

AN INVESTIGATION OF THE FEASIBILITY OF A MONETARY UNION IN THE SADC

MASTER OF ARTS (ECONOMICS) THESIS

BY

**RODGERS BRENNER CHAWANI
BSoc.Sc (Econ)**

Submitted to the Department of Economics at Chancellor College, University of Malawi, in partial fulfillment of the requirements for the award of Degree of Master of Arts in Economics

SEPTEMBER 2007

DECLARATION

I hereby declare that this paper contains my original work and I accept responsibility for any errors herein. Acknowledgements have been made where I have used other people's work.

Rodgers Brenner Chawani

Date

CERTIFICATE OF APPROVAL

This thesis is submitted with our approval

Supervisor: _____
Dr Winford Masanjala

Date: _____

Supervisor: _____
Dr Exley Silumbu

Date: _____

ACKNOWLEDGEMENTS

In the course of pursuing this programme I have received generous and valuable assistance and strong encouragement from well-meaning persons. It is therefore appropriate for me to express my deep-seated gratitude to them all.

I am thankful to God who has been behind the fruition of this work.

Secondly, I am abidingly grateful to my supervisors, Dr Winford Masanjala and Dr Exley Silumbu for the valuable mentorship and tutelage while I remained as a student. Without their enthusiastic counsel and support, this study would not have been possible.

I am also favourably inclined to thank the Reserve Bank of Malawi for granting me the scholarship to pursue this course. I shall forever be grateful for the resources provided to me in pursuance of this programme.

I am deeply indebted to my brother Allan and three sisters Effie, Irene and Cynthia for their endearment when my energies were sapped and Thoko for her valuable inspiration.

In conclusion, this study would not have been possible without the painstaking foundation laid by late father Dr. Brenner Samuel Chawani and Mrs. Felesia Samuel Chawani who continually inspired me to attain the highest level of knowledge possible. In life and death my parents have been inspirational by setting forth a path for the pursuit of a worthy life odyssey. I cannot fill Brenner's shoes but nevertheless step into them. I should therefore end this acknowledgement by dedicating this study with love, admiration, respect and appreciation to his memory.

ABSTRACT

The overriding objective of this study is to assess the readiness of SADC member countries for the proposed monetary unification. The study applies the diverse theory of optimal currency areas placing it firmly within the context of the SADC for the period 1980-2004. An assessment of the theoretical and applied empirical literature is discussed. This informed the empirical methodology employed which is an adaptation of Bayoumi and Eichengreen (1997) OCA index. The results established that the core implications of OCA theory find strong empirical support when applied within the SADC context. Yet the results do not display strong support for forming a monetary union in the SADC region based on OCA criteria. Overtime the degree of asymmetry of shocks in the SADC is increasing and the extent of international trade ties seems to be waning across the periods. Finally, the study managed to sort out which countries would be best prepared to be founding members of the SADC monetary union in the near future and further obtained a ranking of their declining suitability.

TABLE OF CONTENTS

LIST OF TABLES	vii
LIST OF CHARTS	viii
LIST OF APPENDICES	ix
LIST OF ACRONYMS	x
CHAPTER 1	1
INTRODUCTION	1
1.1 Background	1
1.2 Problem Statement	3
1.3 Objectives of the Study	4
1.4 Hypotheses	5
1.5 Significance of the Present Research	5
1.6 Organization of the Study	6
CHAPTER 2	7
SADC AND MONETARY INTEGRATION: AN OVERVIEW	7
2.1 Characteristics of SADC Economies	7
2.1.1 Overview	7
2.1.2 Multiple RECs Membership	8
2.1.3 Exchange Rate Variability in the SADC	9
2.1.4 SADC Recent Economic Developments	11
2.2 SADC Efforts in Monetary Integration	12
2.2.1 Monetary Harmonization and Policy Highlights	12
2.2.2 Macroeconomic Convergence in the SADC	13
2.2.3 SADC Strides towards Monetary Convergence	14
CHAPTER 3	15
LITERATURE REVIEW	15
3.1 Monetary Integration	15
3.2 Stages of Monetary Integration	15
3.3 Theoretical Issues for Monetary Unification	17
3.3.1 The “Pioneering Phase:” from the Early 1960s to the Early 1970s	19
3.3.2 The “Reconciliation Phase:” the 1970s	20
3.3.3 The “Reassessment Phase:” the 1980s and Early 1990s	21
3.3.4 Empirical Studies of OCA: from the 1980s to today	23
3.4 Empirical Review	23
3.5 Conclusion of the Literature Review	28
CHAPTER 4	29
METHODOLOGY	29
4.1 Model Specification	29
4.2 Definitions of Variables and Expected Signs	30

a)	<i>Nominal Exchange Rate Variability</i>	30
b)	<i>Variability of Output</i>	30
c)	<i>Bilateral Trade</i>	30
d)	<i>Size of the economy</i>	31
4.3	Data Source	31
4.4	Estimation Technique	31
4.5	Diagnostic Tests	32
4.5.1	<i>The Ramsey RESET Test</i>	32
4.5.2	<i>Heteroskedasticity</i>	33
4.5.3	<i>Multicollinearity</i>	33
CHAPTER 5		34
EMPIRICAL RESULTS AND INTERPRETATION		34
5.0	Analysis of the Results	35
5.1	<i>Some General Results</i>	35
5.2	<i>Variability of Output</i>	36
5.3	<i>Bilateral Trade</i>	36
5.4	<i>Size of the Economy</i>	38
5.5	OCA Index for the SADC and COMESA Regions	39
5.5.1	<i>Prior Commitment</i>	42
5.5.2	<i>Convergence</i>	42
CHAPTER 6		44
SUMMARY AND POLICY IMPLICATIONS		44
6.1	Summary	44
6.2	Policy Implications	45
6.3	Limitations of the study	46
BIBLIOGRAPHY		47
APPENDICES		51

LIST OF TABLES

Table 2.1	Economic Indicators for SADC Member Countries(2005)	8
Table 2.2	Overlapping Membership	9
Table 2.3	Exchange Rate Arrangements in the SADC	9
Table 2.4	Comparison of NER and RER Standard Deviations for the SADC.....	10
Table 4.1 :	Ramsey RESET Test.....	32
Table 4.2 :	Correlation Matrix.....	33
Table 5.1:	OCA Criteria And Exchange Rate Variability for the SADC	34
Table 5.2:	OCA Index - Country vs Kenya	41
Table 5.3 :	OCA Index-Country vs South Africa.....	41
Table 5.4	Stepwise Allocation of Countries to Regional Economic Communities Based on Convergence of OCA Indices.....	43
Table 5.5	REC Arrangements after Allocation Based on OCA Indices	43

LIST OF CHARTS

Chart 1: Average Ratio of GDP for SADC Member States with South Africa (2000-2004).....38

LIST OF APPENDICES

Appendix 1:	GDP at market prices (Const. 2000 US\$) (million).....	51
Appendix 2	SADC Exports and Imports	52
Appendix 3	SADC Exports and Imports	53
Appendix 4	Bilateral Trade Data for Kenya	54

LIST OF ACRONYMS

COMESA	Common Market for Eastern and Southern Africa
CMA	Common Monetary Area
EAC	East African Community
ECA	Economic Commission for Africa
EMS	European Monetary System
EMU	Economic and Monetary Union
EU	European Union
OCA	Optimum Currency Area
REC	Regional Economic Community
SADC	Southern Africa Development Community

CHAPTER 1

INTRODUCTION

1.1 Background

The centrality of monetary integration within the global economic era is now beyond dispute. The elimination of national currencies and their replacement by common regional currencies continues to be a topical subject (Ogunkola, 2005). The increased interest in monetary integration has been fuelled by the epochal developments in Europe. In particular, the European Union (EU) model has inspired many schemes of regional integration in other parts of the world (Adams, 2005). Also, in the face of the globalization phenomenon, monetary integration has received much attention. Monetary unification is seen as a mechanism to enhance and promote a region's competitiveness vis-à-vis other trading blocks and enlarged markets. To this end several regions have been assessing the advisability of entering into a monetary union with a few even setting tentative timetables for the process. The Southern African Development Community (SADC) is no exception in this regard.

The SADC evolved out of its forerunner the Southern African Development Coordination Conference (SADCC)¹. The SADCC was created on April 1, 1980 in Lusaka, Zambia and was intended to provide a bulwark against the Apartheid system prevailing in South Africa. The organization emerged from an informal political grouping in 1974 known as the Front Line States (FLS) comprising of Angola, Botswana, Mozambique, Tanzania and Zambia, while Zimbabwe joined them in 1980. The member states were also expected to utilize collective resources for economic and social development of the region. By 1980, the SADCC was set up as a development aid coordination mechanism by the FLS plus Lesotho, Malawi and Swaziland.

¹ <http://www.sadc.int>

The transformation of the organization from a Coordinating Conference into a Development Community (SADC) officially started on August 17, 1992 in Windhoek, Namibia when the Declaration and Treaty was signed at the Summit of Heads of State and Government thereby giving the organization a legal character². The attainment of independence by Namibia in 1990 and the advent of democracy in South Africa implied that the political anti-apartheid agenda started to lose relevance. Subsequently, the region embarked on programmes that strove more for economic and social welfare through a deeper regional integration in wider sectors, ranging from socio-economic and political to security. Thus, the aims of the SADC were refocused. The organization now aims to achieve regional development through economic growth, enhancing the standard and quality of life of the people of southern Africa. The ultimate goal is to build a region with a high degree of harmonization and rationalization, which enables the pooling of resources, with the aim of achieving collective self-reliance and of improving living standards in the region.

The SADC has had monetary integration on its agenda for sometime. In January 1992, during the Annual Consultative meeting held in Maputo, Mozambique, the SADC embarked on macroeconomic policy cooperation and coordination which would culminate into the creation of a monetary union. The aim of the SADC is to form a monetary union, with the Central Bank Governors meeting held in February 2005 proposing 2016 for a SADC common currency.

In forming a monetary union countries are motivated by the desire to reduce transaction costs derivable from the elimination of separate national currencies and to reduce the unfavourable effects of exchange rate uncertainty on trade and investment. Other benefits include the promotion of market integration and strengthening of price stability within the monetary union, interest on saving from pooling of foreign exchange reserves and resource saving from centralization of monetary policy. The main cost of a monetary union, on the other hand, is the member country's loss of the ability to manipulate the value of its currency and sovereignty to conduct an independent monetary policy such as devaluing its currency and adjusting its interest rate as a tool

² The founding countries were Angola, Botswana, Lesotho, Malawi, Mozambique, Swaziland, Tanzania, Zambia and Zimbabwe. SADC has since evolved and grown in size with the entry of Namibia (1990), South Africa (1994), Mauritius (1995), and Democratic Republic of Congo (1997). Seychelles joined in 1997 but withdrew in 2004, leaving SADC with 13 members. Madagascar joined the SADC in 2005.

for macroeconomic adjustment (Ogunkola, 2005). Other elements of costs include loss of seigniorage and loss of inflation tax revenue from lower inflation.

As interest in the formation of a monetary union in the SADC grows, the empirical questions being asked are: are the SADC member countries drawing closer to the proposed monetary unification? Is the proposed monetary integration viable?

1.2 Problem Statement

The desirable extent of a monetary union has been the subject of discussions on the political arena. Many of the arguments for monetary unification are political concerns such as bargaining power and security. A common view is that Africa is becoming increasingly marginalized by globalization (Adepoju, 2001). In a bid to enhance bargaining power and to promote peace, security and stability, a monetary union is seen as creating important opportunities. The SADC Committee of Central Bank Governors in SADC report of January 2002 acknowledges that almost without exception a political agenda serves as the driving force in the establishment of regional integration arrangements.

But independent of the political vision, regional integration has a distinct economic rationale, which finds expression in improvements in material welfare, economic growth and development and the regional distribution of these developments. If the economic benefits of integration are perceived not to exist or to be distributed too unequally the political agenda is unlikely to be on track. There is need for an updated assessment on whether the political driving force towards the monetary union has an economic basis. Traditionally the study of monetary integration suggests that member regional associations should do an economic cost benefit analysis of the proposed action and favor forming a monetary union when the economic benefits outweigh the costs.

A few descriptive studies in Southern Africa and in particular, the SADC have been undertaken to meet this demand. Agbeyegbe (2003) investigated the feasibility of a monetary union in the SADC by looking at evidence of nominal exchange rate and inflation convergence. Using a methodology based on estimating time varying parameters, the evidence suggests non-convergence. The problem with the approach is that it is backward looking, as a monetary union between divergent

economies would bring more benefits regardless of the fact that the countries lack a history of stable macroeconomic outcomes according to the new OCA theory. Holden and Mbonigaba (2005) computes nominal and real effective exchange rates for the SADC for the period 1980-2004 with a view of identifying those which could join the Common Monetary Area (CMA) in the future. Mkenda (2001) employs a Generalized Purchasing Power Parity model to analyze suitability of the East African Community (EAC) for a monetary union by using cointegration methods. The limitation of the approach is that movements in macroeconomic variables reflect the combined effects of shocks and responses. This distinction is made by Buigut and Valev (2005) who use VAR techniques to investigate potential of forming a monetary union in Eastern and Southern Africa based on synchronicity of demand and supply disturbances. A study by Khamfula and Huizinga (2004) using a Generalized Autoregressive Conditional Heteroscedasticity (GARCH) model investigates which countries are suited to enter into the South Africa Monetary Union. But the time period examined, 1980-1996, cover disparate situations such as transition recessions, stabilization and absence of a strong political will to support monetary unification incentives.

The proposed thesis fills these gaps by appraising the potential of forming a monetary union through an updated assessment and supplementing the descriptive method.

1.3 Objectives of the Study

The main objective of this study is to assess the SADC member countries' readiness for the proposed monetary unification. In particular the specific objectives are:

- To examine the impact of asymmetric disturbances to output, trade linkages and country size on the nominal exchange rate variability.
- To explore whether SADC member countries are converging.
- To explore whether SADC member states belonging to multiple RECs are converging to the proposed SADC monetary union as opposed to COMESA monetary union.

1.4 Hypotheses

In light of these objectives, the following hypothesis shall be tested:

- Asymmetric disturbances to output, trade linkages and country size have no impact on the variability of the nominal exchange rate.
- Little or no convergence is evident for SADC member countries.
- No convergence is evident for SADC member states belonging to multiple RECs towards the proposed SADC monetary union as opposed to the COMESA monetary union.

1.5 Significance of the Present Research

Firstly, in view of the epochal changes taking place in Europe, it is not surprising that the question of monetary unification continues to preoccupy the agenda for both researchers and policy makers. OCA theory remains the workhorse for analyses of monetary unification. A popular device is to conclude a review of the theoretical literatures by stating that “SADC is not an OCA” without providing much analysis of how this situation is changing or of the comparative prospects of different countries. Furthermore, where results were positive, strong caveats were applied to the techniques employed. The present research attempts to lay down a systematic methodological foundation for subsequent re-appraisals of deepening monetary integration efforts.

Secondly, there is overlap of membership among RECs in the Eastern and Southern African region to an extent unparalleled anywhere else in the world (Jakobeit, Hartzenberg, Charalambides, 2005). For strategic and political reasons many African countries belong to more than one regional economic community, especially in East and Southern Africa (UNECA2004a). The structure of each regional economic community varies, but they all share a common objective: reducing trade barriers among member countries by creating a common, larger economic space. The complex patchwork resulting from the multiplicity and overlapping membership in RECs raises considerable problems for policy and programme coordination and harmonization. The effect of overlapping membership is viewed by the Economic Commission for Africa (ECA) (2004) as a stumbling bloc to integration due to confusion arising from differences in rules of origin, wasteful duplication of effort and counterproductive competition among countries and institutions (Buigut and Valev, 2006). These drawbacks reduce ability for regional economic communities to pursue coherent and

effective integration programmes. The present study attempts to address this problem through a construction of suitable RECs which sorts out what group of countries appear to be good candidates for the proposed monetary union.

Finally OCA theory was developed within the European context. The applicability of the theory to least developed regions is an empirical affair. There is need to assess whether the postulates of the theory find strong empirical support and the SADC presents a good region for such experiments. In the developing world, policy decisions are based on untested theories that cannot be transplanted to the domestic arena. Yet applicability of such theories is affected by a host of other factors which are unique to the particular environment. Therefore, periodical analyses on the compatibility of theories into third world setting are essential to ensure that the macroeconomic prescriptions are relevant. Such an approach will permit the determination of policy responses and modifications. In this regard, the present study is timely.

1.6 Organization of the Study

The rest of the study is organized as follows: Chapter 2 reviews the characteristics of SADC economies and the status of activities towards monetary unification. Then the existing literature for relevant theoretical and empirical applications is reviewed in Chapter 3. In Chapter 4, the methodological approach adopted in this study is described. Estimations and interpretation of results are presented in chapter 5. Finally chapter 6 concludes the study.

CHAPTER 2

SADC AND MONETARY INTEGRATION: AN OVERVIEW

2.1 Characteristics of SADC Economies

2.1.1 Overview

SADC has immense diversities in terms of economic size, per capital income, degree of urbanization and cultural background (Agbeyegbe, 2003). Individual national economies are structurally diverse and at varying stages of development, but predominantly underdeveloped. However, common features among several of the SADC countries include: small domestic markets, landlocked locations, linked infrastructural networks, and reliance on a few primary commodity exports. As a result, social and economic growth and development across the region are heterogeneous, with some countries attaining high growth rates and others achieving very low growth rates. In spite of the economic imbalances amongst its members and relatively small size of the market, SADC can still reap significant static and dynamic gains from regional integration, provided the supply side constraints are adequately constrained.

The economic structures of most countries are typical of developing countries, with large shares of GDP originating from primary sectors (agriculture and mining). Statistics on SADC show that only Mauritius and South Africa have sizeable manufacturing sectors at approximately 25% of GDP. In addition to the small size of their manufacturing sectors, the countries produce a similar range of products from agricultural inputs, such as foodstuffs, beverages, tobacco, textiles, clothing, and footwear. Overall, economies in the sub-region are largely undiversified, resulting in a lack of complementarity, which limits the scope for trade, except between SA and the rest of the region. The economies are reasonably open, and given that most countries in the sub-region are heavily dependent on exports of primary and semi-processed agricultural and mineral commodities, the sub-regional economy remains excessively vulnerable to rainfall variations and commodity price

fluctuations. As an emerging market, SA is vulnerable to the volatility in financial flows for such markets.

The combined sub-region population of almost 240 million is unevenly distributed. South Africa, Tanzania and the Democratic Republic of Congo (DRC) have 60 percent of the population, with the remainder unevenly distributed among the other 11 countries. According to the SADC Central Bank Governors' committee, it is envisaged that monetary unification in the SADC will boost the region's economic and political clout through creation of a single market for 239 million people. In terms of population size, the region will be the fifth-largest emerging market after China, India, Indonesia and Brazil.

Table 2.1 Economic Indicators for SADC Member Countries(2005)

Country	GDP Growth	Current Account as % of GDP	Inflation Rate	Budget Deficit/Surplus	GDP per capita (US\$)	Interest Rates	Population
Angola	20.6	15.7	18.5	8.2	1,985.0	18.0	14.8
Botswana	8.4	13.3	11.4	1.2	4,958.2	14.5	2.4
DRC	6.5	-3.5	21.3	-1.2	87.7	28.8	59.7
Lesotho	1.2	1.4	3.4	1.5	341.4	7.0	2.4
Madagascar	4.6	-12.1	18.5	-10.1	282.1	17.0	17.9
Malawi	2.1	-26.8	15.4	-4.4	258.1	25.0	12.0
Mauritius	2.5	-5.0	4.9	-5.0	5,075.0	7.7	1.2
Mozambique	6.2	-1.1	6.4	2.3	341.0	11.8	19.4
Namibia	3.2	8.4	2.2	-1.1	2,939.1	7.0	1.8
South Africa	5.1	-4.2	3.4	-0.5	5,056.0	7.0	47.4
Swaziland	1.8		4.8	-4.3		7.0	1.1
Tanzania	6.8	-7.9	4.4	-5.0	319.0	12.1	36.2
Zambia	5.0	-9.6	15.9	-2.6	401.1	27.6	11.1
Zimbabwe	-4.3	-12.0	585.8	-5.8	229.0		12.0

Source: Recent Economic Developments and Statistics, September 2006

2.1.2 Multiple RECs Membership

A key feature of regional cooperation in Africa is the existence of overlapping regional integration initiatives (Adams, 2005). Many countries in the SADC belong to a multiplicity of regional integration initiatives that have varied objectives and envision varied degrees of integration. Angola, Botswana, Democratic Republic of Congo, Malawi, Mauritius, Namibia, Swaziland, Zambia and Zimbabwe are all members of more than one RECs. Firstly, two groups of countries are

distinguishable in the region: the Common Monetary Area (CMA)³ countries and those outside the CMA zone. The CMA countries are more integrated culturally and in terms of policy as they are operating within a monetary union. Secondly, most of the SADC countries also share dual membership with the Common Market for East and Southern Africa (COMESA). The different groupings or sub-groupings tend to sometimes compete, conflict or overlap amongst each other.

Table 2.2 Overlapping Membership

	SACU	COMESA	EAC	SADC
Angola		x		x
Botswana	x			x
DRC		x		x
Lesotho	x			x
Madagascar		x		x
Malawi		x		x
Mauritius		x		x
Mozambique				x
Namibia	x	x		x
South Africa	x			x
Swaziland	x	x		x
Tanzania			x	x
Zambia		x		x
Zimbabwe		x		x

Adapted from a TSG Report on the SADC Protocol Mid-Term Review, 2005.

SADC: Southern African Development Community; COMESA: Common Market for Eastern and Southern Africa;

SACU: Southern African Customs Union; EAC: East African Community;

2.1.3 Exchange Rate Variability in the SADC

Among SADC members exchange rate regimes vary considerably. Exchange rate arrangements are presented in the table below.

Table 2.3 Exchange Rate Arrangements in the SADC

Currency pegged to					
Single currency	Composite basket of currencies	Managed floating		Independently floating	
Currency and country	Currency and country	Currency and country		Currency and country	
Maluti Lesotho ¹	Pula Botswana	Kwacha Malawi		Kwanza	Angola
Dollar Namibia ¹	Rupee Seychelles			Franc	DRC
Lilangeni Swaziland ¹				Rupee	Mauritius
Dollar Zimbabwe ²				Meticaïs	Mozambique
				Rand	South Africa
				Shilling	Tanzania
				Kwacha	Zambia

1 Formally pegged to the South African rand

Source: IMF

2 Country has a formally announced policy of independent floating but is currently pegged to the US\$ at a fixed rate

³ The CMA is made up of Lesotho, Namibia, South Africa and Swaziland.

The literature defines a currency area as a group of countries where inter-area currencies maintain a fixed relative value, but vary freely in relation to currencies outside the area (Holden and Mbonigaba, 2005). This implies that variability of the exchange rate is a key variable in the determination of an OCA. According to Melitz (1995) variability of exchange rates is against a currency area especially when this variability differs in magnitude and direction for the candidates in a monetary area. Holden and Mbonigaba (2005) computed the nominal effective exchange rate (NER) and the real effective exchange rate (RER) for the SADC for the period 1980-2004. In particular, member countries exchange rates were compared to the CMA countries. Both the NER and RER cases suggest that variability of exchange rates between the CMA countries and most fellow SADC members are comparable. The results are presented below:

Table 2.4 Comparison of NER and RER Standard Deviations for the SADC

COUNTRY	NER Standard Deviation (%)	RER Standard Deviation (%)
CMA 0.73	100.0	100.0
Botswana	98.0	98.2
Zambia	267.0	267.0
Mauritius	349.0	348.9
Angola	382.0	382.0
Malawi	383.0	383.2
Zimbabwe	384.9	384.9
Tanzania	418.9	418.9
DRC	544.0	544.7
Mozambique	815.0	815.2

Source : Holden and Mbonigaba (2005)

According to the results in Table 2.2, using NER variations, degree of closeness is relatively lower for Angola, DRC, Malawi, Mozambique, Tanzania, Zambia and Zimbabwe. To the contrary, the NER variations for Botswana are relatively closer to the variations of CMA NER. The similarity in the movement of the NER indicates the existence of similar imbalances between countries whilst divergence indicates dissimilarity in macroeconomic imbalances. According to the results of the relative standard deviations in terms of RER Botswana, Zambia and Mauritius are closer to the CMA. These results allude to possible gains inherent in formation of a monetary union among the SADC member countries. Yet some of the countries exhibit weak symmetry of RER shocks.

Khamfula and Huizinga (2003) noted that the average RER variability in SADC is higher than that in the European Community when compared with studies by Eichengreen (1990) and Von Hagen and Neumann (1994) on the viability of a monetary union in the European Community. This was attributed to the volatility of NER in the SADC which is reinforced by a slow adjustment of prices in the region.

2.1.4 SADC Recent Economic Developments

Most of the SADC economies experienced positive growth during 2005. Angola recorded the highest growth rate of 20.6 percent in 2005. Growth also improved in Botswana, Tanzania and South Africa, while in the Democratic Republic of Congo (DRC), Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Zambia and Zimbabwe growth slightly worsened due to underperformance of the agricultural, manufacturing, fishing and mining sectors as well as the impact of high global oil prices⁴. SADC features a dominant economy, South Africa, which constitutes about 20% of the population but 70% of the regional aggregate GDP. The South African economy is more sophisticated and diversified, e.g. the share of manufacturing in its GDP and total exports is larger, and its financial depth is greater (Agbeyegbe, 2003). In addition, South Africa exports five times as much to other SADC countries as it imports from them, and has bilateral surpluses with each of them.

Only seven countries managed to record single digit inflation rates in 2005. The comparison shows a difference between “low and high” inflation groups of countries in SADC. The low inflation group comprises of the CMA, Tanzania and Mauritius. With the exception of Tanzania, no country in this group has a history of high inflation. In the high inflation group, comprising the rest of other SADC member countries, inflation is more volatile and inconsistent. Nine countries recorded deficits in 2005. Malawi recorded the highest current account deficit as a percentage of GDP at 26.8 percent, whereas Botswana recorded the highest surplus current account as percentage of GDP at 13.3 percent in 2005. An inflow of about US\$10,480.1 million worth of foreign direct investment (FDI) was recorded in the SADC region in 2005. In relation to the FDI inflows in 2004, the current figure represents an increase of about 76.8 percent. The highest levels of FDI were attracted by South Africa (US\$6,379 million) on account of a large foreign investment in the banking sector. The

⁴ Integrated Paper on Recent Economic Developments in SADC

proposed monetary integration is anticipated to help member countries to spruce up their investment attractiveness and be better positioned to trade with the European Union (EU) which is negotiating economic and trading partnerships with larger regions as opposed to individual countries.

On average, fiscal performance in terms of the budget deficit as a percentage of GDP in the SADC is satisfactory. All SADC countries' fiscal deficits, with the exception of Madagascar (-10.1 percent) and Zimbabwe (-5.8 percent) were below or equal to 5 percent in 2005. Botswana and Lesotho with budget surpluses of 1.2 percent and 1.5 percent of GDP respectively, are the countries with good fiscal performances.

2.2 SADC Efforts in Monetary Integration

The main focus of the examination in this section is on provisions relating to monetary integration and the activities of the institutions responsible for promoting monetary union in the region. Other complementary efforts are also highlighted.

2.2.1 Monetary Harmonization and Policy Highlights

Cooperation among SADC member states took a new twist in the early 1990s as Namibia attained independence and South Africa phased off Apartheid. At its 1991 summit held in Arusha, Tanzania, the committee responsible for managing the SADC decided that the organization should embark on macroeconomic and sectoral policy planning and coordination (Khamfula, 2003). As pointed out by the organization's Executive Secretary in January 1992, during the Annual Consultative meeting held in Maputo, Mozambique, the revised Treaty expanded and broadened the scope of cooperation in the monetary and financial matters to include the establishment of a monetary union.

To this end, the SADC adopted a Monetary Harmonization Programme (MHP) whose primary objectives are to create a common area of monetary stability, which will facilitate economic integration and economic growth (Mudenda, 2003). In line with this regional policy, the phased MHP is anticipated to culminate into a monetary union by 2016. This involves complete harmonization of economic, fiscal and monetary policies of the regional states; adoption of a single

currency; pooling of the foreign reserves and establishment of a common monetary authority. The thrust of the implementation activities focus on the following issues:

- Liberalization of the exchange system of the member states to facilitate the flow of trade and capital within the region.
- Establishing greater harmony in the economic, fiscal and monetary policies of the member states so as to minimize currency misalignment, and establishing consultative and coordinating machinery.
- Attaining convertibility of member countries' national currencies; and
- Mobilization of financial resources for trade expansion and development programmes.

In a bid to centralize the activities of the SADC, the 1999 SADC summit sanctioned a review of the organization of SADC which led to among others the amendment of the 1992 Treaty and realignment of SADC plan of priorities. But most importantly, this review led to the development of a Regional Indicative Strategic Development Plan (RISDP). The RISDP was formulated with the goal of deepening regional integration. The RISDP set out development objectives, timelines and implementation strategies which provide a strategic direction with respect to programmes and activities, and ensures coherence between SADC priorities and policies (SADC 2003a: 83-87).

The RISDP identified key priority areas under trade, economic liberalization and development (SADC 2003a: 83-87). Under its tutelage, SADC launched the SADC Free Trade Area in September 2000. Under the accord, SADC countries would phase out tariffs on all 'non-sensitive' products by 2008 and fully liberalized trade is expected by 2012. The SADC FTA is intended to act as a catalyst for increased regional integration and to facilitate trade and investment flows within the region.

2.2.2 Macroeconomic Convergence in the SADC

In August 2002, the Memorandum of Understanding (MoU) on cooperation on macroeconomic convergence was tabled and was adopted during the same month. Member states under the MoU agreed to achieve and maintain macroeconomic stability, where all countries should converge on stability-oriented economic policies, which include restricting inflation to low and stable levels, maintaining a prudent fiscal stance that eschews large fiscal deficits and minimizing market distortions (SADC 2003a: 86). Necessary policy and institutional coordination include the

harmonization of exchange rate systems, liberalization of capital and current account transactions and adoption of market oriented approach to the conduct of monetary policy. The RISDP has set the establishment of a SADC monetary union by 2016 as the main target for financial market integration. This requires SADC to finalize preparations for an institutional, administrative and legal framework to set up a Central Bank by the same year, and to launch a regional currency for the SADC monetary union by 2018. RISDP has set the following as specific targets for macroeconomic convergence (SADC 2003a:86):

- getting inflation rates to a single digit by 2008, to 5% by 2012 and to 3% by 2015;
- budget deficit to GDP ratio not to exceed 5% by 2008 and 3% as an anchor within a band of 1% by 2012 and to be maintained at the 2012 level up to 2018; and
- nominal level of public debt and public guaranteed debt should be less than 60% of GDP by 2008, and this to be maintained throughout the plan period (until 2018).

2.2.3 SADC Strides towards Monetary Convergence

According to the Integrated Paper on Recent Economic Developments in SADC (2006) SADC countries as a group recorded a mixed performance with regards to meeting the convergence criteria. There was no improvement towards attaining the convergence target of single digit inflation. In 2004, eight countries achieved the set target, while only seven countries recorded single digit inflation in 2005. Public Debt improved from 63 per cent of GDP in 2004 to 55 per cent in 2005. Budget deficits improved significantly with all SADC countries meeting the target except Madagascar and Zimbabwe. Current account balances as a percentage of GDP worsened from an average of 3.3 percent in 2004 to 4 percent in 2005.

While some progress has been recorded with regard to economic integration, a lot still needs to be done to remove constraints such as uncompetitive industries, small markets, inadequate infrastructure, underdeveloped financial systems, and lack of skilled personnel and application of modern technology. The slow pace of integration arises from fears of the loss of revenue and of employment opportunities, as well as fears that domestic industries will be dominated by industries from larger economies. The lack of institutional capacity at both national and regional levels has exacerbated these problems, with the result that SADC has failed to adopt appropriate time-bound convergence criteria.

CHAPTER 3

LITERATURE REVIEW

3.1 Monetary Integration

Monetary union arrangements typically take the form of a number of independent countries coming together to adopt a single currency. This entails a common monetary authority that is responsible for issuing a common currency, holding and managing the external assets of member countries in the common pool, and managing the monetary and some fiscal policy aspects (Ogunkola, 2005).

3.2 Stages of Monetary Integration

There are various phases of monetary integration, ranging from limited currency convertibility to single common currency (monetary union). While a permanently fixed exchange rate is the core of a monetary union, higher forms of monetary integration involve integration of economic policies, a common pool of reserves and a single Central Bank (Ogunkola, 2005). The following stages of monetary integration can be identified from the literature: limited and full currency convertibility; partial monetary union; parallel currency union; single common currency; and full monetary union.

According to this classification, convertibility at the market clearing rates is referred to as limited currency convertibility. In this case, all the exchange restrictions with respect to the existing currencies in the sub-region are eliminated. Members maintain their currencies, which are convertible at a market clearing rate or fixed exchange rate. The basic aim of the limited currency convertibility is to minimize the disadvantages of multiple currencies that may exist in the region. This is a weak form of monetary union, as members are not obliged to make firm commitment to this policy. Furthermore, there is no common policy towards third countries, so that individual members can still formulate different policies towards third countries (Ogunkola 2005). Since this creates unrestricted exchange and use of the member countries' currencies, it is not only a modest attempt at monetary integration of a region, but also a way of promoting intra-regional trade.

Full currency convertibility arrangement involves irrevocable commitments to a fixed exchange rate, unlike under limited currency convertibility arrangement where countries can still use exchange rate policy. This arrangement calls for certain preconditions that must be met. Such preconditions include approximate external balance and readiness to eliminate all exchange and other restrictions on external transactions without undue pressure on the foreign reserves (McLenaghan et al., 1982)

The partial monetary union approach has been referred to as the European Monetary System (EMS) model (Ogunkola, 2005). This approach involves the harmonization of exchange rates through cooperative intervention in foreign exchange markets to eliminate or minimize exchange risks in trade and other economic relations. This approach is based on (a) an exchange rate and intervention mechanism, (b) an accounting and settlement mechanism and (c) credit mechanism. It also features the establishment of a unit of account. Chipeta and Mkandawire (1994) described it as a loosely integrated monetary zone. This is characterized by (a) close alignment of the participating members' exchange rates; (b) some harmonization of monetary policy through cooperative intervention in their exchanges; (c) some cooperation in fiscal policy; and (d) retention of substantial national autonomy in most areas of economic and financial policies.

The parallel currency union model is described as a system in which a common union currency is issued to circulate side by side with national currencies to which it has a defined and fixed relationship. For the system to work there must be an irrevocable commitment to a permanently fixed exchange rate and full and less costly convertibility (Ogunkola, 2005). In this system, national central banks are retained but their existing autonomy in monetary and credit management is reduced in favour of the union monetary authority, which is jointly exercised by the member states. It is more advanced stage than the limited and full currency convertibility arrangement and the partial monetary union approach.

The single common currency model entails the establishment of a single currency. It also involves a common monetary authority that is responsible for issuing a common currency, holding and managing the monetary and some aspects of the fiscal policies of the member countries. The

activities of the common monetary authority are to facilitate the monetary stability and the full and unlimited convertibility of their currency against the external reference currency to which it is immutably pegged (Ogunkola, 2005). The ultimate goal of monetary unification is a complete EMU that involves a single currency for the area, displacement of all existing autonomous national banks with a region bank, a common exchange rate and monetary and credit policies. The creation of money for the purpose of deficit financing is severely constrained. Some aspects of fiscal autonomy are also given up.

3.3 Theoretical Issues for Monetary Unification

A discussion on monetary integration is essentially predicated on what is known as OCA theory as it addresses the pertinent question as to whether a monetary union should be pursued. The literature defines a currency area as a group of countries where inter-area currencies maintain a fixed relative value, but vary freely in relation to currencies outside the region (Grubel, 1970). The area is considered optimal when the relative constancy of the exchange rate achieves simultaneously internal and external balances for each country in the area. This definition implies that a change in the exchange rate of one country within the area with the rest of the world requires a proportional change of the exchange rate for the remaining countries in the area to keep the inter-area exchange rate fixed. It therefore follows that factors determining the constancy of the exchange rate also determine the optimal currency area and variability of exchange rate against the optimal currency area (Holden and Mbonigaba, 2005). Thus, in order to ascertain which countries can form a currency area, variability of the exchange rate has a central place and to explore its dynamics, particular reference must be made to the OCA theory.

Theoretical discussion of OCA theory begins with the groundbreaking work of Robert Mundell (1961). OCA theory can be situated in the exchange rate controversy of the postwar period that culminated into debates about exchange rate regimes and adjustment under Balance of Payments (BOP) disequilibria. The Bretton Woods system of fixed exchange rates was increasingly criticized in the early 1950s. Proponents of floating exchange rates as a means of cushioning BOP disequilibria due to exogenous shocks like Friedman (1953) were of the view that exchange rate changes were a more appropriate instrument for correcting current account imbalances. Furthermore, flexible exchange rates were deemed to provide countries with freedom to pursue

their own domestic policy objectives. The argumentation was that in an environment of sticky wages, rigid wages and factor immobility, in the event of a negative demand or supply shock, flexible exchange rates could be a device whereby depreciation takes the place of unemployment when the external balance is in deficit and appreciation can take the place of inflation when the external balance is in surplus.

Eight years later Nobel Laureate Robert Mundell (1961) cautioned against the practicability of Friedman's proposition using a model of an asymmetric shift in consumption patterns of two countries. Mundell posed the pertinent question as to what constitutes the appropriate domain of a currency. By way of hypothetical examples, Mundell explains how changes in consumption patterns under sticky price assumptions can have different economic outcomes depending on the location and nature of changes and the monetary and exchange rate policy pursued.

According to Mundell (1961), if the changes in consumption patterns coincide with national and currency boundaries, for example an increase in demand for country A goods compared with country B, then a system of flexible exchange rates relating the two independent currencies maintains the external balance of both countries, relieving inflation pressure in country A and reducing unemployment in country B. However, if the changes in consumption do not coincide with the national and currency boundaries then a flexible exchange rate is able to maintain external balance but is ineffective in alleviating the related problems of inflation and unemployment. Yet if exchange rates are arranged along regional lines, exchange rate flexibility will allow internal and external balance between the two regions. To achieve this Mundell suggested some non-exchange rate means of cushioning the disequilibria.

This next section surveys the OCA literature and following Mongelli (2002) the literature is divided into four phases: the "pioneering phase" which put forward the OCA theory and its properties, the "reconciliation phase" when its diverse facets were combined, the "reassessment phase" that led to the "new OCA theory," and the "empirical phase" during which the theory was subject to empirical scrutiny. Most of the groundbreaking work on OCA focused on microeconomic foundations but recent literature on this subject justifies monetary integration with reference principally to the macroeconomic stability it can induce.

3.3.1 *The “Pioneering Phase:” from the Early 1960s to the Early 1970s*

The OCA theory emerged in the early 1960s from the debate on the merits of fixed versus flexible exchange rate regimes and various OCA properties – that are also called “prerequisites,” “characteristics,” or “criteria” for monetary integration by some authors -- emerged from this debate.

Mundell (1961) links the variability of the exchange rate to the low degree of internal factor mobility. In his groundbreaking paper Mundell postulates that if there is high degree of labour mobility within a region, the cost of forming a monetary union in the region will be minimized. The view is that high labour mobility allows an economy within a monetary union to deal with asymmetric shocks through migration, lessening the need for adjustment through exchange rates. But in case of low degree of labour mobility, this achievement hinges only on varying the exchange rate. In this sense, higher observed variability of the exchange rate would be a sign of unsustainable monetary area and vice-versa. Mundell’s work was supplemented by important offerings from McKinnon (1963) and Kenen (1969).

McKinnon (1963) highlights the importance of differing size and structures of economies. Primarily, where economies are relatively open, variable exchange rates have a significant effect on internal price levels since the ratio of tradables to non-tradables is high and devaluation increases the relative cost of tradables. Given the conflicting aims of employment maximization, external balance and internal price stability, an open economy with variable exchange rates may be able to control the former two but the rising cost of tradables will impact on the latter aim: thus open economies have less to lose from moving from variable exchange rates to a single currency. Thus McKinnon links variability of the exchange rate to openness of the economy. In the sense of McKinnon, the variability of the exchange rate is a sign of unsustainable currency area for countries that have closed economies and a sign of sustainable currency area for countries with open economies.

McKinnon also highlights the importance of size. Where countries are small a fixed exchange rate mechanism may help to maintain liquidity and prevent capital flight. However the fixing of exchange rates must be credible, otherwise it may induce capital flight into more liquid foreign currencies that reduces investment potential of the domestic currency.

Kenen (1969) furthers the debate by highlighting the importance of degree of product diversification among countries intending to form a monetary union. The assumption is that a more diversified economy is less likely to suffer from a country-specific shock and therefore the country's exchange rate is less useful in macroeconomic adjustment. Thus, surrendering (to the union) the exchange rate policy is less painful for such an economy.

The pioneering authors initiated a debate on the benefits and costs from adopting a single currency that has continued to these days and has important implications on the motivation to form a currency area among a group of partner countries. However, Robson (1987) observes that several properties are difficult to measure unambiguously and evaluate against each other. Also the pioneering phase as a whole lacked a unifying framework as one could still end up drawing different borders for a currency area by referring to different OCA properties. Tavlas (1994) calls this the "problem of inconclusiveness," as OCA properties may point in different directions: for example, a country might be quite open in terms of reciprocal trade with a group of partner countries indicating the preferability of a fixed exchange rate regime, or even monetary integration, with its main trading partners. However, the same country might display low mobility of factors of production and labour vis-à-vis these trading partners suggesting instead that a flexible exchange rate arrangement might be desirable in order to cope with shocks originating from outside this group.

3.3.2 The "Reconciliation Phase:" the 1970s

The phase has the merit of having brought together the main OCA properties. Most notably, Vaubel (1978) provided the linkage between these criteria and changes in real exchange rate as follows. First, if labour is highly mobile, unemployment in an area within the monetary union will be eliminated through labour migration to other areas in the union. Thus, fewer attempts would be made to change the real wage through exchange rate depreciation. Second, if trade between members of a monetary union is highly diversified, according to Vaubel (1978), the law of large numbers reduces the probability and the size of changes in each country's terms of trade. Hence countries whose external transactions are highly diversified will experience only small real exchange rate changes. Third, openness criterion concerns macroeconomic efficiency of nominal

exchange rate changes, for the openness of an economy is, if at all, negatively correlated with shock of exchange rate illusion available for real adjustment through nominal exchange rate changes. From these linkages it is understood why most studies on the evaluation of viability of a monetary union have concentrated on exchange rate variability. In addition, high labour mobility, trade diversification and degree of openness are difficult to measure.

Mongelli (2002) observe that during the “reconciliation phase” a second set of contributions jointly examined the OCA properties. This represented an important advancement as properties started to be analysed and weighed with one another to gauge their relative importance. This phase also gave more structure to the analysis of the costs and benefits. However, most OCA properties continued to lack an empirical content.

3.3.3 The “ Reassessment Phase:” the 1980s and Early 1990s

Mongelli (2002) noted that after the initial two phases, the development of the OCA theory lost some momentum. In particular, there were problems of inconclusiveness, as OCA properties may point in different directions, a weakening of the analytical framework behind the OCA theory thus far, and a slow-down in the process of European monetary integration. However, gradually several theoretical and empirical advancements lead to a reassessment of the OCA theory and of the main benefits and costs from monetary unification. The balance of judgments shifted in favour of currency unions.

The “One Market, One Money” Report by Emerson et al. (1992) point out that “there is no ready-to-use theory for assessing the costs and benefits of EMU.” The OCA theory has, in their view, provided important early insights but provides only a narrow and outdated analytical framework to define the optimum economic and monetary competencies of a given geographic domain (i.e., a “region” such as the EU). The analytical framework behind the OCA theory thus far underwent a revision leading to a reconsideration of the effective costs and benefits from monetary integration. This has in turn a bearing on the debate on the size (i.e., borders) and timing of currency areas. At the end of this reassessment phase a “new” OCA theory starts emerging vis-à-vis the “old” OCA theory (Tavlas, 1993).

Early contributors to the OCA theory asserted that monetary policies could be used to achieve the desired trade off between inflation and unemployment, as given by the Phillips curve. Thus, monetary integration which necessarily requires the abandonment of national monetary policy to a centralized body exerts a cost in so much as the nation states are unable to fine-tune the economy to the desired balance of inflation and unemployment. The monetarist critique, exemplified by Lucas and Friedman asserts that in the long run, monetary policies are ineffective in controlling unemployment. This in turn implies that the costs of monetary integration are mitigated. The view on the ineffectiveness of monetary policy is not undisputed though. There are potential sources of money non-neutrality (Tavlas, 1993). Melitz (1991) notes that even countries confronted with identical shocks may require different policy responses due to differences in their initial economic positions, degree of price and wage flexibility, tax structures, trade responsiveness, and preferences. Members of a currency area may have different dislikes for inflation and be worse off by sharing a single currency (De Grauwe, 2000).

Strikingly, whereas traditional OCA theory had viewed convergence of inflation rates as a prerequisite for the formation of a monetary union, modern theory demonstrates how monetary integration may be more beneficial when the divergence of inflation rates is high, provided that the central bank adopts a credible policy stance of optimal inflation. This is because the high inflation country can achieve a low inflation reputation overnight by surrendering to the control of the low inflation central bank with no cost to the low inflation country. This work was developed by Kydland and Prescott (1977) and subsequently Barro and Gordon (1983) and De Grauwe (2000). An important prerequisite is that such an anchor country exists in the envisaged monetary union. This low inflation anchor country has instead fully recognized the costs of high and variable inflation (Goodhart, 1989), has built a strong track record of low and stable inflation, and will not alter its monetary discipline after establishing the monetary union: i.e., this country can indeed provide the nominal anchor for the monetary union (Rogoff, 1996 and Goodhart, 1989). In summary, similarities of inflation rates could be a feasible outcome from participating in a monetary union but is not a necessary recondition.

An important legacy of this phase is that there are somewhat fewer costs in terms of the loss of autonomy of domestic macroeconomic policies. There are also more benefits, due to credibility

gains, for countries with a track record of higher and more variable inflation (the similarity of inflation property can then be satisfied ex-post). In addition, the contribution of Frankel and Rose (1998) provided OCA theory with a more forward looking outlook, arguing that many of the prerequisites for monetary union, espoused by traditional theorists, are in fact reinforced by the creation of monetary union.

3.3.4 Empirical Studies of OCA: from the 1980s to today

This phase is characterized by empirical studies on the diverse OCA properties. The flourishing of these studies is due to the theoretical innovations discussed in the previous sections, the advancements in econometric techniques, and foremost, the renovated interest toward European economic and monetary integration (Mongelii, 2002). These empirical studies seek to assess why specific groups of countries may form an optimum currency area by analyzing and comparing a variety of OCA properties and applying several econometric techniques. Thus they aim to operationalize the OCA theory. Selected studies are presented in the next section.

Due to the need for relatively long time series for the econometric tests, studies investigating OCA properties are by necessity backward looking. Such studies cannot reflect a change in policy preferences, or a switch in policy regime. In fact, monetary integration would represent a structural break for any group of countries adopting a new single currency. There is thus a need for a forward looking approach in order to assess the optimality of currency areas.

3.4 Empirical Review

The literature on monetary unification is biased towards the experience of the developed countries e.g. Bayoumi and Eichengreen (1992), Von Hagen and Neumann (1994) and Frankel and Rose (1998). These notwithstanding, a number of studies have been conducted to sort out what group of countries appear to be good candidates for monetary unions in developing countries in general and the SADC or sub-Saharan Africa in particular.

To operationalize the OCA theory, the Generalized-Purchasing Power Parity Analysis, which uses cointegration analysis to assess the level of similarity in the movements of the real exchange rate relative to a central dominant country, can be used. This method was developed by Enders and

Hurn (1994) and assesses the extent to which a group of countries exhibit integration of their real exchange rates. Real exchange rates, assumed to be dependent on economic fundamentals are able to show the similarity of economies and therefore their suitability for monetary union. Most formally the methodology estimates the following regression (Mkenda 2001)

$$r_{12t} = \beta_0 + \beta_{13t}r_{13t} + \beta_{14t}r_{14t} + \dots + \beta_{1mt}r_{1mt} + \varepsilon_t \dots\dots\dots (1)$$

Where,

r_{1it} are the bilateral real exchange rates between country 1 (the base country) and country I in time period t,

β_0 is an intercept term,

β_1 are the parameters of the co-integrating vector, and

ε_t is a stationary stochastic disturbance term

Where higher cointegration of real exchange rates is present, monetary union would incur lower costs. Mkenda (2001) applies this technique to assess the suitability for three East African countries (Kenya, Tanzania, Uganda) to form a monetary union and finds cointegration between the real exchange rate movements suggesting similar movements in the underlying economic fundamentals and therefore lower cost incurred from monetary union. Grandes (2003) used this approach and concluded that Botswana and the CMA could form an OCA. But cointegration analysis alone cannot form the basis of worthwhile conclusions as the assumption that real exchange rates capture economic fundamentals is too implausible. This is not least because policy interventions can alter exchange rates (through nominal rate) without any underlying economic causes, for purely political purposes. In addition this method doesn't distinguish disturbances from responses since movements in macroeconomic variables reflect combined effects of shocks and variables.

The other method is the identification scheme due to Blanchard and Quah (1989) make this distinction. The two used structural vector auto regression (SVAR) techniques. The approach is termed 'shocking studies' and is used to isolate demand and supply movements in a selection of

economies using time series data of real and nominal output growth. The correlation of these shocks is then assessed with greater weight being placed upon supply shocks. This identification scheme is based on the Aggregate Demand–Aggregate Supply (AD–AS) framework. In this framework, the short-run aggregate supply curve is upward sloping due to sticky wages. A higher price level lowers the real wage, inducing higher employment and raising output. However, in the long-run real wages adjust to price changes so that the long-run aggregate supply curve is vertical at the full employment level of output. The aggregate demand curve is downward sloping both in the short and the long-run to reflect the assumption that lower prices boost demand. Supply shocks such as those originating from changes in technology, have long-run permanent effects on the full employment level of output. A positive supply shock reduces price and increases output. Conversely, the effect of a positive shock to aggregate demand is a short-term increase in output that gradually returns to its initial level as the real wage adjusts. The long-term effect is only a permanent increase in prices. Thus, both supply and demand shocks have long-run effects on the level of prices, though in opposite directions.

The application of SVAR techniques for the analysis of monetary union was first undertaken by Bayoumi and Eichengreen (1997, among others) in relation to the EMU and other possible single currency areas. Buigut and Valev (2005) used VAR techniques to investigate the potential for forming monetary unions in Eastern and Southern Africa. The study objective was to sort out which countries are suitable for a monetary union based on synchronicity of demand and supply disturbances. The results showed that although economic shocks are not highly correlated across the entire region, three sub-region clusters of countries could benefit from integration.

But SVAR techniques despite compromise between atheoretical econometric tests of correlation and assumption laden macroeconomic simulations are not particularly widespread. The advantage of the approach is that the technique entails a ‘catch-all’ approach of assessing the asymmetry of shocks as well as the size and response to them. However a suitably long time series is necessary to achieve worthwhile conclusions, nor is there any consideration of changing exchange rate regimes or structural change. This weakness is apparent with the problems posed by data availability for African economies.

A third approach of looking at feasibility of currency union arrangements is to look at the evidence of nominal exchange rate and inflation convergence. Using a methodology based on estimating time varying parameters estimates Agbeyegbe (2003) found evidence suggesting non-convergence among the SADC members. However such an approach is also backward looking as Frankel and Rose (1998) provided OCA theory with a more forward looking outlook, arguing that many of the prerequisites for monetary union, espoused by traditional theorists, are in fact reinforced by the creation of monetary union.

Khamfula and Huizinga (2004) analyzed short-run and long-run Real Exchange Rates (RER) changes for the period 1980-1996 to assess the desirability of a monetary union in the SADC. The results suggested that most SADC members have comparable degrees of variability and would be selected to form a monetary union. However, because of prevalence of asymmetric RER shocks across most of the economies such a monetary union is likely to incur large costs relative to the benefits. The authors proceeded to assess the potential role of monetary and fiscal policy coordination in reducing the RER variances by employing a Generalised Auto-Regressive Conditional Heteroscedasticity (GARCH). The GARCH model that was estimated was

$$H_{iSA,t} = \lambda + \gamma(L)H_{iSA,t-1} + \beta(L)M_{iSA,t} + \phi(L)I_{iSA,t} + \gamma(L)DROG_{iSA,t} + V_t \dots\dots\dots (2)$$

Where,
 $H_{iSA,t}$ is the square of monthly or quarterly RER disturbances (i.e., $W_{2iSA,t}$ or $Z_{2iSA,t}$) between South Africa and fellow member country i ;
 $M_{iSA,t}$ the squared differences in logarithmic deseasonalised monthly or quarterly growth rates of the money supply, $M1$, between the two countries;
 $I_{iSA,t}$ the squared differences in the monthly or quarterly changes in interest rates between the two countries;
 $DROG_{iSA,t}$ the squared differences in the monthly or quarterly real output growth rates between the two countries;
and L the lag operator.

Equation 2 specifies that the variance of the RER shocks depend on only the past values of the dependent variable. The results showed that monetary integration would substantially eliminate

real exchange rate variation due to different monetary policies for some members. In terms of methodology the study attaches much weight to real exchange rates as vital to economic fundamentals. The period of the assessment also begs the need for an updated assessment as the data covered 1980-1996. A lot of economic and political changes have since occurred to warrant a renewed assessment.

In an appealingly simple article, Bayoumi and Eichengreen (1997) construct an OCA index (dependent variable) which relates the variability of the nominal exchange rate with several independent variables.

$$SD(e_{ij}) = \alpha + \beta_1 SD(\Delta y_i - \Delta y_j) + \beta_2 DISSIM_{ij} + \beta_3 TRADE_{ij} + \beta_4 SIZE_{ij} \dots\dots\dots (3)$$

Where,

$SD(e_{ij})$ is the variability of the nominal exchange rate

$SD(\Delta y_i - \Delta y_j)$ is the differences in output disturbances

$DISSIM_{ij}$ is the dissimilarity of commodity compositions of exports

$TRADE_{ij}$ is trade linkages and,

$SIZE_{ij}$ is the country size

The OCA index is an attempt to operationalize the foremost theoretical criteria identified in the long literature of optimum currency areas. It seeks to relate nominal bilateral exchange rate variability with three key aspects of the traditional OCA theory: output movements, trade linkages and size. Adams (2005) constructed an OCA index for Africa in order to permit analysis of suitability of Africa and its regions to enter into a currency union. The technique permits a two stage analysis of the suitability of a monetary union. Firstly, examine whether the available data follow OCA theory in so much as the estimating equation is significant. Equation 3 is estimated using a base or “centre” country, which in Bayoumi and Eichengreen’s (1997) assessment of the EMU is Germany over a number of different periods. Secondly, obtain forecasts of the independent variables in order to project into the future. This permits a comparison of the movements of the dependent variable (OCA Index). From the computed OCA indices then countries are diagrammatically grouped into convergent, converging and non-converging sets.

In so far as this technique represents a good attempt to incorporate traditional OCA theory into practice, it is worthwhile. Yet the method does little more without relying on out of sample forecasting. There is an intuitive simplicity in the method however and the data demands are relatively small making it suitable for this study. It is used in the forthcoming empirical section because it is forward looking and also an ideal methodology to investigate the problem of multiple REC membership. Many countries in the SADC belong to a multiplicity of regional integration initiatives that have varied objectives and envision varied degrees of integration. This overlapping membership is viewed by the Economic Commission for Africa (ECA, 2004) as a stumbling block to integration due to confusion arising from differences in rules of origin, wasteful duplication of effort and counterproductive competition among countries and institutions. Considering convergence of OCA indices would give an indication of the most appropriate groupings for countries which currently belong to more than one REC, which is the case with most SADC countries.

3.5 Conclusion of the Literature Review

The literature review has permitted an assessment of the theoretical and methodological discussions surrounding OCA theory and has highlighted the research gaps that exist with specific reference to the SADC. The empirical gap suggested by the literature is the need to streamline arrangement of RECs. In most of the studies a popular device had been to conclude that the area is not an OCA without providing much analysis of how this situation is changing or of the comparative prospects of different countries. The proposed study tries to fill in this gap by providing a forward-looking approach.

CHAPTER 4

METHODOLOGY

4.1 Model Specification

The study shall adopt the construction of an OCA index along the lines of Bayoumi and Eichengreen (1997) for the SADC region to capture the salient elements of the currency union. In their study, Bayoumi and Eichengreen (1997) relate the nominal exchange rate variability with the following independent variables: differences in output disturbances and dissimilarity of commodity compositions of exports to capture asymmetry of shocks and therefore the costs of monetary union, trade linkages and size. This equation is estimated using a base or “centre” country over a number of different periods. Finally, comparison is made of the movements in the dependent variable overtime. Following Bayoumi and Eichengreen (1997), the estimating equation is therefore:

$$SD(e_{ij}) = \alpha_0 + \alpha_1 SD(\Delta y_i - \Delta y_j) + \alpha_2 TRADE_{ij} + \alpha_3 SIZE_{ij} + \varepsilon_t \dots\dots\dots (4)$$

where

$SD(e_{ij})$	=	Nominal Bilateral Exchange Rate Variability
$SD(\Delta y_i - \Delta y_j)$	=	Variability of output
$TRADE_{ij}$	=	Bilateral trade
$SIZE_{ij}$	=	Size of the economy
ε_{jt}	=	Random error term

Subscripts i and j denote the two countries in the pair and where ε_{jt} has a mean of 0 and a constant variance. Variables are taken as averages over successive 5 year sample periods from 1986-2004; the regressions estimated and assessed for continuity with theory.

4.2 Definitions of Variables and Expected Signs

a) *Nominal Exchange Rate Variability*

Nominal exchange rate variability is measured as the standard deviation of the logarithm of the exchange rate (S_{ij}) ratio for the two consecutive periods, where S_{ij} represents the number of units of currency i per unit of currency j (where j is always the Rand). Due to unavailability of direct bilateral exchange rate figures, some studies have used National Currency Units per SDR e.g. Adams (2005). In this analysis this approach is not adopted as a country's position with the IMF may not adequately portray the dynamics of real economic movements. Instead nominal exchange rates are outsourced and using the Rand as the benchmark, bilateral exchange rates are computed.

b) *Variability of Output*

Asymmetric output movements are measured as the standard deviation of the change in the log of relative output in the two countries. Where country output movements move together, this will be relatively small; where business cycles are divergent, this will be large. When output movements between countries are similar, the cost of losing the dual controls of exchange rate movement and interest rate through monetary integration are reduced, enabling the new, union-wide interest rate to effectively control the short-term inflation and unemployment trade-off. The anticipated sign is therefore positive. Some studies have also included a variable concerning the relative similarity of trade compositions to capture the asymmetry of economies. However due to lack of reliable disaggregated trade statistics for the region, this will not be possible.

c) *Bilateral Trade*

Trade linkages are measured using bilateral data, measuring the average value of trade (both imports and exports) between any two pairs of countries. The average figures for imports and exports were taken for each year to find the level of bilateral trade in current US dollars. The composite figure was then deflated by the American CPI to find real figures and then divided by real GDP to give Trade_{ij} . Where bilateral trade is high, the variability of nominal exchange rates between those two countries is expected to be low. Increased trade between countries will

increase the benefits obtained through elimination of exchange rate variability. Increased trade may also lead to increasing synchronization of exchange rate and interest rate movements, making the need for separate policy controls redundant. The anticipated sign is thus negative.

d) *Size of the economy*

Size is quite simply measured as the arithmetic average of the log of real GDP of the two countries in the country pair. Bayoumi and Eichengreen (1997) anticipate this to be positively related to exchange rate variability to reflect the concept that smaller countries will benefit more from the stability of a single currency area. Smaller economies, assumed to be less diversified, have a larger proportion of tradeables to non-tradeables and a weaker national currency and therefore are considered to benefit more from the reduced exchange rate uncertainty inherent in moving to monetary integration.

4.3 Data Source

The study will use annual data from 1980-2004. The paucity of dis-aggregated trade data has already limited the investigation, removing the DISSIM variable used in previous studies. There are also other time and data limitations, since reliable bilateral trade data is only available after 1980 and up to 2004. Furthermore, some trade and GDP statistics are not available in certain instances for a variety of reasons. Data for $SD(e_{ij})$ will be sourced from the IMF International Finance Statistics. $SD(\Delta y_i - \Delta y_j)$ will be calculated from the World Bank's World Development Indicators, using real GDP (in constant US dollars). The SIZE variable will be calculated using the same dataset. The bilateral trade data will be sourced from the IMF Direction of Trade Statistics (DoTS) which provides information on imports and exports from both reporting and partner countries. Given this, any single country has two measurements of imports (CIF) and exports (FOB) respectively; total trade therefore has four measurements. These figures will be averaged for each year to find the level of bilateral total trade in current US dollars.

4.4 Estimation Technique

With the consideration of the time varying nature of monetary integration, the variables will be taken as averages over successive 5 year sample periods from 1986 – 2004. The choice of this

period is based on the policy shift of the SADC towards formation of a monetary union and the joining of South Africa which is pivotal in the regional community. Comparative significance tests will be performed to establish the trends of the cross section for the SADC. The Ordinary Least Squares method will be utilized as an appropriate economic tool and the STATA 8.0 computer package will be used. The most significant estimation period is used to predict bilateral values for dependant variable. At this point some COMESA countries will be added to the regression in order to come up with the predicting equation. The predicted values are termed OCA Index. Where the index is relatively low, OCA characteristics predict a low level of bilateral exchange rate variability and therefore high suitability for monetary integration.

4.5 Diagnostic Tests

The following diagnostic tests were carried out to verify the appropriateness of the cross-section model.

4.5.1 The Ramsey RESET Test

The Ramsey Reset Test is a general test for specification errors, which include the following: omitted variables, incorrect functional form, and correlation between explanatory variables and the residuals. Under such specification, least squares estimators will be biased and inconsistent, and conventional inference procedures will be invalidated. The F statistic tests the hypothesis that the coefficients on the forecast vectors are all zeros. The results of the models estimated are presented below:

Table 4.1 : Ramsey RESET Test

	1986-1990	1990-1994	1995-1999	2000-2004
F-Statistics	0.58	0.18	0.16	0.11
Probability	0.7768	0.9033	0.9174	0.1361

From the results above, the F statistic for all the four models is not significant implying that the models were correctly specified.

4.5.2 Heteroskedasticity

Heteroskedasticity results when there is a violation of homo (equal) scedasticity (Spread) assumption in the classical linear regression model. Among other factors, heteroskedasticity is caused by presence of outlier observations in the model, model misspecification and the distribution of the data. Heteroskedasticity is more of a cross sectional data problem than a time series econometrics problem and it is a concern because it causes parameter estimates to be inconsistent. To control for this, we include a 'robust' command when running our regressions in Stata.

4.5.3 Multicollinearity

Another assumption of a multiple regression model is that the explanatory variables are not dependent on each other. In other words, there exists no exact linear relationship among the regressors of the model. A correlation matrix is used to determine any exact linear relationship among the regressors. It is generally known that a correlation coefficient of more than 0.8 implies serious correlation. The results in the Table 4.2 below suggest that there is no serious correlation among the variables in question.

Table 4.2 : Correlation Matrix

1986-1990				1990-1994			
	Variability	Size	Trade		Variability	Size	Trade
Variability	1.0000			Variability	1.0000		
Size	-0.3660	1.0000		Size	-0.2279	1.0000	
Trade	0.0540	-0.4773	1.0000	Trade	0.4157	-0.2176	1.0000
1995-1999				2000-2004			
	Variability	Size	Trade		Variability	Size	Trade
Variability	1.0000			Variability	1.0000		
Size	-0.5409	1.0000		Size	-0.3742	1.0000	
Trade	0.6525	-0.1388	1.0000	Trade	0.4482	-0.1515	1.0000

CHAPTER 5

EMPIRICAL RESULTS AND INTERPRETATION

The regression was run on repeated five year averages from 1986-2004, based on data spanning 1980-2004. Reported below in Table 5.1 is a selection of those results that portray a fair development of the relationship overtime.

Table 5.1: OCA Criteria And Exchange Rate Variability for the SADC

	1986-1990	1990-1994	1995-1999	2000-2004
Variability of output	-2.405(4.3607)	6.3612(1.924)*	18.1130(9.2502)***	16.3529(4.771)*
Size	16.8684(38.2320)	3.0749(1.4514)***	7.6907(2.6059)**	2.1521(1.1162)***
Bilateral Trade	-18.7948(36.8904)	-29.9346(16.0333)***	-42.1081(14.8391)**	-5.3985(5.9839)
Constant	0.4146(0.3512)	-1.9286(0.9518)***	-5.2660(1.8924)**	-1.6854(0.8364)***
F-statistic	0.34	4.08**	3.10***	4.13**
R ²	0.0937	0.5506	0.4817	0.5531

Cross-section OLS with robust standard errors in the parantheses.

*Indicates significance at the 1% level, **at the 5% level, ***at the level 10%

Analysis of the results will be based on three periods: 1990-1994, 1995-1999 and 2000-2004. The entries in table 5.1 above show that OCA criteria fail to predict the level of exchange rate variability during the period 1986-1990. The goodness of fit of the model given by the R-squared is very low implying that the sample regression line does not fit the data well. The R-squared value of 0.0937 means that only approximately 9 percent of the variability in the nominal exchange rate is explained by the variation in the explanatory variables. The overall F-statistic of 0.34 is statistically insignificant confirming that the model is not well specified for the period. Possible explanations include that this is a pre-integration period. During the apartheid era in South Africa, SADCC was characterized by a high degree of economic disintegration with marked hostility and political divisions. Before the 1990s regional efforts were aimed at dealing with essentially non-economic

challenges. National sovereignty was fundamental to the SADCC with member states preoccupied with national interests and political autonomy. Instances of civil war, like in Mozambique, were also a hindrance to growth of trade (Ndhlovu, B, 1998). The period was also marked by economic policies that entrenched the state in all aspects of economic activities thus regionalism was defined by excessive state intervention and suffocation of markets in the SADCC.

5.0 Analysis of the Results

This section begins by reporting results from the nominal exchange rate variability model for periods 1990-1994, 1995-1999 and 2000-2004, respectively.

5.1 Some General Results

The results in table 5.1 show that the core implications of OCA theory find strong empirical support when applied within the SADC context. The relationship between the characteristic of countries to which OCA theory points and the observed behaviour of exchange rates returns more conclusive and theoretically consistent results. All the variables come out with the correct signs and are significant more often than not. The results also show that the cross-sectional nominal exchange rate equation reasonably fits the data well with reported R-squared values of 0.5506, 0.4817 and 0.5531 for the 1990-1994, 1995-1999 and 2000-2004 periods, respectively. The respective overall F-statistic for these periods is significant at 5 percent for both 1990-1994 and 2000-2004, and at 10 percent for 1995-1999 confirming that the model is well specified. The strength of the regression in terms of its predictive power is more comparable with Bayoumi and Eichengreen (1997) who found an R-squared value of 0.51 for Europe while the results compare poorly with Adams (2005). At its best, the equation explains 55 percent of the variation in exchange rates whilst Adams returns an R-squared in the region of 20 percent for Africa. This could be attributed to methodological differences as Adams used the IMF's National Currency per SDR rate which captures a country's position with the institution and is relatively stable as a proxy for nominal exchange rate variability. These empirical findings confirm that the SADC region satisfies the standard OCA criteria for the adoption of a common currency about as well as Western Europe and therefore surmise that the OCA theory is applicable within the SADC context.

5.2 *Variability of Output*

The findings reported above show that nominal exchange rate variability increases in the presence of asymmetric output movements for the SADC member states during all periods under consideration. The relationship retains the correct sign and is significant at 1 percent for 1990-1994 and 2000-2004 periods while that for the 1995-1999 period is significant at 10 percent. It can be deduced that a 1 percent increase in the variability of output would have led to 6.36, 18.11 and 16.35 percentage increases in nominal exchange rate variability for the periods 1990-1994, 1995-1999 and 2000-2004, respectively. Theory postulate that economies suitable for monetary union experience symmetry of shocks to their outputs and thus on average move together (Mundell, 1961). Thus for countries in which business cycles are symmetric and national outputs move together, the value of the variability of output measure will be small (Bayoumi and Eichengreen, 1997). In terms of magnitudes of the coefficients however a weak pattern is discernible as the degree of asymmetry of shocks seems to be increasing overtime albeit decreasing marginally in 2000-2004. This result is not surprising. At its inception in 1992, SADC was chosen as a platform for enhancing economic cooperation by member governments in a bid to promote economic development, exploit economies of scale and expand trade. This economic agenda provided impetus for member countries to increase production in every sector, to reap economies of scale to make them competitive on a regional scale and to increase intra-regional trade. Frank and Rose (1998) show that greater trade flows between countries lead to more highly correlated business cycles. However, after the initial enthusiasm of the early 1990s, the SADC suffered setbacks. The accession of South Africa into the SADC led to a climate charged with political insecurity and anxieties regarding the role of regional power and this weakened the platform for fostering long-term cooperation and also fed into trade relations (Hansohm and Shilimela, 2006). In particular, the counter-tendency of rivalry between South Africa and Zimbabwe fed into the instruments of economic integration and this undermined the sustainability of the foundations for regional cooperation. The results complement Khamfula and Huizinga (2004) who established low degrees of symmetry of the real exchange rate across SADC economies.

5.3 *Bilateral Trade*

The bilateral trade coefficients have the expected sign throughout the period under consideration implying that increased bilateral trade reduced the nominal exchange rate variability which is

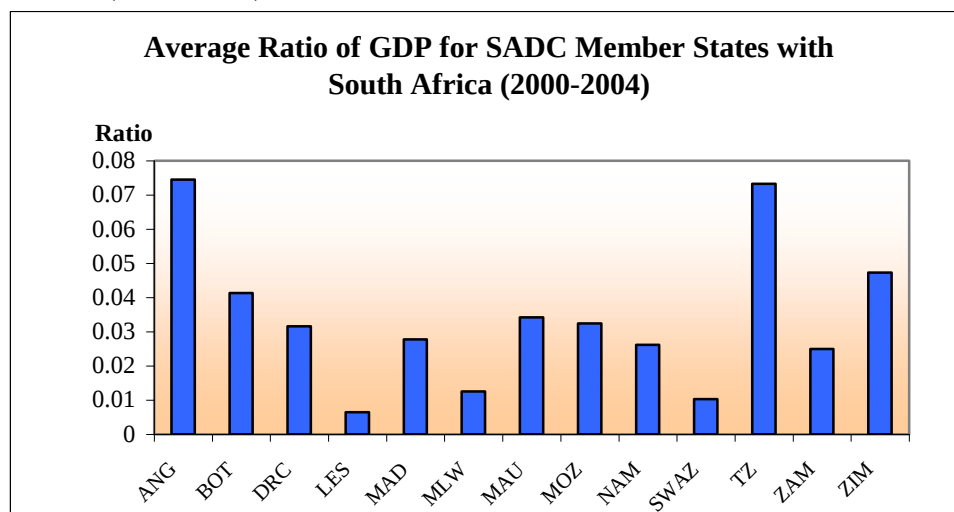
consistent with the theoretical expectations. This indicates that a 1 percent increase in bilateral trade would have yielded percentage decreases of 29.93, 42.11 and 5.40 in nominal exchange rate variability for the periods 1990-1994, 1995-1999 and 2000-2004, respectively. In terms of magnitudes, the value of the decline wanes across the period. This finding may be attributed to a variety of reasons. The SADC Trade Protocol was signed in 1996 against the backdrop of political changes in South Africa and as a basis for anchoring regional economies on a sustainable growth path as well as integration into the global world. This explains the better results for bilateral trade for 1995-1999 as the SADC member countries set out to liberalize intra-regional trade in goods and services through an asymmetric tariff phase-down process with the ultimate view of establishing a FTA. But the post-ratification period reveals less intra-trade reflecting the member states less preparedness to engage in deeper and more meaningful liberalization of trade. This could be attributed to South Africa's dominant position in the SADC. Firstly, it is frustrating for Zimbabwe which enjoyed a status of regional hegemony before 1994. Secondly, South Africa dominates intra-regional trade exporting high-value manufacturing goods to neighbouring countries while importing small amounts of low-value primary goods. The one-way trade and divergent levels of development are problematic as economic activity ends up in the largest/richer countries. Furthermore, instead of taking a lead in opening up its borders, South Africa fostered rivalry by stringently instituting protectionist measures. This understandably has undermined intra-regional trade patterns due to general perceptions of poor distribution of economic gains. All these developments had indirect effects on the intra-trade patterns in the SADC. Firstly, COMESA provided occasion to snub a South African centered SADC e.g. Zimbabwe, Zambia, Mauritius and Malawi are simultaneously participating in COMESA FTA arrangements. Secondly, some member states embarked on negotiations for Economic Partnership Agreements (EPA) with the EU under different regional configurations. Thirdly the rivalry between Zimbabwe and South Africa took advantage of the war in DRC as an opportunity to reinforce regional authority which was counterproductive. Fourthly Informal trade networks also emerged following protectionist measures and the civil war compromising official estimations of the magnitude of intra-trade patterns. Finally, progress with respect to full liberalization of trade among member states was varied and slow. Some countries such as Zimbabwe, Malawi and Zambia faced a difficult trade-off between public revenue losses from trade liberalization and the long-term benefits from trade integration. This

tends to delay the ratification of trade protocols and postpone their implementation. These factors explain the poor outturn of the variable and its insignificance in the 2000-2004 period.

5.4 *Size of the Economy*

The estimated parameter values for size are positive across all the periods under consideration, which is in line with the expected theoretical pattern. The coefficient of size is statistically significant at 5 percent for 1995-1999 while for the 1990-1994 and 2000-2004 periods the coefficient is significant at the 10 percent level. Theory postulates that the benefits of a common currency will be greatest for small economies where there is least scope for utilizing a separate national currency in transactions (Bayoumi and Eichengreen, 1997). In his 1963 article, McKinnon suggests that for a small country, the utility of its own national currency increases if linked with other currencies. That is smaller countries should benefit from the unit of account, means of payment and store of value services provided by a common currency.

Chart 1: Average Ratio of GDP for SADC Member States with South Africa (2000-2004)



Source: Calculated from World Bank Development Indicators

From Chart 1, most of the SADC member states seem to be relatively small in size apart from Angola and Tanzania. Since the potential benefits of monetary integration are ingrained in the theories of economies of scale, the small size of most of SADC economies points to unification as a useful means of expanding markets and increasing participation in the global economy.

All in all, it has been established that the core implications of OCA theory find strong empirical support when applied within the SADC context. Yet the results do not display strong support for forming a monetary union in the SADC region based on OCA criteria. If disturbances are distributed symmetrically across member states, a common response will suffice. If however the countries face mostly asymmetric shocks, the retention of policy autonomy is beneficial. Overtime the degree of asymmetry of shocks in the SADC is increasing. Hence the diminishing cross-country correlation of business cycles point to a weaker case for monetary unification as more costs would amass relative to benefits. In addition, the extent of international trade ties seems to be waning across the periods. This result concurs with Adams (2005) who attributed it to underdeveloped exchange markets, large amount of informal trade and greater control over exchange rate movements in order to manipulate the current account. Based on economic considerations, the theoretical case for monetary unification in the SADC is weak. These findings are comparable with Khamfula and Huizinga (2004) who established low degree of symmetry of the real exchange rate shocks and Buigut and Valev (2005) found no evidence at all for a SADC monetary union.

5.5 OCA Index for the SADC and COMESA Regions

The preceding section established that the core implications of OCA theory find strong empirical support when applied within the SADC context. The relationship between the characteristics of countries to which OCA theory points alongside the observed behaviour of exchange rates seemed sufficiently stable and robust to support simple forecasting. Extrapolating the independent variables, exchange rate equations can therefore be used to predict which countries will be able to support stable exchange rates in the future or equivalently which are best prepared to be among the founding members of the SADC monetary union. Further, this will permit streamlining of the multiple RECs membership with particular focus on the SADC and COMESA. The focus in this section is placed on countries that have dual membership in SADC and COMESA which include Angola, DRC, Malawi, Madagascar, Mauritius, Mozambique, Namibia, Seychelles, Swaziland, Tanzania, Zambia and Zimbabwe. On the basis of strong inter-COMESA trade, Kenya was chosen as an anchor for the COMESA region. Two ten year periods, 1981-1990 and 1991-2000 were evaluated to come up with a suitable period to generate predictions of the dependent variable. The following predicting equations emerged for the two periods

$$1981-1990: \quad SD(e_{ij}) = -2.05 - 0.35SD(\Delta y_i - \Delta y_j) - 17.30TRADE_{ij} + 9.2SIZE_{ij} \dots\dots(5)$$

(1.93) (0.27) (12.2) (3.75)**

$R^2 = 0.05$

$$1991-2000: \quad SD(e_{ij}) = -1.40 + 3.15SD(\Delta y_i - \Delta y_j) - 10.62TRADE_{ij} + 0.29SIZE_{ij} \dots\dots(6)$$

(0.53)** (1.41)* (1.94)* (0.11)**

$R^2 = 0.51$

The results for the period 1981-1990 using the classical OCA criteria failed to predict level of exchange rate variability. The value of R^2 was low (0.05 percent) compared to 0.51 percent for the period 1991-2000, which may support the hypothesis that traditional OCA criteria could not explain the variability of the exchange rates in the 1980s. Also, as observed earlier on, counterintuitive results especially that increased output variability between any pair of countries will result into lower exchange rate variability, were noted. Based on the strong theoretical and statistical significance of the estimation, 1991-2000 was chosen as a period to generate predictions of the dependent variable, the OCA index for particular two years 1994 and 2005. The year 1994 coincided with renewed focus on monetary unification in the SADC and the accession into SADC of South Africa, both a dominant economy and a major SADC intra-trade partner. In addition, the Abuja Treaty which called for increasing harmonization of RECs policies in Africa was ratified in 1994. The year 2005 was chosen because it follows the study scope and in addition most of the data for the forecast, especially bilateral trade data were available⁵. The derived OCA indices are presented in a tabular form. In considering the convergence between the average group indices for each country and their involvement in other regional commitments I intend to assign these countries to the ideal REC. Absolute differences that are closer to zero indicate a greater movement towards zero exchange rate variability and thus convergence. The countries divide into three groups: prime candidates for a monetary union; those which are converging to a monetary union; and those for which index shows little significance.

⁵ To forecast asymmetric output movements, $SD(\Delta y_i - \Delta y_j)$ was calculated over 1991-2000. This variable was then regressed on a constant term and a time trend just like Bayoumi and Eichengreen (1997). For economic size and bilateral trade, most of the actual data were used.

Table 5.2: OCA Index - Country vs Kenya

	1994	2005	Absolute Difference
Angola	-1.4397	0.0931	1.5328
Botswana	-1.5370	-2.4538	0.9168
Congo. Democratic Republic	-1.8971	-2.5217	0.6246
Malawi	-2.0836	-2.5778	0.4942
Mauritius	-1.4837	-2.1624	0.6786
Mozambique	-1.6645	-2.3512	0.6867
Tanzania	-1.6800	-2.8061	1.1261
Zambia	-2.1661	-3.0802	0.9142
Zimbabwe	-2.4125	-4.1979	1.7855

Table 5.2 shows forecasts of the dependent variable, which we refer to as the OCA index vis-à-vis Kenya in 1994 and 2005. On this basis, countries which are converging to the COMESA monetary union include Malawi, DRC, Mauritius, Mozambique and Zambia. Countries which show little convergence include Angola, Tanzania and Zimbabwe. But the OCA indices differences compare relatively poorly with those derived in the SADC according to Table 5.2 below.

Table 5.3 : OCA Index-Country vs South Africa

	1994	2005	Absolute Difference
Angola	-1.3326	-1.3752	0.0426
Botswana	-1.1133	-1.1200	0.0067
Congo. Democratic Republic	-1.5892	-1.3591	0.2301
Malawi	-1.8122	-1.4516	0.3605
Mauritius	-1.3136	-1.0545	0.2592
Mozambique	-1.2534	-0.9446	0.3088
Tanzania	-1.4083	-1.4504	0.0421
Zambia	-1.7631	-1.4478	0.3154
Zimbabwe	-1.2728	-3.6349	2.3621

Table 5.3 shows forecasts of the dependent variable, which we refer to as the OCA index vis-à-vis South Africa in 1994 and 2005. Almost all the countries except Zimbabwe are converging to the SADC as opposed to COMESA according to the OCA indices. Prime candidates for the proposed SADC monetary union include Botswana, Tanzania and Angola. These three countries could join the CMA countries in a feasible but weak initial SADC monetary union since the OCA indices show that they have stable exchange rates. Other countries that are converging towards the proposed SADC monetary union include the DRC, Mauritius, Mozambique, Zambia and Malawi. The countries are characterized by some level of volatility in the exchange rates. Only Zimbabwe shows little convergence to the proposed SADC monetary union.

The above outturn permits a ranking of the countries according to the declining suitability for the proposed SADC monetary union on the basis of the OCA indices. The countries that are in the CMA are primary candidates by virtue of the success of the monetary union and the pivotal role of South Africa. Then Botswana, Tanzania and Angola follow and the combination of these three and the CMA countries could entail initial candidates for the envisaged monetary union. Then DRC, Mauritius, Mozambique, Zambia and Malawi would follow. Compared to Holden and Mbonigaba (2005) who computed the NER and RER for the SADC for the period 1980-2004, DRC and Tanzania seem to be better candidates using OCA indices. However their ranking fairs poorly using the NER and RER approach. But Angola and Mauritius retain their ranking.

On the basis of convergence between group indices, I now proceed to assign these countries to the ideal REC. The process of allocation will proceed step by step, with countries first being eliminated by prior commitments, then by their differences in the average rate of convergence with the partner country in their REC.

5.5.1 Prior Commitment

On the basis of prior commitment, all countries in the CMA are taken aboard the SADC grouping by virtue of South Africa not being a member of COMESA yet at the centre of the SADC. Thus, Namibia and Swaziland are incorporated with the SADC based on their inclusion within the CMA removing them from the COMESA group. Seychelles abandoned the SADC in 2004 but remain a member of COMESA hence it's incorporated with the COMESA grouping. Madagascar joined the SADC in 2005 after years of scrutiny hence removed from COMESA.

5.5.2 Convergence

The next process is a stepwise elimination of countries based upon the differences in their average convergence for alternative RECs.

Table 5.4 Stepwise Allocation of Countries to Regional Economic Communities Based on Convergence of OCA Indices

Country with largest Absolute Difference	REC Chosen (Rejected)
Zimbabwe	COMESA(SADC)
Angola	SADC (COMESA)
Zambia	SADC (COMESA)
Tanzania	SADC (COMESA)
Mozambique	SADC (COMESA)
Mauritius	SADC (COMESA)
Malawi	SADC (COMESA)
Congo. Democratic Republic	SADC (COMESA)

Based on these calculations then table 5.4 displays the arrangements that would pertain.

Table 5.5 REC Arrangements after Allocation Based on OCA Indices

SADC	Proposed into COMESA
Angola	Seychelles
Botswana	Zimbabwe
Lesotho	
Madagascar	
Malawi	
Mauritius	
Mozambique	
Namibia	
South Africa	
Swaziland	
Tanzania	
Zambia	

Note: Interest only on membership overlap between COMESA and SADC

Of particular note, is that Malawi remains with its mostly English speaking neighbors. There is evidence of convergence with its SADC counterparts albeit the difference being marginal when compared with developments in COMESA. Still the result provides strong support for monetary unification in particular with the SADC grouping. Zimbabwe on the other hand abandons its English speaking counterparts and joins the COMESA group.

CHAPTER 6

SUMMARY AND POLICY IMPLICATIONS

6.1 Summary

The principal objective of the study was to assess the readiness of SADC member countries for the proposed monetary unification. The approach to the study was two-pronged: A literature review of the existing theoretical studies was undertaken. An investigation of the empirical techniques was pursued in order to inform the empirical section of the study. An application of Bayoumi and Eichengreen's procedure for applying the core implications of OCA theory to cross-country data was adopted for the period 1980-2004. This approach permitted streamlining of the SADC and COMESA RECs, removing countries which were members of more than one community using a path dependent stepwise elimination of duplicate countries.

The empirical findings of the study do not provide ample evidence in favor of a SADC monetary union at the moment. Generally the results show that there is prevalence of asymmetric shocks across most of the economies, implying that a monetary union would accrue large costs relative to the benefits. The results also indicated that intra-regional trade is low. The poor trade links may also contribute to lower similarity of economic fluctuations and potentially greater costs of monetary unification among this group of countries. However the study established that the core implications of OCA theory had strong empirical basis within the SADC context supporting possibilities of forming an OCA in the SADC. All variables were jointly significantly different from zero suggesting that the OCA criteria do explain some of the variability of the exchange rates. Finally the study managed to sort out which countries would be best prepared to be founding members of the SADC monetary union in the future and further obtained a ranking of their declining suitability.

6.2 Policy Implications

Several policy implications come to the fore. Firstly, OCA theory stresses a number of criteria to assess whether a region is ready for establishing a monetary union. The verdict on the classical criteria was that SADC member countries are certainly not ready (at least at the moment) to form a monetary union. Therefore, SADC as a whole should not start a monetary union, at least not in the near future, since the countries are too different to form an OCA implying presently the costs overshadow the benefits. Nevertheless, the following countries would be suited to be founding members of the union in this order: the CMA countries, Botswana, Tanzania and Angola. Later these could be joined by DRC, Mauritius, Mozambique, Zambia and Malawi. Zimbabwe could join the region after achieving some manageable degree of exchange rate variability. For this to be achieved the political situation must stabilize and sound macroeconomic policies put in place to reverse the hyperinflationary episodes. Alternatively the country would join the CMA immediately and this will help import monetary and fiscal policy credibility putting the economy back on an economic trajectory that fully utilize trade integration benefits.

From the available evidence, a very serious obstacle to regional integration efforts in the SADC appears to be the higher degrees of asymmetry of shocks. A possible solution to this has been advocacy of a policy of macroeconomic convergence that ensures sound macroeconomic policies. Yet in a region like SADC strict convergence might be counterproductive due to the varying terms of trade and stability of the member states. This implies that in the long-run, the asymmetry of shocks can be best dealt with through the diversification of economic activity and intra-regional trade. Frankel and Rose (1998) found a strong positive relationship between the degree of bilateral trade intensity and cross country bilateral correlation of business cycles. Overall, it is highly debatable if any regional grouping in the world can achieve OCA status *ex ante*. Indeed, even the Euro area which is the current success story of a monetary union did not achieve the OCA status *ex ante*. Therefore, SADC could become OCA compliant, if a supra national central bank compels them to meet the convergence criteria *ex post* and not *ex ante*.

Theory on economic integration suggests that integration among countries with divergent levels of economic development might run into problems. The success of SADC will depend on its ability to experience growth in intra-regional trade for the benefit of all member states. The findings of the

study point to the need to re-examine the design of intra-trade initiatives to ensure that deeper integration amongst the various countries fosters harmonious relations in the process creating a positive climate as opposed to one that generates possibilities for reversal. In particular, where asymmetry of power and skewed distribution of gains exist, a pivotal state within the region must use its position of advantage positively to equalize benefits or off-set losses arising from asymmetrical transactional arrangements. In 1971, the earlier East African Community was regarded as having potential to succeed yet perception that only Kenya was benefiting was an important cause of this collapse. In this regard, South Africa needs to be proactive and ensure that investment in the production capacity of the lesser developed member countries takes place.

Finally, policymakers widely understand that the multiplicity of overlapping memberships in regional economic communities constrains the integration aspirations of the region. There is need to eradicate wasteful or costly duplication of multiple memberships and rationalizing some overlapping sub-regions in the bloc based on priority needs and efficiency from comparative advantage. To deal with this challenge, the reasons for belonging to various groupings or forming sub-groups within the same group should be carefully studied. With clearer definitions of the mandates, objectives, and responsibilities of institutions serving the same constituents, countries would weigh the costs and benefits of membership and further make an informed choice.

6.3 Areas of Future Research

There is need to examine the impact of labour mobility on nominal exchange rate variability in the SADC. OCA theory suggests that increased labour mobility reduces the need for exchange rate movements as workers migrate to balance unemployment and inflation pressures Mundell (1961). Labour mobility in Sub-Saharan Africa is considered high traditionally (Masson and Pattillo, 2005; Benassy-Quere and Coupet, 2005). Yet data on international migration remain fragmentary and incomplete. Adams (2005) used the World Development Indicators absolute migration to population averages for bilateral pair of countries. This is undoubtedly a flawed proxy for labour mobility since this represents net migration with the world as a whole. Further the estimate is likely to be based on political rather than economic migration which takes place relatively undetected even in the SADC. The results would improve if migration is adequately quantified.

BIBLIOGRAPHY

- Adams, P. (2005) '*Optimal Currency Areas: Theory and Evidence for an African Single Currency*' University of Manchester.
- Adepoju, Aderanti (2001) 'Regional Organizations and Intra-Regional Migration in Sub-Saharan Africa: Challenges and Prospects' **International Migration** 39:43–57
- Agbeyegbe, T. (2003) "**On the Feasibility of a Monetary Union in the Southern Africa Development Community**" Hunter College, New York
- Barro, R. and Gordon, D. (1983) 'Rules, discretion and reputation in monetary policy' **Journal of Monetary Economics** 12: 101-121.
- Bayoumi, T. and Eichengreen, B. (1992) '*Shocking aspects of European monetary unification.*' NBER Working paper series, working paper No 3449. Cambridge, MA, NBER.
- Bayoumi, T. and Eichengreen, B. (1997) 'Optimum currency Areas and Exchange Rate Volatility: Theory and Evidence Compared' pp184-215 in Cohen ed. **International Trade and Finance: New Frontiers for Research: Essays in Honour of Peter B. Kenen.** Cambridge: Cambridge University Press
- Benassy-Quere, Agnes and Coupet (2005) 'On the Adequacy of Monetary Arrangements in Sub-Saharan Africa', **The World Economy** 28: 349-73
- Blanchard, O. and Quah, D. (1989) 'The dynamic effects of aggregate demand and supply disturbances.' **American Economic Review** 79(4): 655-673.
- Buigut, S. and Valev, N. (2005) 'Is the proposed East African monetary union an optimal currency area? A structural vector autoregression analysis.' **World Development** 33(12): 2119-2133.
- Chipeta, C. and Mkandawire, M. (1994) '*Monetary Harmonization in Southern Africa*' AERC Research Paper No.30. African Economic Research Consortium, Nairobi, Kenya
- Cobham, D and Robinson, P (1992). "Monetary Integration in Africa: A Deliberately European Perspective" **Journal of Economic Literature**, 31:1321-57
- De Grauwe, P. (2000) '**Economics of Monetary Union**' (4th Edition). Oxford: Oxford University Press

- Emerson, M., Gros, D. Italianer, A., Pisani-Ferry, J. and Reichenbach, H. (1992), '**One Market, One Money: An Evaluation of the Potential Benefits and Costs of Forming an Economic and Monetary Union**', Oxford; New York; Toronto and Melbourne Oxford University Press,, p. 354.
- Enders, W. and Hurn, S. (1994) 'Theory and Tests of Generalised Purchasing Power Parity: Common Trends and Real Exchange Rates in the Pacific Rim' **Review of International Economics** 2(2): 179-190
- Frankel, J. and Rose K. (1998) 'The Endogeneity of the Optimum Currency Area Criteria,' **The Economic Journal** 108:1009–25.
- Friedman, M. (1953) 'The Case for Flexible Exchange Rates' in **Essays in Positive Economics**. The University of Chicago Press
- Goodhart, C.A.E. (1989), '**Money, Information and Uncertainty**', Cambridge, Mass.: MIT Press.
- Grandes, M. (2003) '*Macroeconomic Convergence in Southern Africa: the Rand Zone Experience*', OECD Development Centre Working Paper No. 231.
- Grubel, H.G. (1970) 'The Theory of Optimal Currency Areas' **The Canadian Journal of Economics** 3, (2): 318-324
- Guillaume, D. and Stasavage, D. (2000) 'Improving policy credibility: Is there a case for African Monetary Unions.' **World Development** 28(8): 1391-1407.
- Hansohm, D and Shilimela, R. (2006) '*Progress in economic integration within SADC*' Monitoring Regional Integration in Southern Africa
- Holden, M. and Mbonigaba, J. (2005) '*Nominal and Real Effective Exchange Rate for SADC Countries over the Period 1980-2004: Implications for the Expansion of the Common Monetary Area*' University of Kwazulu Natal.
- Jakobeit, Hartzenberg, Charalambides, (2005) '**Overlapping Membership in COMESA, EAC, SACU and SADC Trade Policy Options for the Region and for EPA Negotiations**' Eschborn
- Kenen, P. (1969) '*The Theory of Optimal Currency Areas: An Eclectic View*', pp 41-60 in Mundell, Robert A. and Swoboda, Alexander K. (1969)
- Khamfula, Y. and Huizinga, H. (2004) 'The Southern African Development Community: Suitable for a monetary union?' **Journal of Development Economics** 73(2): 699-714.

- Krugman, P. (1993) 'Lessons of Massachusetts for EMU' pp241-261 in Giavazzi and Torres eds. **The Transition to Economic and Monetary Union in Europe**, New York: Cambridge University Press
- Kydland, Finn, E. and Prescott, Edward, C. (1977) 'Rules Rather than Discretion: The Inconsistency of Optimal Plans' **The Journal of Political Economy** 85 (3): 473-492
- Masson, P. and Pattilo, C. (2005) **'The Monetary Geography of Africa'** Washington DC: Brookings Institution Press
- McKinnon, R. (1963) 'Optimum Currency Areas'. **The American Economic Review** 53 (4): 717-725
- McLenaghan, J., Nsouli and Riechel (1982) '*Currency Convertibility in the Economic Community of West African States*' International Monetary Fund, Occasional Paper No.13
- Mélitz, J. (1996) 'The Theory of Optimum Currency Areas, Trade and Adjustment and Trade', **Open Economies Review** 7(2): 99-116.
- Mkenda, B. (2001) '*Is East Africa an Optimum Currency Area?*' Working Papers in Economics No. 41, School of Economics and Commercial Law, Goteborg University.
- Mongelli, P. (2002) '*New Views on the Optimum Currency Theory: What is the EMU telling us?*' European Central Bank, Working Paper, No.138
- Mundell, R. A. (1961) 'A theory of optimum currency areas.' **American Economic Review** 51(4): 657-665.
- Mundell, R. A. (2002) 'Does Africa need a common currency?' Keynote presentation. **Development Forum III**, March 3-8, Addis Ababa, UNECA.
- Ndhlovu, B. (1998) '*Economic Integration and Intra-Regional Trade: The Case of SADC*' Unpublished MA Thesis, University of Malawi
- Ogunkola, E. (2005) '*An Evaluation of the Viability of a Single Monetary Zone in ECOWAS*' AERC Research Paper No. 147, African Economic Research Consortium, Nairobi, Kenya
- Robson, P (1987) **"The Economics of International Integration"** London, Allen and Unwin.
- Rogoff, K. (1996) 'The Purchasing Power Parity Puzzle', **The Journal of Economic Literature**, Vol. 34 no.2, pp. 647-668.

SADC Articles and Treaties from www.sadc.int

SADC Recent Economic Developments and Statistics Issues

SADC Integrated Papers on Recent Economic Developments

Tavlas, G. (1993) 'The 'New' Theory of Optimum Currency Areas', **The World Economy**, pp 663- 685

Tavlas, G. (1994) 'The Theory of Monetary Integration', **Open Economies Review**, Vol. 5 no. 2, pp 211-230.

Vaubel, R. (1978) 'Real Exchange Rate Changes in the European Community: A New Approach to the Determination of Optimum Currency Areas' **Journal International Economics**, 8:319-39

Von Hagen, J. Neumann, J. (1994) 'Real Exchange Rates within and between Currency Areas: How Far is EMU?' **Review of Economics and Statistics LXXXVI (2)**, 236-244

APPENDICES

Appendix 1: GDP at market prices (Const. 2000 US\$) (million)

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
Angola	6,746.39	6,314.62	6,314.62	6,579.84	6,974.63	7,218.74	7,420.86	8,007.11	8,455.51	8,489.33	8,463.86	8,362.30
Botswana	1,130.28	1,232.74	1,382.71	1,564.49	1,698.18	1,819.18	1,967.86	2,201.68	2,629.91	2,973.36	3,174.74	3,411.53
DRC	7,025.36	7,190.49	7,157.58	7,258.63	7,660.83	7,696.68	8,059.74	8,275.39	8,314.32	8,209.06	7,669.86	7,023.98
Lesotho	399.97	402.75	413.05	399.86	441.45	463.50	466.08	483.10	534.17	577.45	614.48	638.69
Madagascar	3,098.71	2,798.18	2,747.52	2,772.31	2,819.57	2,852.16	2,908.04	2,942.30	3,042.43	3,166.53	3,265.65	3,059.60
Malawi	999.78	946.89	970.59	1,006.69	1,060.65	1,109.13	1,106.75	1,124.73	1,160.47	1,176.07	1,243.02	1,351.54
Mauritius	1,516.90	1,587.72	1,678.05	1,727.40	1,771.29	1,874.49	2,030.98	2,220.20	2,394.29	2,529.05	2,676.39	2,831.17
Mozambique	2,156.67	2,264.50	2,108.25	1,777.25	1,661.73	1,678.35	1,639.75	1,880.79	2,035.02	2,167.29	2,188.96	2,296.22
Namibia	2,002.12	2,019.98	2,012.54	1,976.82	1,971.98	1,982.77	2,076.16	2,149.09	2,167.69	2,207.50	2,262.57	2,447.49
South Africa	95,502.50	100,622.00	100,236.00	98,385.60	103,402.00	102,150.00	102,168.00	104,314.00	108,695.00	111,298.00	110,945.00	109,815.00
Swaziland	554.03	556.68	559.35	570.96	606.57	629.39	706.64	810.17	864.28	943.10	1,023.80	1,050.55
Tanzania	..	..	..	..	..	6,123.16	6,123.16	6,123.16	6,123.16	6,353.67	6,801.29	6,942.21
Zambia	2,729.81	2,898.18	2,816.66	2,761.27	2,751.97	2,796.42	2,816.66	2,892.03	3,073.67	3,042.21	3,027.58	3,026.48
Zimbabwe	4,376.44	4,924.61	5,054.34	5,134.47	5,036.53	5,386.29	5,499.35	5,562.63	5,982.74	6,293.83	6,733.68	7,106.17

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Angola	7,785.30	5,862.33	6,067.51	6,698.53	7,448.77	8,037.22	8,584.13	8,862.24	9,129.18	9,416.02	10,767.70	11,139.10	12,378.30
Botswana	3,511.05	3,578.32	3,708.15	3,871.45	4,087.29	4,368.08	4,631.15	4,880.72	5,250.85	5,526.36	5,804.26	6,192.94	6,494.37
DRC	6,286.46	5,439.73	5,227.58	5,264.18	5,210.31	4,917.65	4,837.78	4,624.92	4,305.80	4,215.38	4,362.91	4,611.60	4,925.19
Lesotho	668.01	691.23	714.76	746.12	820.40	887.26	846.07	848.14	859.32	886.89	917.91	946.29	976.08
Madagascar	3,095.89	3,160.80	3,158.53	3,212.61	3,281.65	3,402.86	3,536.67	3,701.45	3,877.53	4,110.99	3,589.97	3,941.45	4,148.94
Malawi	1,252.43	1,373.81	1,233.13	1,439.42	1,544.74	1,603.32	1,665.78	1,716.45	1,743.51	1,656.77	1,704.14	1,807.59	1,936.32
Mauritius	2,983.11	3,159.60	3,302.24	3,436.30	3,614.55	3,826.19	4,055.76	4,292.10	4,464.91	4,712.81	4,851.27	4,992.48	5,212.21
Mozambique	2,110.23	2,293.82	2,465.86	2,571.89	2,754.49	3,059.42	3,445.96	3,705.72	3,777.70	4,272.63	4,621.29	4,986.37	5,360.08
Namibia	2,623.48	2,570.78	2,758.87	2,872.35	2,964.13	3,089.14	3,190.87	3,298.48	3,413.54	3,495.38	3,728.68	3,858.44	4,088.12
South Africa	107,468.00	108,794.00	112,312.00	115,812.00	120,799.00	123,997.00	124,638.00	127,577.00	132,878.00	136,512.00	141,549.00	145,761.00	152,276.00
Swaziland	1,063.02	1,100.35	1,137.21	1,179.96	1,226.38	1,273.33	1,314.76	1,360.96	1,388.70	1,413.61	1,454.61	1,489.52	1,520.80
Tanzania	6,982.78	7,066.97	7,177.76	7,434.04	7,772.93	8,045.81	8,344.19	8,638.73	9,079.26	9,646.04	10,344.50	11,080.80	11,822.40
Zambia	2,974.10	3,176.25	2,902.29	2,820.41	3,016.30	3,115.80	3,057.89	3,125.91	3,237.72	3,396.17	3,508.37	3,687.94	3,887.47
Zimbabwe	6,465.51	6,533.49	7,136.87	7,148.15	7,888.75	8,100.22	8,333.92	8,033.90	7,399.22	7,199.45	6,882.67	6,166.87	5,907.86

Source : World Bank Development Indicators 2006

Appendix 2 SADC Exports and Imports

SADC EXPORTS

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
Angola	1.193	13.917	14.839	57.285	24.259	21.531	8.4	14.348	13.183	23.526	35.977	20.754
Botswana	0.471	44.576	34.669	40.477	49.244	38.302	47.079	64.741	73.559	90.382	92.966	93.097
DRC	24.571	64.327	52.275	66.052	90.222	38.852	63.659	65.265	82.3	166.606	143.527	90.634
Lesotho	0.075	1.815	0.364	0.964	0.29	0.345	4.749	10.917	2.016	2.911	2.597	2.853
Madagascar	16.277	3.427	2.34	2.773	3.441	3.525	8.76	6.352	7.836	14.119	21.148	28.991
Malawi	6.198	31.75	34.888	30.13	17.851	16.232	15.09	19.753	48.357	47.315	149.13	145.646
Mauritius	14.337	19.998	11.292	8.289	10.464	9.392	9.891	18.694	10.13	13.228	97	207.052
Mozambique	29.868	76.895	120.117	44.637	45.726	23.676	49.403	58.978	60.574	61.526	92.27	61.466
Namibia	0.011	3.458	1.874	1.006	1.613	0.768	0.715	1.193	0.517	2.244	1.467	9.962
South Africa	22.587	310.082	213.588	217.947	217.963	127.406	155.86	148.736	184.885	183.796	198.203	207.555
Swaziland	2.202	3.268	2.674	1.832	0.68	1.007	0.329	4.41	3.983	2.291	1.165	1.008
Tanzania	20.64	24.726	27.827	22.818	37.652	27.946	24.564	33.506	40.967	41.102	64.572	70.793
Zambia	24.318	63.96	44.104	51.588	44.803	55.113	36.572	38.877	77.257	76.162	148.659	212.617
Zimbabwe	35.199	51.3	52.512	86.342	26.831	19.27	9.728	23.342	40.609	42.931	310.863	540.403

SADC IMPORTS

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
Angola	76.245	51.783	11.146	8.351	0.946	1.306	10.638	20.917	28.853	54.652	19.534	3.568
Botswana	18.309	38.172	50.071	56.829	39.729	35.741	55.989	83.557	104.88	133.054	88.937	82.088
DRC	21.984	31.079	45.435	21.128	28.006	19.798	20.515	19.993	13.266	29.309	109.369	25.012
Lesotho	0.047	0.05	0.053	0.68	0.013	0.044	0.096	0.121	0.215	1.229	1.73	1.653
Madagascar	48.224	22.22	24.625	21.57	17.878	12.949	13.886	21.111	22.583	34.264	110.17	37.149
Malawi	12.418	40.147	23.781	30.567	31.86	18.28	22.878	9.229	13.023	15.354	34.035	38.219
Mauritius	7.875	8.174	7.567	9.736	9.577	9.404	21.893	23.649	26.701	32.399	50.1	48.536
Mozambique	60.256	43.702	54.251	18.146	7.082	2.079	6.519	8.620	6.879	8.625	7.801	14.599
Namibia	0	1.81	0.697	0.159	0.015	0.952	1.878	2.85	3.73	5.379	10.435	9.323
South Africa	527.955	821.126	741.935	585.512	566.115	573.416	604.849	645.843	552.428	990.355	1036.68	1241.56
Swaziland	3.252	13.244	9.84	5.338	3.493	6.789	6.246	10.474	23.258	29.265	27.324	46.671
Tanzania	31.175	73.891	35.993	51.312	38.323	21.276	15.818	15.646	30.322	34.106	39.104	45.688
Zambia	77.825	67.333	60.55	53.749	55.858	51.534	55.366	50.532	36.914	65.421	71.433	66.357
Zimbabwe	37.674	70.299	141.146	111.907	91.323	105.349	116.767	183.556	191.733	256.377	307.759	378.21

US GDP Deflator	54.043	59.119	62.726	65.207	67.655	69.713	71.250	73.196	75.693	78.556	81.589	84.443
-----------------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------

Source : IMF Direction of Trade Statistics 2006

Appendix 3 SADC Exports and Imports

SADC EXPORTS

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Angola	162.491	111.008	125.888	175.347	386.383	227.998	243.066	233.717	295.282	417.926	425.381	521.211	579.616
Botswana	70.819	79.788	106.778	2.813	89.962	97.357	82.993	70.695	62.885	24.785	43.385	73.470	51.950
DRC	194.041	190.297	266.228	386.399	418.255	371.432	351.657	312.194	265.074	282.853	352.355	368.573	551.925
Lesotho	0.544	1.627	1.865	0	0.265	0.512	1.021	1.165	1.669	1.639	0.552	1.11	7.593
Madagascar	46.965	29.94	61.592	95.1	105.426	127.028	121.566	118.608	130.377	163.085	124.721	237.181	209.593
Malawi	292.971	233.751	272.427	259.182	344.391	377.614	352.829	394.007	373.024	265.114	354.87	350.616	435.72
Mauritius	174.431	177.74	184.074	235.263	257.309	296.122	245.056	482.679	347.619	295.777	303.346	354.641	340.035
Mozambique	288.018	358.754	459.699	677.755	651.778	665.352	518.643	828.59	773.768	684.008	651.53	812.093	851.388
Namibia	2.822	4.102	22.488	2.14	29.082	22.194	25.316	13.811	20.626	12.393	19.736	37.902	27.58
South Africa	351.05	419.907	542.326	710.608	826.559	916.984	640.715	826.801	955.553	857.969	1295.26	1945.88	2472.11
Swaziland	1.428	1.999	2.915	0.098	3.059	2.338	13.918	8.649	4.805	1.413	2.233	19.338	4.192
Tanzania	66.642	124.696	264.343	434.968	407.49	475.228	492.632	324.305	408.848	387.39	461.8	606.257	747.525
Zambia	448.937	475.339	401.786	495.104	542.436	596.603	526.591	478.944	747.968	611.028	707.024	657.572	883.233
Zimbabwe	595.51	572.732	738.114	1310.45	1344.12	1332.02	1104.26	948.601	879.929	823.762	895.968	991.094	1083.09

SADC IMPORTS

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Angola	20.558	7.922	39.182	20.759	75.596	64.277	11.728	48.893	17.672	12.078	35.725	10.601	297.442
Botswana	51.184	69.725	54.643	9.931	50.634	65.499	47.184	46.71	84.373	39.318	58.723	20.706	98.506
DRC	22.013	99.361	127.394	130.032	148.076	121.976	15.223	13.666	27.372	122.477	30.497	41.43	57.761
Lesotho	0.945	0.616	0.362	0.341	0.237	0.64	0.531	5.652	6.296	0.591	0.451	1.275	1.184
Madagascar	41.135	27.426	50.411	69.378	78.019	54.289	63.589	47.101	46.087	45.374	31.521	59.331	43.831
Malawi	65.148	64.56	74.896	82.576	136.995	131.015	116.869	104.641	68.558	72.449	82.469	116.979	139.535
Mauritius	49.251	67.78	50.185	54.872	80.377	45.281	45.741	224.247	62.702	107.533	89.331	112.47	194.43
Mozambique	31.293	23.263	49.551	59.588	41.960	96.649	82.561	49.472	119.686	142.341	240.196	133.850	156.375
Namibia	11.699	17.817	20.503	16.892	29.394	17.937	18.834	19.339	22.392	22.563	15.551	23.157	39.624
South Africa	1943.49	2019.46	2499.86	3252.57	3710.19	4356.89	3471.57	3490.58	3916.84	4007.77	4196.18	4623.52	6679.53
Swaziland	61.913	45.602	42.614	33.706	43.913	47.44	53.456	63.418	56.985	57.158	108.268	78.32	125.183
Tanzania	80.035	80.064	88.691	112.773	116.768	76.431	79.709	128.547	114.596	66.287	109.808	172.577	230.556
Zambia	60.4	75.12	98.575	118.34	184.052	145.147	171.802	150.158	151.995	137.013	161.892	325.382	565.409
Zimbabwe	494.947	438.218	605.891	492.088	517.253	548.848	578.909	515.55	426.516	376.078	481.208	677.681	697.985

US GDP Deflator	86.386	88.380	90.259	92.105	93.852	95.413	96.472	97.868	100.000	102.399	104.187	106.403	109.426
-----------------	--------	--------	--------	--------	--------	--------	--------	--------	---------	---------	---------	---------	---------

Source : IMF Direction of Trade Statistics 2006

Appendix 4 Bilateral Trade Data for Kenya

Bilateral Exports of Kenya

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Angola	20.754	162.491	111.008	125.888	175.347	386.383	227.998	243.066	233.717	295.282	417.926	425.381	521.211	579.616
DRC	90.634	194.041	190.297	266.228	386.399	418.255	371.432	351.657	312.194	265.074	282.853	352.355	368.573	551.925
Malawi	145.646	292.971	233.751	272.427	259.182	344.391	377.614	352.829	394.007	373.024	265.114	354.87	350.616	435.72
Mauritius	207.052	174.431	177.74	184.074	235.263	257.309	296.122	245.056	482.679	347.619	295.777	303.346	354.641	340.035
Mozambique	61.466	288.018	358.754	459.699	677.755	651.778	665.352	518.643	828.59	773.768	684.008	651.53	812.093	851.388
Seychelles	34.074	26.38	30.209	29.757	42.27	48.718	51.814	43.444	44.85	45.918	36.233	52.576	52.263	50.6
Tanzania	70.793	66.642	124.696	264.343	434.968	407.49	475.228	492.632	324.305	408.848	387.39	461.8	606.257	747.525
Zambia	212.617	448.937	475.339	401.786	495.104	542.436	596.603	526.591	478.944	747.968	611.028	707.024	657.572	883.233
Zimbabwe	540.403	595.51	572.732	738.114	1310.45	1344.12	1332.02	1104.26	948.601	879.929	823.762	895.968	991.094	1083.09

Bilateral Imports of Kenya

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Angola	3.568	20.558	7.922	39.182	20.759	75.596	64.277	11.728	48.893	17.672	12.078	35.725	10.601	297.442
DRC	25.012	22.013	99.361	127.394	130.032	148.076	121.976	15.223	13.666	27.372	122.477	30.497	41.43	57.761
Malawi	38.219	65.148	64.56	74.896	82.576	136.995	131.015	116.869	104.641	68.558	72.449	82.469	116.979	139.535
Mauritius	48.536	49.251	67.78	50.185	54.872	80.377	45.281	45.741	224.247	62.702	107.533	89.331	112.47	194.43
Mozambique	14.599	31.293	23.263	49.551	59.588	41.96	96.649	82.561	49.472	119.686	142.341	240.196	133.85	156.375
Seychelles	3.601	2.519	2.239	3.384	2.507	3.765	4.125	4.698	3.816	6.246	12.217	41.352	14.926	25.946
Tanzania	45.688	80.035	80.064	88.691	112.773	116.768	76.431	79.709	128.547	114.596	66.287	109.808	172.577	230.556
Zambia	66.357	60.4	75.12	98.575	118.34	184.052	145.147	171.802	150.158	151.995	137.013	161.892	325.382	565.409
Zimbabwe	378.21	494.947	438.218	605.891	492.088	517.253	548.848	578.909	515.55	426.516	376.078	481.208	677.681	697.985

Source : IMF Direction of Trade Statistics 2006