export performance. Exports to Asia experienced high nominal growth between 1990 and 1997, resulting in an increase in the region's share of total exports to almost 25% in 1997 from 17% in 1990. However, Europe remains the largest market for SADC exports, earning the region \$15.8bn in foreign exchange in 1997, while exports to the rest of Africa represented only 1% of SADC's total exports. The top country destinations of SADC exports in 1997 included the US, the UK, Japan, Italy and Germany, totaling almost \$20bn in 1997 (WEF, 2000: 67). Overall, these traditional export destinations have through various preferential trading arrangements, offered strong support for the largely-primary commodity-concentrated regional export goods.

2.3 Challenges to Overcoming Import and Export Elasticity Pessimism

2.3.1 Impediments to Successful Exchange Rate Policy Implementation

The apparent lack of significant import and export response to changes in the exchange rate is perhaps one of the greatest challenges facing policy makers in developing countries today. Indeed Southern African economies have not been spared of the retrogressive effects of this problem, which has been the major fuelling cause of exchange rate uncertainties and the consequent exchange rate overvaluation. The weakness in production base, the predominantly exchange nature of the economy and its openness have perpetuated Africa's external dependence. This has been a direct consequence of the fact that African economies are dominated by the external sector,

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[4] The border price of exports refers to the international price in foreign currency multiplied by the nominal exchange rate.

which renders them highly susceptible to external shocks (UN ECA, 1991). Overall the major challenges facing Southern African economies with regard to realising the benefits of exchange rate policy as a trade facilitation tool can be analysed through the following:

2.3.1.1 Excessive External Dependence

The importance of trade as development channel also poses formidable challenges to Southern African economies and is reflected in the high value of the contribution of trade to overall national income. Currently, the value of the region's trade is around two-thirds of gross national product (GNP), with intra-regional trade of under 10 per cent of the total trade of the COMESA, while intra-SADC trade ranges from 5 to 10 per cent (Cassim, et al, 1997: 13). Though the informal and micro, small and medium enterprise sector is largely neglected, it has been shown that there is a large amount of informal trade across borders that is not counted in the official statistics (Bronstein, Ibid.). Some studies put such trade at between 15-50 per cent of official trade, thus suggesting that the region's trade could be much higher than official estimates.

The manufacturing and the services sectors are also the largest import sectors, thus suggesting a lop-sided openness and excessive dependence of the economies on external factor inputs for the region as a whole (Ndlela, 2001: 1). Moreover, like most developing countries, most Southern African economies have not been spared from worsening balance of payment positions. Volatile export earnings during the nineties, coupled with a relatively strong growth in imports, of 7.9% a year in nominal terms between 1990 and 1997, have resulted in a declining trade surplus for the SADC region. Imports increased sharply from $48bn to $62.8bn between 1994 and 1995, outstripping export growth and resulting in a substantially lower trade surplus at just over $1.6bn, a decline from $8bn recorded in 1994. Though the trade balance deteriorated further in 1996, as export earnings declined by almost $5bn, the trade surplus amounting to about $12.3bn, or almost 54% of total imports in 1997 indicates persistence balance of payment pressures (WEF, 2000). Thus, although the strong growth in imports constitutes a major challenge towards balance of payment stabilisation efforts, the strong reliance on imports of capital equipment as reflected in the composition of imports is also another factor that regional economies have to contend with in exchange rate policy implementation issues.

2.3.1.2 Resistance to Devaluation, Policy Volatility and Inconsistency

Evidence has shown that import and export elasticity pessimisms constitute some of the major causes of political resistance towards exchange rate devaluation, the frequent abandonment of exchange rate policies and in some cases the complete collapse of official exchange rate regimes in African economies. This widespread existence of this phenomenon is fully supported by Bird (1981) through the following summary, which perhaps captures the whole roots of the exchange rate management problem in LIDCs:

> "Currency depreciation, particularly in its starkest form of devaluation, is a
> highly controversial issue in many developing countries especially in Africa.
> Unconvinced by the economic arguments for it, and suspicious of its political

repercussions, many governments prefer to avoid depreciation where at all possible (Bird, 1981: 1)."

In addition, periods of sustained devaluation are short-lived due to the existence of non-complementary macroeconomic policies. The short-lived nature of the devaluation episodes which are frequently followed by nominal appreciations within a relatively short time period and the frequent reversal of policies has rendered considerable difficulty in the response of productive structures to exchange rate policy. This has resulted in periods of sustained severe exchange rate overvaluation, leading to chronic foreign currency shortages with consequences for the development of parallel foreign exchange markets where agents compete for rents generated by the market shortages.

The imposition of new Exchange Control Regulations and the tightening of existing ones, that often accompanies periods of exchange rate overvaluation has in addition led to the emergence of smuggling and under invoicing of exports.[5] Zimbabwe is currently a special case where the development of a fully-fledged parallel foreign exchange market has resulted in virtually most of the country's export receipts being channelled to the parallel market and has created severe foreign currency shortages in the official market.

2.3.1.3 Limited Scope for Import Substitution

Given the relatively low level of industrialization and the capacity to produce import substitutes in most African countries, the problem of low price elasticities is particularly important for Southern African regional economies. This is also worsened by the limited scope for import substitution, which has resulted from the imposing of direct controls on imports in which governments may have forced their countries' import structures into inflexibility through the administrative elimination of all imports that were considered nonessential. Secondly, even in the absence of import controls, the import structure of Southern African economies consists primarily of goods such as petroleum and intermediate inputs, which are intrinsically price insensitive and have few domestic substitutes.

2.3.1.4 Dependence on Few Traditional Export Commodities

The relative price inelasticity of traditional imports and the reliance on a few export commodities imposes insufficient capacity for devaluations to generate the desired increases in export levels. In Africa, a few commodities often account for 80% of the total export earnings and government revenue (UN ECA, 1991: 5).[6] Thus, the commodity concentration of exports is not only high but also rising while at the same time the decline of export volumes, and deterioration in the terms of trade and rising debt burden have intensified the resource constraint on development. Further complementary attributes that have worsened the role of export demand and supply pessimism particularly in regional economies have been attributed to the smuggling

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[5] This refers to the amount by which a country's reported exports are understated relative to the world's reported imports from the same country and which is strongly related to the parallel black market premium

[6] For CFA countries, the commodity concentration of exports is so high such that for each country, an average of four products were found to account for 70-90 percent of total trade (see Hinkle and Montiel, 1999).

and underinvoicing of exports while at the same time there have been delays in remitting export receipts, again in anticipation of devaluation. These resource leakages that have been exacerbated by losses in external reserves, capital flight and brain drain are also reflective of the openness and dependence of the African economy (Ibid.).

2.3.2 Overcoming the Challenges

2.3.2.1 Coherence of Macroeconomic Policies

Given that the exchange rate is but one of the macroeconomic policy instruments to help maintain external and internal balances simultaneously, it is only effective when used in coordination with other instruments and supported by requisite institutional and regulatory structures. With substantial openness to international capital markets, maintenance of exchange rate pegs requires full commitment of monetary policy that is partly or fully committed to exchange rate objectives. The exchange rate cannot maintain competitiveness, unless it is supported by prudent macroeconomic policies, a strong financial sector, and credible institutions (Yagci, 2001, Velasco, 2000). In addition, price incentives created by devaluation can be eroded by the domestic cost inflation which it may trigger, thus causing the RER to appreciate over time. To prevent this from happening, appropriate domestic financial policies should be pursued alongside depreciation, as well as other prices and wage policies to limit the cost inflationary effect (Bird 1981: 472). Furthermore, the exchange rate should be seen in a dynamic setting where Central Banks should monitor changes in the RER, and be prepared to adjust the nominal exchange rate should it become overvalued (Ibid.).

Sound and better supervised financial systems, adequate accounting standards and disclosure requirements, prudent foreign exchange exposure of the banking sector and domestic businesses, as well as the presence of efficient legal and judicial systems are also important requirements for an exchange rate regime to successfully maintain competitiveness and avoid a currency crisis. In this regard, governments face a challenge of maintaining policy consistency and credibility and ensuring a sustainable balance between all relevant structural and institutional variables that contribute towards building stable and competitive exchange rates.

2.3.2.2 Fiscal Discipline

Fiscal discipline entails that governments should display full commitment to maintain their policy stance with respect to tight budgeting and inflation targeting. Under fixed exchange rates, the costs of imprudent behaviour, in particular fiscal laxity will manifest themselves in falling reserves or exploding debts. Flexible rates, by contrast, allow the effects of unsound fiscal policies to manifest themselves immediately through movements in the exchange rate and price level (Velasco 2000: 3). Failure to establish fiscal discipline will lead a country to crisis irrespective of any exchange rate regime (Yagci, 2001: pp 1-3).

According to the Canonical Models of currency crisis, this is because in a situation where the government pursues an expansionary fiscal policy, domestic absorption will inevitably exceed production, resulting in spill over effects to the balance of payments

account, which are financed by the running down of reserves. While this will give an unrealistic account of government's resource constraints, the Central Banks will continue to sell forex to peg the exchange rate until the last dollar of reserves. At a critical value of remaining reserves, forward-looking agents attack the currency, eliminating the remaining reserves and triggering a devaluation crisis. However, while lack of fiscal prudence has proved to be the weakest link in the management of both fixed and floating exchange rate regimes, the size of the budget deficit to be financed cannot be universally determined and depends on how the extent of the financial instability. Thus active fiscal policy will also depend largely on the current level of inflation as well as the inflation target (Dornbusch, 1990).[7]

2.3.2.3 Balancing the Interests of Various Stakeholder Groups

The political economy of exchange rate management, that incorporates the role of monopoly powers, lobbies or interest groups cannot be ignored. There exists a conflict of interest between the various institutional players with regards to the merits and demerits of devaluation (Abbey, 1998). Devaluation leads to a positive wealth effect that comes through an increase in export proceeds, however the question that arises is on the extent to which the wealth effect benefits non-exporters. Thus counteracting the static political influence of devaluation and the need to balance the costs and benefits borne by the ordinary electorate who feel the direct impact of an increase in prices of importables has been one of the greatest driving forces behind the resistance to devalue by most developing country governments

Despite the prevalence of the policy dilemma that confronts exchange rate management efforts, the bottom line case still remains very clear that, fundamentally, exports cannot be expanded if the export price does not provide a reasonable incentive (Ndlela 2000: 21). Since profitable export price depends on a competitive exchange rate, it is crucially important that countries maintain their real exchange rates around their equilibrium levels (Ibid.). A devaluation of the exchange rate has a dynamic multiplier effect on the economy whose permanent effect can materialize from the medium to the long-term period. A full exposition of the various exchange rate linkages and the transmission mechanism in policy formulation could provide the solution to counteract the general resistance towards devaluation. Lack of confidence in a country's foreign exchange policy results in exchange rate leakages out of the country and strengthens the parallel market and under such conditions, any attempts to devalue a currency without adjusting existing macroeconomic and institutional fundamentals will be a futile exercise.

2.3.2.4 Diversification to Non-traditional Exports

In light of the above challenges that confront exchange rate management efforts, it should be emphasized that one of the objectives of exchange rate policy would be to create conditions for export diversification. Conventionally, adjustment of overvalued real exchange rates is considered an essential element in improving the trade balance

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[7] According to Dornbusch (1998), there are three considerations with respect to the size of a sustainable budget deficit that a country can afford to maintain. If there has been hyperinflation, a budget surplus is required. If inflation reached only 50%, there is room for moderate deficits financed by money creation and debt finance and lastly the level of inflation also depends on the inflation target that the country aims to achieve. (See Dornbusch, R, Policies to Move from Stabilization to Growth, in Proceedings of the World Bank Annual Conference on Development Economics, 1999, pp 19-58).

of an economy; and an expansion of trade is seen as an important element of growth strategy. The rapid expansion of nontraditional exports which are not just manufactures, but also higher value-added natural resource and agricultural or horticultural products will therefore be some of the priority areas that exist with respect to overcoming the challenges imposed by the elasticity pessimisms. According to empirical evidence, the experience of many countries indicates that under the right conditions, the expansion of non-traditional exports can be both extremely rapid in percentage terms and sustained over very long periods (Hinkle and Montiel, 1999).

It is noted that non-traditional exports typically have increased substantially following large devaluation episodes and that much of this response has often occurred within a year or two. Goldstein and Khan (1985) have noted that although the real activity response to devaluation occurs immediately, the response of trade volumes to changes in real exchange rates builds more gradually over time. Their consensus estimates on the negative price elasticity are between 0.5 and 1 for imports and between 1.25 and 2.25 for exports also illustrates that trade in manufactured goods appears to have slightly higher elasticities than trade in primary goods.

Support for such empirical observations have also been found to exist in Zimbabwe's economy. Notably Riddell (1996) points to the need for prioritizing the manufacturing sector and manufacturing exports in development policy initiatives. Their studies found that manufactured exports display higher price elasticities of supply and demand than those displayed by primary commodities. Bond (1985) found higher elasticity of demand on fuel and manufactured goods than on food and raw materials. Other studies such as the World Bank (1986), Goldstein and Khan (1985), Stewart (1987) and UN ECA (1990) established a general consensus that trade in manufactured goods grows faster than in primary commodities. In fact, in countries deterioration in the terms of trade and export diversification are long-term issues, the growth of nontraditional exports is an important indicator of the appropriateness of the RER and trade policy.

2.3.2.5 Sustained Policy Consistency

Because devaluation of the real exchange rate produces an unfavourable terms of trade response, with import prices rising relative to export prices, the initial impact of a fall in the exchange rate on nominal trade balance can be small or even perverse. The expected effects of the exchange rate on nominal trade balance may therefore only become clear in the medium term (Goldstein and Khan, 1985). In addition, although nontraditional exports are also unlikely to contribute substantially to overall export growth in the near term, experience suggests that a competitively valued exchange rate maintained over an extended period is a necessary, if not a sufficient, condition for diversifying exports successfully and sustaining their rapid growth. (Ibid.) For the J-curve effect to take full effect in any economy requires a reasonable period of sustained policy implementation and time consistency.

According to Bird (1981), the price elasticity of export supply is of crucial significance to balance of payment adjustment and tends to be higher the shorter the gestation period of production, the greater the domestic consumption of the good, the greater the degree of unutilised capacity, the greater the availability of investment

finance, and the greater the mobility of other resources. He however notes that although circumstances may vary between individual cases, generally speaking, it might be anticipated that supply elasticity will be greater in the long run than in the short run, and in principle short-run supply inelasticity may constitute an impediment to the efficacy of depreciation as a balance of payment adjustment tool (Bird, 1981: pp 464).

In this regard, most of the regional economies that emerged through a period of inward looking policies after the attainment of their political independence will need longer periods of perhaps more than five years in order to respond to devaluation signals and start setting up the appropriate production structures for successful export diversification. Selective application of exchange rate policies, exchange controls and export credits schemes are short-run instruments which could be employed in strategic areas to smooth out adverse payments fluctuations, boost foreign currency inflows and reserves. Moreover, the full realisation of exchange rate policy objectives requires maintaining a stable balance between short and long-term policy objectives, whilst taking into account the fact that the exchange rate is but one of the structural variables, which can only work if fully supported by a commitment to set other macroeconomic fundamentals right.

3. EMPIRICAL ANALYSIS OF EFFECTS OF REAL EXCHANGE RATE MOVEMENTS ON TRADE PERFORMANCE

3.1 Econometric Specification of Trade Equations

In this section we thus adopt a partial-equilibrium relative price approach methodology of determining the responsiveness of imports and exports to changes in the real exchange through an estimation of real exchange rate and output elasticities. The specification assumes that changes in the relative prices of imports and exports do take place and examines only how the markets for imports and exports respond to such changes.[8] This underlying assumption disregards the macro-economic effects on domestic economic activity, wages, prices and interest rates and the feedback effects of these changes on the market for export levels. While several unique approaches exist that are used to estimate export functions, the approach adopted in this paper is often applied to low-income developing countries[9]. In this approach, the exporting countries are highly specialised in a small range of undifferentiated primary commodities. Thus in line with Bayoumi (1996), the following econometric specification of trade equations is therefore adopted:

$$\ln(X_t) = a_X + b_X \ln(RER_t) + l_X \ln(YF_t) + m D_E + e_{Xt} \dots\dots\dots\dots\dots\dots\dots\dots(3.1)$$

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[8] This relative price approach is in contrast to, although not in conflict with, the absorption approach of treating the current account as an element of the fundamental macroeconomic identity and focusing on the changes in saving and investment necessary to accommodate reductions in the current account deficit (Hinkle and Montiel, 1999).

[9] This methodology is a simplified form of the trade-equations approach to real exchange rate determination based on the Mundel Flemming framework that is often applied to low-income developing countries where there is unavailability of most data on structural macroeconomic variables. (see Ahlers and Hinkle (1999) and Bayoumi (1996).

$$\ln(M_t) = a_M + b_M \ln(RER_t) + l_M \ln(Y_t) + m D_E + e_{Mt} \quad \text{..}(3.2)$$

Where *X, M, RER$_t$, YF* and *Y* represent real exports, real imports, the real effective exchange rate, partner country GDP, and domestic GDP. In this specification, the real exchange rate is defined in external terms as the ratio of the aggregate foreign price level or cost level to the home country's aggregate price or cost level measured in a common currency (nominal exchange rate adjusted for price level differences between countries). In line with Edwards (1989), the internal RER is expressed as follows:

$$RER = e = \frac{E P_T^w}{P_n} \quad \text{..}(3.3)$$

Where $P_t^{w\,[10]}$ is the world price of traded goods and is assumed exogenous for a small country. *E* is the nominal exchange rate, and P_n is the domestic price of nontraded goods, which is endogenous except over short periods with wage-price rigidity. The RER is therefore endogenous even under a predetermined nominal exchange rate.

The most important property of the RER is that it is a good proxy of a country's international competitiveness. Given that the real exchange rate shows the number of units of domestic goods required to buy one unit of foreign goods, a decline in RER, or a real exchange rate appreciation, reflects an increase in the domestic cost of producing tradable goods and implies that it takes more units of domestic goods to buy one unit of foreign goods. If there are no changes in relative prices in the rest of the world, this real exchange decline reflects a deterioration of a country's international competitiveness, implying that the country now produces tradable goods in a way that is less efficient than before, relative to the rest of the world. Symmetrically, an increase in the relative price of tradables represents an improvement in international competitiveness because it takes fewer units of domestic goods to buy one unit of foreign goods (Edwards, optct: 46).

This use of the real exchange rate concept as a measure of competitiveness in the determination of the effects of the responsiveness of trade flows to exchange rate policy can be justified based on structural considerations of exchange rate policy implementation in the sample countries. Firstly, in most of the Southern African economies, with the exception of Lesotho, Swaziland, Namibia and South Africa, and partly Botswana, the real exchange as policy variable that has been fixed at predetermined rates for a greater part of the period since 1972. As a result of maintaining fixed exchange rates, nominal devaluations have often not translated into real devaluations with the result that most countries have instead maintained overvalued exchange rates with respect to their trading partners. For countries such as Botswana, Swaziland, Lesotho and Namibia, the lack of an independent exchange rate policy, that would allow for market determined adjustment to domestic and external factors, has meant that their exchange rates may not be a true reflection of the equilibrium exchange rates that should be prevailing in those economies.

In the model specification of equations (3.1) and (3.2) above, the coefficients **b** and **l** represent initial estimates of the long-run elasticities with respect to the real exchange rate and output. The next step is to estimate a dynamic equation involving the first

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[10] In measuring the real exchange rate, economists have to define proxies for P_T^w and P_n. These proxies are usually some foreign price level (wholesale price index) and the domestic consumer price index (CPI), (Edwards, 1989).

difference of the explanatory variables plus the lagged residuals from the first-stage. This gives rise to the following specifications:

$$\Delta \ln(X_t) = \boldsymbol{d}_X + \boldsymbol{f}_X \Delta \ln(E_t) + \boldsymbol{l}_X \Delta \ln(YF_t) + \boldsymbol{k}_X \boldsymbol{e}_{Xt-1} + \boldsymbol{e}'_{Xt} \dots\dots\dots\dots\dots\dots\dots(3.3)$$

and

$$\Delta \ln(M_t) = \boldsymbol{d}_M + \boldsymbol{f}_M \Delta \ln(E_t) + \boldsymbol{l}_M \Delta \ln(Y_t) + \boldsymbol{k}_M \boldsymbol{e}_{Mt-1} + \boldsymbol{e}'_{Mt} \dots\dots\dots\dots\dots\dots\dots(3.4)$$

The coefficients $\boldsymbol{f}$ and $\boldsymbol{l}$ represent short-run real exchange rate and income elasticities of export and import demand, respectively, and $\boldsymbol{k}$, the coefficient of the error-correction term, specifies the speed with which the system tends to adjust to the long-run equilibrium. Specifically, the mean lag of the adjustment process is equal to $-1/\boldsymbol{k}$, so that, the larger the value of $\boldsymbol{k}$ in absolute terms, the faster is the rate of adjustment to long-run equilibrium. This econometric specification focuses only on the expenditure and resource-switching component of an exchange rate adjustment. It simply assumes that a policy package that changes the nominal and hence the real exchange rate is adopted and then examines the implications for imports and exports of such a change. Finally, the empirical specification is applied with respect to aggregate merchandise trade and in line with (3.3) and (3.4), proceeds to explore the short-run adjustments surrounding an exchange rate adjustment.

3.2 Short-run and Long-run Export Elasticities

Table 3.2 reports the estimated short and long-run elasticities with respect to output and the real exchange rate. Estimates were made for eight Southern African Economies, namely, Zimbabwe, Zambia, Botswana, Swaziland, Lesotho, Malawi and South Africa and Mauritius, for the period 1972-1996. Annual data from 1972-1996 on merchandise exports and imports, real GDP of domestic and partner countries as well as nominal exchange rates and consumer price indices were obtained from the IMF's *International Financial Statistics*. Major trading partners in this study are defined as the most influential export destinations, which include regional economies with the major OECD countries that incorporate Germany, France, Japan, United Kingdom and the United States representing the world trading partners.

Detailed specifications of individual trading partners are discussed in Appendix 1. To obtain the export and import elasticities, the autoregressive-distributed lag (ARDL) approach to cointegration estimation procedure is adopted (see Appendix 2). Unit root tests to determine the time series properties of the data are shown in Appendix 3. The Augmented Dickey Fuller Statistics, also explained in Appendix 2 shows that in most of the cases the logarithms of exports, imports, real exchange rates, domestic income and trading partner's incomes tend to be non-stationary while their first differences are stationary. In cases where this general trend in violated, the short-run cointegrating equations are based on the relevant time series properties as defined by the ARDL estimation procedure.

Table 3.2: Estimated Long-Run and Short-run Export Elasticities

	Long-Run Elasticities		Short-Run Elasticities	
	Output	Real Exchange Rate	Output	Real Exchange Rate
Zimbabwe	-5.1865	-.42116	-.67126	-.054508
Zambia	-1.2514	-.19405	-1.1156	-.17300
Botswana	1.2720*	1.0344	.53389	.43417
Swaziland	.95225*	-.49238	.14036*	-.31074
Lesotho	.96910	-2.2472	.35343	-.81956
Malawi	-1.6016	-.030622	-.34297	-.0065573
Mauritius	4.9858	2.8020*	1.1446*	.64328*
South Africa	3.2867	-2.7718	.49737	-.41944*
Note: An asterisk indicates that the coefficient is significant at 5% level of significance				

The export regression results presented above, though displaying considerable variation[11] are generally in line with standard theoretical predictions and empirical findings (see Bayoumi 1996, Hinkle and Montiel, 1999, Abdelhlack, et al 1999a 1998b). Moreover, the tendency of the pervasive effects of distorted macroeconomic and structural macroeconomic fundamentals is reflected in some inconsistent results as well as the statistical insignificance of some of the elasticities. Thus, with respect to long run effects, the exchange rate elasticities are negative, with the exception of Botswana and Mauritius. The negative real exchange rate elasticity is a reflection of the inverse relationship between the change in the international relative price of exports and the demand. A devaluation of the real exchange rate that is expressed as the number of units of domestic goods required to buy one unit of foreign goods implies that domestic goods become cheaper relative to foreign goods. All things being equal, this would result in an increase the international demand for domestic exports.

However, the results show that this does not hold for Botswana and Mauritius which have high positive long run and short-run real exchange rate elasticities of 0.43 and 0.68, 1.03 and 2.80 respectively. The elasticities are statistically insignificant in the case of Botswana while for Mauritius the real exchange rate elasticities are significant at the 5% level of significance. The statistical insignificance of the elasticities especially in the case of Botswana could be an indication that exchange rate policies in these countries has played a minimal role in the determination of export performance. In addition, the impact of changes in the trade policy regime or shifts in the type of goods being traded may obscure the true relationship between the real exchange rate and trade.

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[11] In this analysis of results, it should be noted that the econometric estimates only relate to the estimation period of 1972-1996 and do not capture any subsequent developments that have occurred after the period. This has been due to the unavailability of export and GDP data after 1996 for most of the sample countries.

Specifically, such behaviour could be attributed to various causes, including the nature of exports and the underlying macroeconomic policies that have been used to influence the export environment resulting in exchange rate policy becoming less effective as a trade facilitation tool. These could include the role of active export incentive schemes, export processing zones as in the case of Mauritius, the existence of bilateral trading arrangements that entail preferential treatment of exports relative to those of other countries, as well as the ability to take advantage of various trading windows offered under international conventions such as the World Trade Organisation and most recently the AGOA Treaty.

Low elasticities, which are generally in line with those obtained for most developing countries, are obtained for Zimbabwe, Zambia and Malawi, with the lowest short-run elasticity of –0.006 being recorded for Malawi, -0.054 for Zimbabwe and -0.17 for Zambia. Although these low elasticities give support to the prevalence of export demand pessimism in LIDCs, the statistical insignificance of the elasticities also implies that exchange rate policies have played a negligible role in enhancing export competitiveness. Due exchange rate overvaluation that has been facilitated by inward-looking policies, structural policies in the form of export incentives and barter trade arrangements rather than exchange rate adjustment may have had a positive impact on export performance such that the relationship between export prices and the corresponding volumes became invalid. In the case of Zambia, the major export commodity is copper, which as the national export lifeline has also been subjected to various export incentives that could have worked against the normal effects of changing relative prices, and exchange rate misalignment-induced real appreciation.

Very high long-run elasticities are reported for South Africa, Swaziland and Lesotho, with estimates ranging from –2.77 for South Africa, -0.49 for Swaziland and –2.25 for Lesotho. The short-run elasticities although much lower than the long-run ones are still on average much higher than those predicted under the export demand pessimism effect, with estimates ranging from -0.31 and -0.42 for Swaziland and South Africa, to -0.82 for Lesotho. In the case of South Africa, this could be a reflection of the impact of the extent of industrial development in the biggest economy in Sub-Saharan, and the fact that the country has generally followed a floating exchange rate regime, which is not subject to excessive misalignment. Results for Lesotho and Swaziland can be attributed to the impact of a one-to-one exchange rate peg that the two countries have maintained with the South African Rand as well as the strong bilateral trade links in which almost all their trade is entirely with South Africa. However, the statistical insignificance of the elasticities in the case of Swaziland and Lesotho, and the long-run elasticity for South Africa could further signal a negligible role of exchange rate policies on trade performance in these economies.

In terms of real activity responsiveness to trade flows, most of the sample countries display very high long-run and short-run elasticity responses to changes in trading partner's incomes, with the exception of Zambia, Malawi and Zimbabwe in the short-run which have an opposite sign to that of other countries. Low short-run activity responses ranging from 0,35 to 0.533 are obtained for Lesotho, Swaziland and Botswana while that of Mauritius is 1.14. The sample is characterised by very high

long run responses to partner country GDP, in particular South Africa and Mauritius, which have elasticities of 3.27 and 4.98 respectively.

3.3 Short-run and Long-run Import Elasticities

In Table 3.3, we report the short-run and long run import elasticities to nominal exchange rate movements and changes in domestic output for the period 1972-1996. Generally most of the sample countries exhibit high responses of imports to changes in domestic incomes in the long run, with the lowest response of 0.20 for Zambia the highest of 0.91 for South Africa. The short-run elasticities are much lower, with Botswana recording the lowest value of 0.04, followed by 0.16 for Malawi, 0.18 for Swaziland and Lesotho, 0.19 for Zambia, 0.52 for 0.98 for Mauritius and South Africa respectively. However, both the long-run and short-run elasticities were found to be statistically insignificant at the 5% level of significance. This illustrates a weak impact of exchange rate movements on import performance both in the short run and long run. In the case of Zimbabwe, both the short-run and long run import elasticities are negative and statistically insignificant, implying a weak tendency of the demand for imports to increase with an increase in the relative price of imports that is brought about by an exchange rate devaluation. These findings provide support to the general observation that even though the exchange rate has tended to influence imports in a particular direction, its effects have nonetheless been empirically negligible and imply that import demand exhibits a stronger response to other factors besides the exchange rate.

Table 3.3: Estimated Long-run and Short-run Import Elasticities

	Long-Run Elasticities		Short-Run Elasticities	
	Output	**Real Exchange Rate**	**Output**	**Real Exchange Rate**
Zimbabwe	.94776*	-.30685	.57367*	-.18573
Zambia	.47125	.20744	.45286	.19935
Botswana	.79550*	.089182	.37539	.042084
Swaziland	1.5326*	.66868	.41949	.18302
Lesotho	.92527*	.32304	.53203*	.18575
Malawi	.69592*	.29197	.38361*	.16094
Mauritius	.84063*	.47647	.91703*	.51977
South Africa	1.1210	.91207	1.1998	.97620
Note: An asterisk indicates that the coefficient is significant at 5% level of significance				

Real output elasticities were found to be positive for all countries and statistically significant in all cases. On average, the responsiveness of imports to real output changes were less than unity in the short run and fell in the range of 0.38 to 0.91 with the exception of South Africa whose estimated elasticity was about 1.20. Long-run output responses were in the range of 0.47 to 1.53 but were however less than the short-run elasticities in the case of South Africa and Mauritius. Overall, the analysis shows that output elasticities are generally large and well-determined. By contrast, the real exchange rate elasticities are less-well determined and generally quite low. Hence

although there is considerable evidence that the real exchange rates do affect trade volumes in the expected directions, the results are in most cases quite pessimistic as regards the size and effectiveness of the underlying elasticities.

4. CONCLUSIONS

The study has highlighted the central role of exchange rate policy as a trade facilitation tool in Southern African economies. The main emphasis of the study lies in the general overview that trade and exchange rate policy implementation in regional economies is highly constrained by the underlying structural features of the economies which make import substitution difficult while exhibiting inelastic export response both on the demand and supply side. In particular, the main weakness in exchange rate policy implementation can be attributed to high degrees of import compression as well as the nature of trade composition which is such that the import content of these countries consists mostly of manufactured goods and machinery that are critical inputs in the production process. As a result the prevalence of low import and export elasticities still remains a major challenge that has to be overcome by policy makers in most regional economies if, the benefits of effective exchange rate management are to be fully realized.

In terms of the empirical analysis of import and export responsiveness to changes in real output and exchange rates, the study reveals mixed findings concerning theoretical and pre-existing empirical predictions. The estimated import and export elasticities for most of the countries which are generally small and less than unity both in the short-run and long-run small and statistically insignificant coefficients recorded imply a highly pessimistic role of the exchange rate as a trade facilitation tool. To support the findings, it is worth noting that high degrees of policy volatility and inconsistency that has characterised some of the economies, in particular the Zimbabwean economy since independence in 1980 has meant that exchange rate policy has never been used actively as trade facilitation tool. Other cases such as Malawi and Zambia do provide estimates that are consistent with those obtained by the earlier advocates of elasticity pessimisms on developing countries. The higher long-run and short-run elasticities that are obtained for South Africa however support the conclusion that sustained exchange rate policy implementation and maintaining a balanced coherent macroeconomic policy package are prerequisite factors in ensuring that exchange rate policies produce the right results. Although the findings could also be supported by the fact that South Africa is the biggest and most diversified, technologically sound economy in Sub-Saharan Africa, they nevertheless provide an invaluable lesson that success of exchange rate policy implementation also hinges on extensive institutional and technological capacity building as well as adopting complementary macroeconomic policies that are committed to exchange rate objectives.

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APPENDIX 1

SELECTED MAJOR TRADING PARTNERS FOR SOUTHERN AFRICAN ECONOMIES

In estimating the export demand equations 3.3, trading partners' incomes were chosen on the assumption of the most influential trading partners with regards to major export destinations of the particular economy. The choice of these trading partners is chosen mainly on the basis of the World Economic Forum (WEF), 2000 report on the trade profile of Southern African Economies as well as other studies that have attempted to evaluate the direction of regional exports. Sample countries are also based on data availability, which explains the exclusion of Angola, Mozambique and Namibia under regional trading partners as well as other non-SADC and minor OECD export destinations. It should therefore be noted that only SADC and major OECD export destinations, which were selected as the most representative export destinations are illustrated in table A1.

Table A1: Selected Major Trading Partners for Regional Economies

Country	Major Trading Partners
Botswana	South Africa, Lesotho, Swaziland, Zimbabwe
Lesotho	South Africa, Swaziland, Botswana
Malawi	South Africa, Zambia, France, Germany, Japan, United Kingdom, United States
Mauritius	South Africa, France, Germany, Japan, United Kingdom, United States
South Africa	Botswana, Swaziland, Lesotho, Malawi, Zambia, Zimbabwe, France, Germany, Japan, United Kingdom, United States
Swaziland	South Africa, Lesotho, Botswana
Zambia	South Africa, France, Germany, Japan, United Kingdom, United States
Zimbabwe	Zambia, Malawi, South Africa, Botswana, France, Germany, Japan, United Kingdom, United States

APPENDIX 2

ERROR CORRECTION MODELS, CONITEGRATION AND TIMES SERIES PROPERTIES OF DATA

Economic time series are often non-stationary, their means and variances change over time. The trend component in the data can either be deterministic or stochastic, or a combination of both. Fitting a deterministic trend assumes that the data series grows with a fixed rate each period. This is seldom a good way of characterizing describing trends in economic time series. Instead they are better described as containing stochastic trends with a drift. The series might be growing over time, but it is not possible to predict whether it grows or declines in the next period. Variables with stochastic trends can be made stationary by taking first differences. This type variable is called integrated of order 1, where the order of integration is determined by the number of times the variables needs to be differenced before it becomes stationary.

A necessary condition for fitting trending data is that the variables share the same trend; otherwise there is no meaningful statistic relation between them. Testing for co-integration is a way of testing if the data has a common trend, or if they tend to drift apart as time increases. The simplest method to test for co integration is the so-called Engle and Granger two-step procedure (Angle and Granger 1987). The test implies determining whether the data contains stochastic trends, and if so testing if there are common trends. If x_t and y_t are two variables, with non-stochastic trends that become stationary after first differencing, co- integration can be tested by running the following co-integrating regression using the ordinary least squares (OLS) .technique.

$$y_t = \boldsymbol{a} + \boldsymbol{b}x_t + z_t \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots A2.1$$

where the estimated residual is z_t. If the variables are co-integrated, z_t.will be I(0). The second step is then to perform an Augumented Dickey Fuller unit root test of the residual.

$$\Delta \tilde{z}_t = \boldsymbol{a} + \boldsymbol{p}\tilde{z}_t + \sum_{i=1}^{k} \Delta \tilde{z}_{t-1} + \boldsymbol{e}_t \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots A2.2$$

If both x_t and y_t are integrated variables of the same order, a necessary condition for statistically meaningful long-run relation is that the residual term z_t is stationary, that is, it should be I(0). If that is the case the error term from the regression can be seen as temporary deviations from the long-run, and α and β can be viewed as estimates of the long-run steady state relation between x and y.

A general way of building a model of time series, without imposing ad hoc a priori restrictions, is the autoregressive distributed (ARDL) lag model for two variables:
$$A(L)y_t = B(L)x_t + \boldsymbol{h}_t \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots A2.3$$

Where the lags are given by $A(L) = \sum_{i=0}^{k} a_i$, and $\sum_{i=0}^{k} b_i$. The first coefficient in $A(L)$ is set to unity, $a_l = 1$. The lag length is chosen such that the error term becomes a white noise process (stationary). $h_t \sim NID(0, s^2)$. The long-run solution of this model is given by,

$$y_t = p x_t + h_t \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots A2.4$$

Where $p = B(L) / A(L)$. Without loss of generality the difference operator, $\Delta y_t = x_t - x_{t-1}$ can be used to rewrite the autoregressive model as an error correction model,

$$\Delta y_t = \sum_{i=1}^{k} b_i \Delta x_{t-1} + \sum_{i=1}^{k} g_i \Delta y_{t-1} + a ECM_{t-1} + h_t \dots\dots\dots\dots\dots\dots\dots\dots\dots A2.5$$

Where the error correction mechanism is given by $ECM_{t-1} = (p x_{t-1} - y_{t-1})$. The latter term can be said to represent the deviation from the long run steady state relation between the two variables. The α-parameter of the error correction term indicates how changes in Δy_t react to deviations from the long-run equilibrium and in this methodology, the error correction specification works with stationary data. This implies that if y_t and x_t contain stochastic trends it is necessary that they are co-integrated for the ARDL model to make sense in the long run. If the variables are co-integrated the error term from the co-integrating regression (ϵ_t above) can be used as the error correction mechanism. This was show in Engle and Granger (1987)[12]. The advantage of the error correction model formulation as adopted in this study is that it does not put a priori restrictions on the model and that it separates long run and short run effects. Overall, it t has proven to be a very efficient way to model various economic models, namely, money demand, consumption and other macroeconomic variables.

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[12] A detailed formulation of this model is found in Engle, R.F, and C.W.J Granger, 1987, "Co-integration and Error Correction: Representation, Estimation, and Testing," *Econometrica*, Vol. 55 (March 1987), pp 251-76).

APPENDIX 3

AUGUMENTED DICKEY-FULLER UNIT ROOT TESTS

LNX						
	Intercept but no trend			Intercept and trend		
	Test Statistic	Critical ADF Statistic	Conclusion	Test Statistic	Critical ADF Statistic	Conclusion
Botswana	-1.9697	-2.9970	Non Stationary	-1.6468	-3.6219	Non Stationary
Lesotho	-.51599	-2.9970	Non Stationary	-1.7299	-3.6219	Non Stationary
Malawi	-2.0521	-2.9970	Non Stationary	-3.1390	-3.6219	Non Stationary
Mauritius	-1.1847	-2.9970	Non Stationary	-2.3442	-3.6219	Non Stationary
South Africa	-2.4164	-2.9970	Non Stationary	-2.3731	-3.6219	Non Stationary
Swaziland	-1.2657	-2.9970	Non Stationary	-2.4302	-3.6219	Non Stationary
Zambia	-2.5636	-2.9970	Non Stationary	-2.8663	-3.6219	Non Stationary
Zimbabwe	-.86418	-2.9970	Non Stationary	-2.6192	-3.6219	Non Stationary
LNRER						
	Intercept but no trend			Intercept and trend		
	Test Statistic	Critical ADF Statistic	Conclusion	Test Statistic	Critical ADF Statistic	Conclusion
Botswana	-1.7617	-2.9970	Non Stationary	-2.1522	-3.6219	Non Stationary
Lesotho	-2.1020	-2.9970	Non Stationary	-2.2257	-3.6219	Non Stationary
Malawi	-2.9028	-2.9970	Non Stationary	-3.6999	-3.6219	Non Stationary
Mauritius	-1.1681	-2.9970	Non Stationary	-3.9614	-3.6219	Non Stationary
South Africa	-2.0836	-2.9970	Non Stationary	-2.2200	-3.6219	Non Stationary
Swaziland	-2.0573	-2.9970	Non Stationary	-2.3285	-3.6219	Non Stationary
Zambia	-1.7217	-2.9970	Non Stationary	-1.8034	-3.6219	Non Stationary
Zimbabwe	-.94454	-2.9970	Non Stationary	-3.0422	-3.6219	Non Stationary
LNYF						
	Intercept but no trend			Intercept and trend		
	Test Statistic	Critical ADF Statistic	Conclusion	Test Statistic	Critical ADF Statistic	Conclusion
Botswana	-1.3827	-2.9970	Non Stationary	-2.1235	-3.6219	Non Stationary
Lesotho	-1.3410	-2.9970	Non Stationary	-2.1097	-3.6219	Non Stationary
Malawi	-2.3157	-2.9970	Non Stationary	-1.0009	-3.6219	Non Stationary
Mauritius	-2.3183	-2.9970	Non Stationary	-.99889	-3.6219	Non Stationary
South Africa	-2.3292	-2.9970	Non Stationary	-.99055	-3.6219	Non Stationary
Swaziland	-1.3406	-2.9970	Non Stationary	-2.1080	-3.6219	Non Stationary
Zambia	-2.3183	-2.9970	Non Stationary	-.99889	-3.6219	Non Stationary
Zimbabwe	-3.2663	-2.9970	Stationary	-.48840	-3.6219	Non Stationary
DLNX						
	Intercept but no trend			Intercept and trend		
	Test Statistic	Critical ADF Statistic	Conclusion	Test Statistic	Critical ADF Statistic	Conclusion
Botswana	4.1089	-3.0039	Stationary	-4.2402	--3.6331	Stationary
Lesotho	-3.6894	-3.0039	Stationary	-3.6143	-3.6331	Stationary
Malawi	-4.5272	-3.0039	Stationary	-4.4344	-3.6331	Stationary
Mauritius	-4.6335	-3.0039	Stationary	-4.3158	-3.6331	Stationary
South Africa	-3.7307	-3.0039	Stationary	-3.5855	-3.6331	Non Stationary
Swaziland	-3.7920	-3.0039	Stationary	-3.7017	-3.6331	Stationary
Zambia	-4.9101	-3.0039	Stationary	-4.8796	-3.6331	Stationary
Zimbabwe	-4.2250	-3.0039	Stationary	-4.1329	-3.6331	Stationary
DLNRER						
	Intercept but no trend			Intercept and trend		
	Test Statistic	Critical ADF Statistic	Conclusion	Test Statistic	Critical ADF Statistic	Conclusion

	Test Statistic	Critical ADF Statistic	Conclusion	Test Statistic	Critical ADF Statistic	Conclusion
Botswana	-4.1277	-3.0039	Stationary	-4.1277	--3.6331	Stationary
Lesotho	-3.9372	-3.0039	Stationary	-3.8173	-3.6331	Stationary
Malawi	-6.5408	-3.0039	Stationary	-6.3551	-3.6331	Stationary
Mauritius	-8.1616	-3.0039	Stationary	-7.8942	-3.6331	Stationary
South Africa	-3.7661	-3.0039	Stationary	-3.6427	-3.6331	Stationary
Swaziland	-3.7036	-3.0039	Stationary	-3.5952	-3.6331	Stationary
Zambia	-4.2963	-3.0039	Stationary	-4.2400	-3.6331	Non Stationary
Zimbabwe	-5.9285	-3.0039	Stationary	-5.7824	-3.6331	Stationary
DLNYF						
	Intercept but no trend			Intercept and trend		
	Test Statistic	Critical ADF Statistic	Conclusion	Test Statistic	Critical ADF Statistic	Conclusion
Botswana	-5.9285	-3.0039	Stationary	-3.7532	--3.6331	Stationary
Lesotho	-3.7349	-3.0039	Stationary	-3.6715	-3.6331	Stationary
Malawi	-2.3328	-3.0039	Non Stationary	-2.7429	-3.6331	Stationary
Mauritius	-2.3314	-3.0039	Non Stationary	-2.7431	-3.6331	Stationary
South Africa	-2.3125	-3.0039	Non Stationary	-2.7284	-3.6331	Stationary
Swaziland	-3.7382	-3.0039	Stationary	-3.6749	-3.6331	Stationary
Zambia	-2.3314	-3.0039	Non Stationary	-2.7431	-3.6331	Stationary
Zimbabwe	-2.4605	-3.0039	Non Stationary	-2.9506	-3.6331	Stationary
LNM						
	Intercept but no trend			Intercept and trend		
	Test Statistic	Critical ADF Statistic	Conclusion	Test Statistic	Critical ADF Statistic	Conclusion
Botswana	-2.0306	-2.9970	Non Stationary	-.75737	-3.6219	Non Stationary
Lesotho	-3.0570	-2.9970	Non Stationary	-2.8415	-3.6219	Non Stationary
Malawi	-1.9640	-2.9970	Non Stationary	-2.2894	-3.6219	Non Stationary
Mauritius	-1.3784	-2.9970	Non Stationary	-3.0385	-3.6219	Non Stationary
South Africa	-1.6414	-2.9970	Non Stationary	-2.3831	-3.6219	Non Stationary
Swaziland	-1.2655	-2.9970	Non Stationary	-2.6877	-3.6219	Non Stationary
Zambia	-3.4640	-2.9970	Stationary	-3.3470	-3.6219	Non Stationary
Zimbabwe	-.99575	-2.9970	Non Stationary	-1.9749	-3.6219	Non Stationary
LNY						
	Intercept but no trend			Intercept and trend		
	Test Statistic	Critical ADF Statistic	Conclusion	Test Statistic	Critical ADF Statistic	Conclusion
Botswana	-1.5706	-2.9970	Non Stationary	-1.7497	-3.6219	Non Stationary
Lesotho	-1.0109	-2.9970	Non Stationary	-1.8376	-3.6219	Non Stationary
Malawi	-2.3917	-2.9970	Non Stationary	-3.5561	-3.6219	Non Stationary
Mauritius	-2.2171	-2.9970	Non Stationary	-5.4393	-3.6219	Stationary
South Africa	-1.3517	-2.9970	Non Stationary	-2.1173	-3.6219	Non Stationary
Swaziland	-1.0613	-2.9970	Non Stationary	-1.9988	-3.6219	Non Stationary
Zambia	-1.7217	-2.9970	Non Stationary	-1.8034	-3.6219	Non Stationary
Zimbabwe	-2.0333	-2.9970	Non Stationary	-2.5925	-3.6219	Non Stationary
DLNM						
	Intercept but no trend			Intercept and trend		
	Test Statistic	Critical ADF Statistic	Conclusion	Test Statistic	Critical ADF Statistic	Conclusion
Botswana	-2.6851	-3.0039	Non Stationary	-3.0677	--3.6331	Non Stationary
Lesotho	-2.8229	-3.0039	Non Stationary	-2.8756	-3.6331	Non Stationary
Malawi	-3.4274	-3.0039	Stationary	-3.2273	-3.6331	Non Stationary
Mauritius	-6.9714	-3.0039	Stationary	-6.7494	-3.6331	Stationary
South Africa	-3.9127	-3.0039	Stationary	-3.7959	-3.6331	Stationary
Swaziland	-4.8756	-3.0039	Stationary	-4.8102	-3.6331	Stationary
Zambia	-4.9890	-3.0039	Stationary	-4.7972	-3.6331	Stationary
Zimbabwe	-5.2658	-3.0039	Stationary	-5.1017	-3.6331	Stationary
DLNY						

	Intercept but no trend			Intercept and trend		
	Test Statistic	Critical ADF Statistic	Conclusion	Test Statistic	Critical ADF Statistic	Conclusion
Botswana	-4.1398	-3.0039	Stationary	-4.1962	--3.6331	Stationary
Lesotho	-3.3084	-3.0039	Non Stationary	-3.2307	-3.6331	Non Stationary
Malawi	-6.4225	-3.0039	Stationary	-6.2532	-3.6331	Stationary
Mauritius	-8.2783	-3.0039	Stationary	-7.8447	-3.6331	Stationary
South Africa	-3.7407	-3.0039	Stationary	-3.6770	-3.6331	Stationary
Swaziland	-3.1450	-3.0039	Non Stationary	-3.0687	-3.6331	Non Stationary
Zambia	-4.2550	-3.0039	Stationary	-4.1690	-3.6331	Stationary
Zimbabwe	-5.2658	-3.0039	Stationary	-5.1017	-3.6331	Stationary

Note: The Akaike Information criteria was used to come up with an overall conclusion in cases where unit roots that do not incorporate a time trend tended to give an opposite conclusion.