

**THE FEASIBILITY OF FORMING A MONETARY UNION IN SADC:  
MEETING CONVERGENCE AND OPTIMUM CURRENCY AREA  
CRITERIA AND EVALUATING FISCAL SUSTAINABILITY**

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A thesis submitted in fulfilment of the requirements for the degree of

**MASTER OF COMMERCE (FINANCIAL MARKETS)**

**(Half thesis)**

DEPARTMENT OF ECONOMICS AND ECONOMIC HISTORY

RHODES UNIVERSITY

GRAHAMSTOWN

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December 2012

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<sup>1</sup> The financial assistance from the Allan Gray Foundation Scholarship towards this research is hereby acknowledged. Opinions and views expressed, and conclusions arrived at, are those of the author and do not necessarily reflect those of Rhodes University or Allan Gray.

## DECLARATION

*Except for references specifically indicated in the text, and such help as has been acknowledged, this thesis is wholly my own work and has not been submitted to any other University, Technikon or College for degree purpose.*

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## ABSTRACT

In conformity with the goal of the African Union to build a monetary union for the entire African continent, one of the goals of the Southern African Development Community (SADC) is the formation of a monetary union with a single central bank. Towards this end certain macroeconomic convergence criteria, which are closely aligned with those used by the European Union (EU), have been set. While empirical research on whether or not SADC would benefit from the formation of a currency union has focused on the optimum currency area criteria, no reference to these criteria is made in the SADC programme. Instead, the SADC approach has been governed by a set of macroeconomic convergence criteria synonymous with those pursued by the European Monetary Union (EMU) prior to its formation. Doubts regarding the future of the EU have recently been raised as a result of debt crises in certain member states, implicitly raising questions about the adequacy of the convergence criteria that were adopted. Accordingly, this study considers the feasibility of establishing a currency union in the SADC region. The proposed convergence criteria are assessed against the theory of optimum currency areas as well as in terms of their adequacy in the light of recent EU experience. In addition, the paper provides a preliminary assessment of the fiscal sustainability of the SADC region by conducting Engle-Granger cointegration tests on the public debt and revenue series for the SADC countries under analysis.

It was observed that SADC has made considerable progress towards meeting its macroeconomic convergence criteria in recent years. However, in light of the regions' heavy dependence on commodity exports coupled with recent price fluctuations in this regard, the sustainability of this progress is questioned. Furthermore, a review of the EMU experience to date, highlights numerous flaws in its approach and the potential challenges the SADC region should consider in moving forward with its agenda. In essence, the study suggests that almost all the SADC member states are fiscally unprepared for monetary union formation and the recent EMU debt crisis has highlighted the importance of acquiring a state of fiscal sustainability prior to union formation. In addition, it is imperative that the SADC members continue to address issues of product diversification, intra-regional trade and political unification, all of which should be governed by a centralised fiscal authority.

## ACKNOWLEDGEMENTS

*“Hope deferred makes the heart sick. But a dream fulfilled is a tree of life” – Proverbs 13:12*

I would like to begin by thanking the Lord Almighty for blessing me abundantly, guiding me closely throughout my academic career. It is through His will and grace that I have been blessed with the opportunity and capacity to complete this work.

I am forever indebted to my Mom, financier, source of strength and encouragement for her support throughout my studies and her dedication to ensuring I constantly challenge myself to be and become more in my academic and personal life. Mama I thank you for all your support and pray I can continue to make you proud.

To my Dad and siblings, thank you for your endless support and for always being there when I needed you most. Your support and encouragement has been a continuous source of strength.

Thank you to my friends, and my supervisor Rob Stuart, you have all played a significant role in getting me through the writing process.

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## CHAPTER ONE:

### INTRODUCTION

#### 1.1 CONTEXT OF THE RESEARCH

The African Union, a pan-African organisation of which the Constitutive Act entered into force in 2001, set the goal of a single currency in Africa by the year 2021. As we draw closer to this date, monetary unions in different parts of Africa has become an increasingly topical issue in economic policy making decisions. The interest in assessing the feasibility and consequences of monetary integration in Southern Africa stems not only from this ultimate goal of achieving a continental union but from several other factors. Firstly, the experience of the European monetary union has stimulated further interest in monetary unions in regions beyond Europe (Masson and Pattillo, 2005:35; Jefferis, 2007: 83). Secondly, monetary unification is often viewed as the key to a faultless single market especially for countries, such as those of Southern Africa, belonging to regional trading blocs (Kenen and Meade, 2008: 4). Lastly, studies on the potential costs and benefits of currency unionisation suggest that the adoption of a common currency can lead to the improvement of the structural characteristics of concerned economies, increasing trade integration and business-cycle correlation and enhancing the credibility of macroeconomic policies (Rose, 2000).

The Southern African Development Community (SADC)<sup>2</sup> vision is one of a common future founded on common values and principles within a regional community that will ensure economic welfare, improvement in standards of living and quality of life, social justice, freedom, peace and security (SADC, 2009: 52). There is a consensus amongst the signatories of the SADC Treaty that underdevelopment and backwardness in Southern Africa will best be overcome through economic cooperation and integration. In pursuit of this agenda, SADC adopted a Regional Indicative Strategic Development Plan (RISDP) in 2003 which sets milestones to facilitate its attainment, explicitly the SADC Free Trade Area by 2008, a Customs Union (CU) by 2010, the Common Market (CM) by 2015, Monetary Union (MU) by 2016 and the Single Currency by 2018 (SADC, 2009: 52). In this regard, the SADC country's central bank governors laid down a strategy for monetary union similar to the approach adopted by the European Monetary Union. The approach is based on two core principles (De Grauwe, 2007: 143): Firstly, the road towards monetary union should be gradual, extending over a number of carefully planned years. Secondly, the satisfaction of convergence criteria should be a prerequisite for monetary union membership.

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<sup>2</sup> SADC is made up of 15 member countries, namely Angola, Botswana, Democratic Republic of Congo, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, Tanzania, Zambia and Zimbabwe.

Empirical research on whether the SADC would benefit from forming a common currency has focused on its members ability to satisfy optimum currency area (OCA) criteria (e.g. Khamfula and Huisinga, 2004; Buigut, 2006; Jefferis, 2007; Masson, 2008 and Tavlas, 2009). In essence, these studies have focused on three areas: (i) examination of the nature of shocks affecting concerned economies; (ii) analysis of the degree of correlations of movements of real exchange rates and/or terms of trade; and (iii) assessment of co-movements in cyclical real growth rates among the economies. The rationale behind assessing shock absorption together with movements in exchange rates is that they are both believed to encompass the influences of several of the OCA criteria which are believed to encompass key requirements for efficient and feasible currency and monetary union.

Mundell (1961), the pioneer of OCA criteria describes an OCA as an “optimum” geographic area in which a group of countries either (i) shares a common currency or (ii) maintains separate national currencies with permanently fixed exchange rates and full convertibility. Optimality is then measured on the grounds of each member country’s ability to maintain external equilibrium without domestic unemployment as well as maintaining domestic price stability. The notion of an OCA was initially formulated in the context of the debate over the relative merits of flexible and fixed exchange rates and their ability to respond to external and/or internal shocks and still maintain equilibrium (Friedman, 1953). Mundell (1961), Ingram (1962), McKinnon (1963), Kenen (1969) and Fleming (1971) are the main proponents of the properties needed for the construction of a currency union, these being factor mobility (specifically labour and capital), financial integration, degree of openness, similar inflation rates and the level of economic diversification respectively. More recent research has added to this list issues such as, degree of financial development, fiscal balance, political integration and ease of currency substitution (El Hag, 2007).

Most authors have observed that SADC economies are prone to asymmetric shocks such as weak or negative co-movements in growth rates. The general conclusion of such studies is that currency union may not be appropriate for all the SADC members (Tavlas, 2009: 34). Conversely, more favourable results have been observed by Masson and Pattillo (2005), Buguit and Valev (2006), Buigut (2006), Grandes (2003) and Wang *et al.*, (2006) who postulate that a monetary union typically comprising South Africa and combinations of other Common Market Area<sup>3</sup> countries (in most cases including Botswana) and a small group of other countries could be successful. However, because the existing studies differ in terms of empirical approaches and variables used, countries considered as well as sample periods, their results are not strictly comparable. In fact, similar conflicting qualitative results were observed for the euro-area prior to the formation of the European Monetary Union in 1999 (see Commission for the European communities, 1990; Bayoumi and Eichengreen, 1997; Frankel and

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<sup>3</sup> Comprising South Africa, Namibia, Lesotho and Swaziland.

Rose, 1997). Yet, in its early years, the euro-area managed to function “well” as a monetary union despite membership of some countries that were initially predicted to fall short of meeting the OCA criteria. The most obvious exception of the EMU success has been the recent sovereign debt difficulties in Portugal, Italy, Greece and Spain, suggesting that the results of such studies have some shortcomings in their use in making the final currency union formation decision.

One crucial hindrance exists however; the SADC and existing empirical literature has provided very little in terms of official published documentation dealing with significant issues including the benefits and costs of a Southern African monetary union and the degree of labour mobility (within and among the countries themselves), fiscal sustainability as well as the degree of political integration. More importantly, insufficient details have been provided concerning the underlying rationale of its convergence criteria, reasons underlying the choice of the particular quantitative (interim) criteria and the role (if any) of real convergence as a criterion for entry into the monetary union.

The SADC regions’ targets and convergence criteria are not discussed in detail here but can be summed up as follows: ensuring the administrative completion of negotiations by 2015, promoting the diversification of industrial structures and exports, macroeconomic convergence of inflation (8% for all members by 2018), ratio of budget deficit to GDP not exceeding 3% by 2012 and ensuring the nominal value of public and publicly guaranteed debt is less than 60% of GDP by 2008 and maintained throughout the planning period (SADC, 2003).

Although the use of nominal convergence criteria is analogous with the use of such criteria for entry into the euro area, the selection of convergence criteria for the euro area zone was preceded and followed by a substantial amount of analytical research. More specifically, the study by the Commission for the European Communities (1990), which provided a detailed analysis of the benefits and costs of a monetary union in Europe as well as a quantitative estimate of the reduction in transactions costs of a single currency.

There are a number of reasons why monitoring the progression towards the achievement of macroeconomic convergence criteria is important. To begin with, the Committee of Central Bank Governors (CCBG) of SADC have acknowledged that such governance is necessary for the achievement of the goal of monetary union and a single central bank for SADC by 2016 (Rossouw, 2006: 382). Furthermore, the recent experiences of the EMU’s debt crisis have highlighted some issues that have previously not received sufficient emphasis in the steps employed in forming monetary unions. More specifically, the EMU crisis has stressed the importance of establishing both a political and fiscal union in moving towards a state of monetary union. Of even greater importance is the need for a centralised fiscal authority, one that will have the authority to command and govern the

fiscal and monetary policies of potential union member states. This study proposes that if convergence (or progress towards it) is proving to be a challenge this will signal a need for the rethinking or reformulation of SADCs plans and an assessment of prospective alternatives. Successful convergence on the other hand is but only a starting point in evaluating the feasibility of a SADC union and an in-depth cost benefit analysis will need to follow to affirm such prospects.

## **1.2 GOALS OF THE RESEARCH**

The main objective of the research is to address some of the main (abovementioned) shortcomings of the existing empirical literature on economic and monetary union in the SADC. The ultimate goal is to assess the feasibility of a SADC currency union on the basis of its progress towards macro-economic convergence as well as evaluate the level of fiscal sustainability of the region. In this light, the specific goals of the study are as follows:

- To assess the feasibility of forming a currency union in SADC by 2018 with a view to analysing the extent to which each member country is meeting the SADCs macroeconomic convergence criteria as well as monetary and real convergence considerations.
- Evaluate the sustainability of public debt and budget deficits of the SADC member states.

## **1.3 METHODS, PROCEDURES AND TECHNIQUES<sup>4</sup>**

In order to address the sub-objectives an analysis of the movement towards the achievement of the targets laid out in the SADC Regional Indicative Strategic Development Plan (RISDP) of 2003 will be performed. The RISDP emphasises trade and economic liberalisation for deeper integration and poverty eradication as key intervention areas. Emphasis will be placed on determining which of the member countries have managed to meet the targets laid out in the plan thus far with the greatest weight being placed on their degree of macroeconomic convergence.

For the empirical analysis, Engle-Granger co-integration tests between public expenditures and public revenues are performed for 14 of the SADC member states (excluding Zimbabwe due to insufficient data availability) for the 2000 - 2010 period. The period of 2000 - 2010 has been chosen as data is most readily available for this period for most of the SADC countries.

## **1.4 ORGANISATION OF THE STUDY**

This study is organised as follows: Chapter 2 presents a review of the theory and literature on Optimum Currency Areas (OCA) and monetary unions is done. This chapter provides an outline of

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<sup>4</sup> A full description of the econometric method employed in this study is given in Chapter 4.

the key costs and benefits associated with monetary union as well as outlining the premise of OCA in measuring economic convergence. In addition, it outlines the concept of macroeconomic convergence and in light of the recent crises in the European Monetary Union, the idea of fiscal sustainability is introduced. Chapter 3 provides a closer analysis of the SADC case, focusing specifically on highlighting what the literature has to say about the extent to which the SADC members meet the OCA criteria. Furthermore, it explores how far along these members have come to-date in meeting the Maastricht-type macroeconomic convergence criteria laid out by the SADC Central Bank Governors. Chapter 4 describes the econometric methods and techniques employed in the study, including tests for stationarity and Engle-Granger co-integration analysis. The results of the study are discussed in Chapter 5 and the last chapter provides a summary of the results and conclusions as well as suggestions for further research areas.

## CHAPTER TWO:

### THEORETICAL ISSUES AND LITERATURE REVIEW

#### 2.1 INTRODUCTION

This chapter considers the theoretical and empirical literature on the various issues pertaining to monetary union formation. More specifically, it begins by exploring the costs and benefits associated with monetary union formation and membership. Following this, the theory of Optimum Currency Areas (OCA) is introduced, tracking its inception, foundations, growth and challenges. The third sub-section establishes the theory and arguments behind the need for overall macroeconomic convergence in moving towards monetary unionisation. Furthermore, a brief discussion on the reasoning behind the adoption of Maastricht-type convergence criteria is presented followed by an attempt to bridge the gap between OCA and convergence theory. The fourth and fifth sub-sections touch on the theoretical underpinnings and importance of fiscal sustainability and a look at the EMU experience respectively. Finally, the last section concludes the chapter by reconciling the five sections as well as linking it to the objectives outlined in the previous chapter.

#### 2.2 BENEFITS AND COSTS OF A MONETARY UNION

##### 2.2.1 BENEFITS OF FORMING A MONETARY UNION

Tavlas (2008:12) argues that, in the traditional OCA literature, the main benefits of monetary union derive from the efficiency gains arising from the elimination of the transaction costs of exchanging currencies and elimination of exchange-rate volatility and uncertainty. Uncertainty about future exchange rates introduces uncertainty about future revenues, as well as for the prices of goods and services, for firms. In addition to eliminating exchange transaction costs, a single currency could make an important contribution to cutting the costs and delays associated with cross-border bank payments as well as foster increased price transparency (De Grauwe, 2007:68). The associated welfare gains are likely to increase with the degree of openness of an economy (McKinnon, 1963) whereby the elimination of transaction costs will weigh more heavily in countries where firms and consumers buy and sell a large proportion of goods and services in foreign countries and are thus more subject to decision errors because they face large uncertain foreign markets with different currencies. Thus, small and relatively open economies will experience larger welfare gains from the elimination of these risks compared to say large and relatively closed countries. The pooling of national reserves of foreign currencies will also allow for the internalisation of “foreign” trade thus reducing the demand for foreign currency (Jovanovic, 2005: 105) this would, however, depend heavily on how much the countries actually trade with one another to begin with.

The adoption of a single currency together with a joint system of central banking will accommodate major simplifications of banks' treasury management, accounting processing as well as reporting to monetary authorities. When flanked by internal market measures to eliminate the technical barriers that complicate the processing of international bank transfers, these simplifications could act as catalysts for cheaper cross-border payments. This should in turn promote increased trade and long-term investment among the countries of the union and hence increase income and economic growth within the region. According to De Grauwe (2007: 74), the "new" currency adopted by a monetary union is likely to weigh more in international relations than the sum of the individual currencies *prior* to the union. As such, two key benefits are created for the union as a whole. First, an international currency will mean increased exposure to additional revenue sources through increased global transactions with that unit of currency. Second, an international currency will boost activity for domestic financial markets as increased demand for foreign direct investment in financial markets will follow this "new" currency. To the extent that low and stable inflation rates reduce anticipated inflation, more stable economic growth rates may result. Union members' commitment to meeting and maintaining price stability will ultimately result in an improvement in the credibility of previously inflation-prone countries. The associated short-run costs of disinflation (which is often a cost associated with union formation) will be minimised if there are reliable commitments to stable prices by all union members. As such, there are welfare gains to be accrued from a movement towards a monetary union and the reduction in uncertainty about financial and economic conditions following such membership.

### 2.2.2 THE COSTS OF FORMING A MONETARY UNION

Disparate socio-economic conditions among prospective union member countries can make for a taxing process to forming a monetary union. Whether or not a country will be willing to relinquish its national currency and simultaneously lose its ability to conduct country-specific monetary policy lies at the heart of the debate. There is no denying that because nations are different in some important aspects that the use of exchange rates as a policy instrument is useful and convenient. Exchange rate adjustments (along with other monetary policies) are critical in maintaining internal balance and effectively managing these differences (De Grauwe, 2007:5). When such power is surrendered countries can neither independently change (and thus manage) their currencies, nor change short-term interest rates. Furthermore, preferences about economic and socio-political issues such as inflation and unemployment are questioned in the face of monetary union membership. Differences in labour market institutions, legal systems, growth rates as well as fiscal systems could result in significant adjustment costs for countries considering joining the union.

While the key founders of OCA theory, Mundell (1961) and McKinnon (1963), argue that the loss of exchange rate control entails too high a cost, De Grauwe (2007:58) argues that the “exchange rate” argument is unfounded. The ability of exchange rates to absorb asymmetric shocks is a lot weaker than the traditional OCA theory proposes, and exchange rate adjustments have been observed to have only temporary effects on both output and unemployment. Furthermore, De Grauwe (2007: 58) argues that countries that independently manage their monetary and exchange rate policies may observe fluctuations of their exchange rates more as a source of macroeconomic disturbance as opposed to a tool for macroeconomic stabilisation. This volatility in exchange rates may be a significant source of asymmetric shocks for these countries by hampering their ability control its effect on macroeconomic conditions like inflation and unemployment.

Theoretically, a range of costs and benefits associated with the formation of a monetary union exist; a brief outline of the main economic costs and benefits is provided above. Naturally, the nature of these costs and benefits will depend on the structural characteristics of the economies concerned and would need to be investigated and understood in the context of the regions involved.

## 2.3 MEASURING CONVERGENCE: THEORY OF OPTIMUM CURRENCY AREAS

### 2.3.1 THE GENESIS OF OCA THEORY

With the costs and benefits associated with belonging to a monetary union having been briefly set out, and assuming that the countries concerned decide (in principle) to form a union, the matter of whether or not this is practical needs to be addressed. There are two standards against which this can be measured, namely the *optimum currency area* (OCA) criteria and the *convergence criteria* employed in the European unification.

The theory of optimum currency areas originated in the early debate about the merits of fixed versus floating exchange rates and treated a common currency as the extreme case for a fixed exchange rate regime. At the time, under the Bretton Woods system of fixed exchange rates, the choice of exchange rate was perceived as a theoretical rather than a practical issue and the applicability of OCA analysis was limited by the one-country-one-currency rule. However, most of the participants in that debate made little reference to the differences in characteristics among economies in the real world, leaving the impression that the respective cases made for either floating or fixed exchange rates were equally applicable to all economies (Kawai, 1992).

Although Mundell’s (1961) influential paper is universally recognised as the pioneer of OCA theory, the conceptual foundations of Mundell’s work had long been introduced by earlier writers. During the

late 1940s and 1950s Lerner, Friedman, Meade and Scitovsky had already established the basic principle of OCA analysis (Dellas and Tavlas, 2009: 2). These authors identified the importance of a system of a central monetary and fiscal authority and the free movement of goods and factors of production among regions. Furthermore, they emphasised the importance of economic adjustment in promoting inter-regional adjustment within countries. The classical view was that when countries or regions are subject to asymmetric shocks then the adjustment processes will call for an adjustment of exchange rates (due to countries having different currencies), a reallocation of resources or a combination of both. The abovementioned authors believed that this classical adjustment mechanism could still, even in the absence of exchange-rate adjustments, be effective and thus postulated that a regional single-currency could in fact be optimal.

*Friedman (1952, 1953)*

Friedman's case for floating exchange rates is instituted on three core points, the essence of which can be summed up as follows: a system of flexible exchange rates will allow for an equilibrium system of independent monetary policy, in which market forces adjust automatically to any disturbances and thus bring external balance while avoiding the balance-of-payment crises inherent in fixed-but-adjustable rates. In addition, flexible exchange rates would allow for the removal of controls on the movement of goods and capital among countries in turn promoting multilateral trade (Friedman, 1953: 16).

Cesarano (2006: 713) argues that the aforementioned author's ideas, more specifically Friedman; who believed in the efficiency of the classical adjustment mechanism, generally suggested that a single, global currency would only be optimal from a "global welfare" standpoint. However, Dellas and Tavlas (2009: 7) argue that Cesarano's (2006) interpretation is incorrect and incomplete as it fails to consider a vital point in Friedman's argument. Cesarano (2006) acknowledges Friedman's belief that in an imperfect world, separate currencies and flexible exchange rates among different regions would facilitate adjustment amongst the areas however, ignores the fact that the domain of such an area would fundamentally lie on the mobility of factors of production and goods, and the degree of monetary and fiscal integration which could easily be achieved between regions and need not be on a global scale. As such, a number of authors advocate for the importance of Friedman's role in the establishment of OCA theory suggesting that his conclusions identified the need for the modelling of these criteria (factor mobility) into a macroeconomic model and to use that model to assess the costs and benefits of single-currency areas.

### 2.3.2 THEORETICAL ADVANCEMENTS

#### *Labour and factor mobility*

The key factor that set Mundell (1961) apart from the earlier writers was his belief that the conditions necessary for the success of the classical adjustment mechanism, such as labour mobility, might be inoperative both among countries and regions of the same country. As such conditions would call for an adjustment of national borders to allow for this classical adjustment mechanism to work. Additionally, Mundell (1961) advocated for a single currency to ensure optimality in such an area. He sought to identify the conditions which would diminish the case for flexible exchange rates and to demonstrate that, under certain conditions, separate currencies and exchange-rate adjustments would be ineffective.

In formulating his analysis Mundell (1961) considered two countries, East and West, each having its own currency and central bank that form a currency union by pegging their exchange rates. His analysis was governed by four key assumptions: first, the East produces only one good (cars) and the West another (lumber). Second, the countries are characterised by zero capital movements, initially balanced bilateral trade and full employment. Third, both countries are characterised by price and wage stickiness. Lastly, there is a shift in preferences away from cars to lumber. Following the last assumption an excess demand for the West's product (lumber) and an excess supply of the East's product (cars) will arise, naturally fuelling unemployment in the East and inflationary pressures in the West and a flow of bank reserves from the East to the West to address balance-of-payments deficits in the West (Mundell, 1961: 659).

To address these issues Mundell argued that there are two mechanisms that will automatically bring back equilibrium in both countries namely, labour/factor mobility and wage flexibility. Labour mobility was fundamental to his analysis as he believed it to be the core feature of an optimum currency area since it would reduce the need for nominal exchange-rate adjustment as a means of correcting the external imbalance. Ingram (1962) elaborated on the usefulness of capital mobility as a substitute for exchange-rate changes in the short run, the idea being that, where such mobility exists, adjustments to shocks can be spread out over a longer period of time than otherwise. With flexible exchange rates, an increased demand in the West would raise the wage rate in that country, leading to a decline in the aggregate supply of goods and services and a rise in the price level. The decline in demand in the East would decrease wages in that country, leading to an increase in the aggregate supply of goods and services and a decline in the price level in that country. Economic agents in both countries would purchase fewer Western and more Eastern goods, restoring equilibrium. However, in the absence of labour mobility and/or wage flexibility Mundell argued that the incidence of

asymmetric shocks should be a criterion for assessing optimality and that countries susceptible to asymmetric shocks should ideally float their currencies.

Lastly, Mundell recognised certain macroeconomic variables that could support relatively-large currency areas noting that as the number of currencies grew, the efficiency of money as a medium of account and store of value would be depleted as it would mean higher transactions and information costs (Dellas and Tavlas, 2009: 14). Furthermore, too many small currency areas could compromise the efficiency of foreign exchange markets as it promote increased speculator behaviour and thus make the implementation of monetary policy increasingly difficult. Thus, world currencies should be divided into regions within which factors of production are mobile but between which factors of production are immobile with the entire zone of labour mobility delineating the correct domain for a monetary union.

#### *Degree of openness*

McKinnon (1963) elaborated on the notion that openness (beyond labour mobility between regions) should be a criterion for defining optimality. And his assessment was founded on the assumption that the output of an economy is divided into tradables and non-tradables and entailed an examination of the effects of a shock that alters the relative price of these goods on the economy's overall price level. McKinnon argued that when the exchange rate of a relatively small open economy changes in response to such a price shock, the economy's general price index would tend to fluctuate more than the general price index of a relatively large closed economy. The reason for this is that exchange-rate variations in a relatively-open economy would likely cause proportionate or near-proportionate variations in costs, reducing the corrective functions of the flexible exchange rate.

Essentially McKinnon's thoughts were an advancement of Mundell's belief in the need for labour mobility for an optimum currency area to exist; labour can only be mobile between regions if there is a certain degree of openness. As such, McKinnon came to the following conclusions: firstly, economies that are relatively open should peg their currencies. Secondly, open economies that trade extensively with one another would benefit from a currency area because this would form a relatively closed economic unit, thereby providing a greater buffer against the effects of exchange-rate shocks and lastly, large geographic areas are likely to be relatively closed and the size of these areas could be a determinant for an optimal exchange rate regime.

### *Fiscal integration*

Kenen's analysis focused on the effects of sector or industry-specific shocks on particular export products and developed the idea set forth by earlier writers such as Friedman, that fiscal integration should be a criterion to judge optimality for participation in a monetary union. He advocated for high levels of fiscal integration between regions on the grounds that it would facilitate the smoothing out of asymmetric shocks through fiscal transfers from a high employment region to a low employment region. Following from Mundell's argument that countries susceptible to asymmetric shocks should float their currencies, Kenen believed that if the labour mobility condition is met then two countries that are characterised by narrow but similar production structures would together be suitable candidates for a monetary union. These countries' structural similarities would expose them equally to any type of sector specific shock.

Most prominently, Kenen (1969) introduced the idea of product diversification as a key tool in identifying both the desirability and feasibility of a permanently fixed exchange rate between regions. He argued that highly diversified economies make better candidates for currency areas since diversification provides some insulation from the effects of asymmetric shocks and would no longer necessitate changes in the exchange rate to counter unemployment. Similarly, Kenen noted that there may also be a case for sectoral diversification as this would provide for the smooth relocation of labour between regions in response to any industry specific shocks.

In his paper, Bofinger (1994) considers a country with multiple goods where each good constitutes only a small portion of its total output. He argues that in this case, a negative shock to this particular good would have to be overcome by decreasing prices. If the exchange rate were to be used to enforce stability, the entire price level would shift, creating large negative externalities. As such, unlike Kenen, he concluded that Mundell's rationale does not apply to countries that are highly diversified.

### *Other founding contributions*

Several of the OCA criteria still needed to be explicitly spelt out and analysed in some detail. Following the ground work of Friedman, Mundell, McKinnon and Kenen it was observed that several of the properties were difficult to measure unambiguously and evaluate against each other and lacked a unifying framework (Robson, 1987). This fuelled further interest in the development of the existing criteria and making them more applicable to deciding which exchange rate regime to adopt. The importance of a 'political-will to integrate' was identified by numerous authors to be the number one prerequisite for forming a monetary union (Haberler, 1970; Tower and Willet, 1976). These authors believed that political-will promotes commitment to the processes involved in achieving the desired

state of economic and fiscal integration. Governed by a joint commitment, co-operation on the economic policy instituted as well as encouraging increased institutional linkages; countries would find it easier and desirable to meet the requirements for increased levels of integration. Furthermore, these authors argued that similarity of policy attitudes among partner countries coupled with a reasonable degree of compatibility in preferences toward growth, inflation and unemployment are vital in turning a group of countries into a prosperous currency area.

Ishiyama (1975) recognises the limitations of defining OCAs based on a single property and postulates that each country should evaluate the costs and benefits of participating in a currency union from the point of view of its own self-interest and welfare. Furthermore, he argues that differences in inflation rates and wage increases resulting from different social preferences, and conflicting national demand management policies are of greater importance to several other OCA properties. Tower and Willet (1976) show that joining a currency union may enhance the usefulness of money the more open an economy is, but may also constrain the use of discretionary macroeconomic policies to achieve internal balance due to the external constraint for the area as a whole. In addition, the total cost of adjustment will depend heavily upon the sources, type and strength of external disturbances.

### 2.3.3 OCA THEORY TODAY: CHALLENGES AND APPLICABILITY

Due to the characteristics of the world in which the theory of optimum currency area theory was originally analysed (Bretton Woods Systems of fixed-but-adjustable exchange rates and restricted capital mobility) the formalisation of criteria believed to govern the efficient adoption of fixed exchange rates often overlooked a number of factors. For example when observing a small and open country, McKinnon's argument would call for pegged exchange rates. However, if such a country possesses a low degree of labour mobility with neighbouring areas then according to Mundell, the country should in fact adopt a flexible exchange rate. McKinnon's openness argument suggests that small economies should fix their exchange rates since they are likely to be relatively open. However, small economies tend to be less diversified (McKinnon, 1969: 112) and in accordance with Kenen's diversification criteria are more suited for flexible exchange rates. In addition, the openness criteria is inconsistent in its implications. Kenen (1969) states that undiversified countries should float their currencies but if these same countries decide to form a monetary union they will end up being more diversified than they were before. This would be contrary to the inference drawn from the diversification principle which suggests that such countries should float their exchange rates.

Mundell (1969: 111) suggest that Kenen's diversification argument is unfounded. He argues that diversified economies could be suited for flexible exchange rates as they have increased capacity to

deal with any shocks to their exchange rates whereas undiversified economies cannot. Furthermore, globalisation and changes in the openness of economies could push economies to specialise in specific sectors or industries and this would transform previously sector-specific shocks to country-specific shocks. In such an instance the openness criterion suggested McKinnon (1963) would not call for pegged rates but rather flexible rates to accommodate any shocks to the economy.

In a detailed analysis of the theory of optimum currency areas Dellas and Tavlas (2009: 21-26) consider five additional issues that they believe complicate a country's choice of exchange rate regime. First, is the issue of the nature of the asymmetric shock to productivity discussed by Mundell (1961). In his paper Mundell merely discusses what effects a positive shock would have on demand, supply, level of employment and exchange rate adjustments in the two regions but does not acknowledge the causes and nature of these shocks.

The conclusion that emerged from the post-1960s literature is that the shock-absorbing capacity of exchange rate regimes is a lot more complicated than had been assumed by earlier writers (Frankel and Rose, 1998). The costs of adopting a fixed exchange rate regime and abandoning policy autonomy were founded on both the nature (temporary or permanent) and degree of the shocks, the greater the number and impact of the shocks, the greater the benefits from adopting flexible rates. Second, the introduction of capital flows into OCA analysis alters the results of Mundell's initial framework which postulates that a positive shock to productivity will result in a current account deficit with the rest of the world, assuming the shock causes capital outflows to acquire the capacity to meet the increased need to produce more. This will force the need for exchange rate adjustments. However, Dellas and Tavlas (2009: 23) argue that if this shock to productivity acts as a catalyst for economic growth and that this growth is accompanied by capital inflows, will make it possible (contrary to Mundell's hypothesis) to finance the deficit without the need of devaluing the currency.

Third, De Grauwe (2007: 205) highlights the myopic nature of the fiscal transfer argument presented by the founding authors of OCA criteria. According to De Grauwe (2007) the use of fiscal policy can lead to problems relating to debt sustainability and can have the adverse effects of locking resources in place, preventing necessary adjustments. And if one or more members of a monetary union are characterised by large fiscal deficits and high debt-to-GDP ratios they could create a situation where negative spillover effects are imposed on other member countries, driving up the union interest rate and increasing the burden of financing government debts in the other member countries. As a result, the union may be forced to impose control mechanisms such as fiscal rules (such as those used in the Euro area) to restrict the magnitude of budget deficits and state debt in the union (De Grauwe, 2007: 208).

The fourth issue that the traditional literature on OCA failed to consider is the appropriateness of a monetary union for countries at different stages of economic development. Dellas and Tavlas (2009: 24) argue that the degree of real convergence should be a key characteristic underpinning the choice of exchange-rate regime. While the traditional OCA criteria focused on nominal variables reflecting macroeconomic stability, real convergence would require greater similarity or equality of real variables of national economies. Lastly, the core OCA paradigm was a partial-equilibrium and static model comprising only two countries and lacking an explicit welfare function through which the various criteria can be analysed (Dellas and Tevlas, 2009: 25). This model set-up led to a situation where numerous, and at times conflicting, welfare objectives were being assessed leading to a situation in which it was difficult to learn about the relative importance of the criteria or to assess whether participation in a monetary union could alter an economy's structure (McKinnon, 1963: 717). The earlier OCA paradigm failed to provide an approach to resolving conflicts among the criteria.

It was only at the beginning of the late 1980s and early 1990s that the theory of OCA re-emerged as an active field of academic and policy interest. The initial stages of the European Monetary Union formulation early success was perceived to be extremely beneficial for its members and fuelled further interest in monetary unions in regions outside Europe. Furthermore, developments in academic thinking played an important role in reviving interest in OCA theory, these are discussed briefly below.

#### 2.3.4 ENDOGENEITY OF OCA CRITERIA

Frankel and Rose (1998, 2002) initiated the discussion on the endogeneity of OCA criteria. Compared to the static and *ex ante* nature of the earlier model, which sought to identify characteristics that an economy should satisfy before it was considered eligible to join a monetary union, Frankel and Rose (1998, 2002) focused on changes in economic structure and performance that may result from participating in a monetary union *ex post*. The core propositions of endogenous OCA literature are as follows: Free trade is severely hampered by the existence of borders, which are broadly defined to include separate monies. When two or more countries decide to form or join a monetary union, this barrier to trade will be removed fostering increased trade between the members (McCallum, 1995, Engel and Rogers 2004). The introduction of the single currency will eliminate exchange-rate risk and the cost of hedging, reduce information costs, and raise price transparency all of which will reduce market segmentation and encourage competition.

De Grauwe and Mongelli (2005) argue that a common currency promotes what could be attained through pegged rates among separate currencies, common trade, financial and economic integration as well as the accumulation of knowledge. Furthermore, trade integration will result in more-highly-

correlated business cycles because of common demand shocks and greater intra-industry trade, lessening the need of country-specific monetary policies and reducing the cost of giving up a nationally tailored monetary policy.

Thus, in contrast to the earlier literature, which emphasised the number and severity of asymmetric shocks among countries as a criterion for choosing union membership (*ex ante*), endogenous OCA literature concludes that participation itself will result in a reduction in the incidence of asymmetric shocks among participants. From this perspective it is less important that some of the convergence and optimal currency area criteria are met *prior* to a monetary union being established, and membership will induce convergence, institutional and structural changes that will assist members of the union to find new methods of adjusting to economic shocks. Endogenous OCA theory identifies two main channels of transmission through which a monetary union may affect the economic performance of a country, these being trade integration and enhanced credibility (Tavlas, 2008: 27).

#### *Trade integration*

Trade integration is believed to stimulate growth through two processes firstly, by promoting allocative efficiency and secondly, by accelerating the transfer of knowledge. As mentioned above, endogenous OCA theory postulates that a common currency can be effective in promoting trade and growth thus making a set of national currencies a significant barrier to trade. In accordance with this view, the removal of costs associated with currency conversion together with a single currency and a common monetary policy, prevent future competitive devaluations, increase price transparency, facilitate foreign direct and portfolio investment and the establishment of long-term relations. This may, over time, encourage forms of political integration within the union (Mongelli, 2002). Consequently, these outcomes would promote mutual trade, economic and financial integration, as well as the accumulation of knowledge further promoting conditions for increased productivity of factors and, thus, a rise in potential output (Rose and Van Wincoop, 2001; Mongelli, 2002; De Grauwe, 2002). Lastly, increased trade integration is thought to result in more highly correlated business cycles because of symmetric demand shocks and increased intra-industry trade, reducing the need for country-specific monetary policies (Frankel and Rose, 1998).

#### *Issues of credibility and monetary policy*

While earlier OCA literature dealt mainly with the country characteristics of the potential members of a monetary union, recent discussions focus on the credibility of monetary policy and alternative commitment mechanisms for policy makers (De Grauwe, 1996, Dellas and Tavlas, 2009). Whereas earlier literature emphasised the ability of monetary authorities to attain a desired point along a stable

long-run Phillips curve. Recent literature views the prevention of high inflation as the main macroeconomic objective of a central bank, followed by the management of business-cycle fluctuations. More specifically this new view analyses how countries can gain (or lose) credibility by joining a monetary union, and how this may affect their welfare and is governed by the Barro-Gordon model. The core insight of this model is as follows, when two countries with different reputations concerning inflation decide to form a monetary union the high inflation rate country is likely to profit from the reputation of the low inflation country and the low inflation country will be adversely affected by the bad reputation of the high inflation country, which will experience a welfare loss (De Grauwe, 1996). Monetary unions and hard pegs are said to provide commitment to low inflation, changing agents' inflation expectations so that the output and employment costs of attaining low inflation equilibrium are reduced.

Another key feature of these new developments is the view on the effects of a monetary union on the ability for each member country to use a nationally-tailored monetary policy. Where traditional authors saw this loss of autonomy as a cost, Dellas and Tavlas (2009) infer that countries with a history of high inflation that join a monetary union can in fact provide credibility. This, in turn reduces interest rates and unemployment costs of moving from the high-inflation to the low-inflation equilibrium.

## 2.4 MACROECONOMIC CONVERGENCE

### 2.4.1 WHY CONVERGENCE CRITERIA?

A remarkable feature of OCA theory is its silence on the need for the attainment of *prior* convergence of macroeconomic variables such as inflation, interest rates and budgetary policies. According to traditional OCA theory, these convergence criteria are unnecessary because countries with say different inflation rates *prior* to the union may be characterised by similarities in other key economic variables. As such OCA theory focused on microeconomic variables like labour and factor mobility. In fact, the transition to a monetary union has traditionally not called for the need for member countries to first slowly meet specific convergence criteria before forming a union. The Maastricht Treaty employed by the European Union is the first transition strategy that emphasised the need for macroeconomic convergence criteria. For example, a key characteristic of the German monetary union which happened on 1 July 1990 was its speed and absence of any convergence requirements. Germany's decision to implement the monetary union was made at the end of 1989, and a mere six months later the union was a reality. Unlike the Maastricht-type convergence which encompasses a long-term effort to finalising union formation the German case proves that monetary union can be established quickly without *prior* conditions having to be met.

The question of why OCA theory essentially focused on microeconomic conditions, and the Treaty on macroeconomic convergence, can be addressed at two levels. Firstly, a number of countries wanting to join the European Union failed to meet all the OCA criteria presenting the need for alternate approaches towards increased integration. Secondly, there existed the fear that a future monetary union would have an inflationary bias. De Grauwe (2003: 132) argues that when candidate member countries are asked to prove their commitment to low inflation levels (by permitting the disinflationary process to fuel a temporary increase in unemployment) may act in the best interest of the union and commit themselves to conforming to the required levels. However, the danger lies in the fact, as pointed out by De Grauwe (1996:1094), that they may also act opportunistically to ensure entry but may later falter and fail to re-commit themselves to conforming to the required levels. This type of 'cheating' may be an integral part of the problems faced in forming a monetary union. Differences in inflation rates between countries may be a reflection of differences in the institutional features in monetary policy decision making and in forming a monetary union these institutional differences will disappear, making the *prior* differences in inflation irrelevant. Similarly, *prior* convergence of inflation rates is insufficient to form a monetary union as the two countries may have the same rates of inflation and yet be structurally so different that a monetary union between them would be suboptimal (De Grauwe, 1996: 1093).

Similar arguments have been developed for the other convergence criteria (interest rates and budgetary requirements). In the case of budgetary convergence requirements the OCA theory advises that if the monetary union fails to simultaneously involve some degree of centralisation of national budgets the imposition of budgetary convergence requirements is going to make matters worse for the management of the union. When asymmetric shocks occur, the requirements to keep budgetary policies in line with other members, will rob countries of the last instrument to absorb these shocks. As a result, the pressure on union's central bank to change its monetary policy stance will be more pronounced. The argument for debt and deficit reduction *prior* to entry into a union is made not because countries with high debt and deficits cannot form a monetary union, but because allowing these countries into the union increases the risk of more inflation in the future union. Another more positive argument for deficit and debt reductions as a condition for entry into the union is that the authorities with a large debt will face a higher default risk and if allowed into the union, will increase the pressure for a bailout in the event of a default crisis (De Grauwe, 2003: 134). In essence, traditional OCA theory views convergence criteria as inadequate and ultimately unnecessary.

Nonetheless, there are strong arguments to impose budgetary convergence *prior* to entry in the union (see De Grawue, 1996: 1096). These conditions however, also carry great risks in the form of an increased debt burden for the high inflation country. De Gauwe (1996: 1097) explains this as follows,

*ex ante* the high inflation, high government debt country will be required to reduce its inflation and debt in line with the low inflation, low debt country. Due to the nature this disinflationary process, issues of credibility may arise and a disinflationary strategy that is not credible will result in a joint reduction in inflation and an increase in the real interest rate i.e. there will not be a decline in expected inflation and the debt burden will be pushed up. Thus the inflation convergence requirement makes debt reduction more difficult making a credible anti-inflation policy difficult to follow and will create doubts about the possibility of meeting the targets, inducing speculative crises and raising the country's interest rate.

It should follow that with convergence criteria being met, member countries should be able to contribute favourably to the functioning of the union as a whole. In addition, increased economic integration will increase competition in global trade and improve access to foreign technology, investment and ideas. This will in turn promote intra-regional trade openness further fuelling the potential for increased economic growth (United Nations Economic Commission for Africa, 2010: 7). One of the most difficult issues to deal with in a monetary union is, however, the possible role of a stabilisation or compensation mechanism to transfer resources from fast-growing to slow-growing regions. Such a mechanism can play a vital role in enabling countries or regions to respond to shocks when their use of nationally tailored policy instruments is constrained. Without such a mechanism, differing economic conditions will last longer and be more difficult to eliminate through convergence. The theory of OCA argues that significant parts of national fiscal budgets should be centralised at union level in order to provide an automatic stabilisation mechanism through fiscal transfers (Kenen, 1969). The political feasibility of liberalising restrictions on factor mobility is a topic omitted completely from OCA theory considerations but yet has a very important role in ensuring any success for any union. Jefferis (2007: 89) states that political feasibility can only be ensured or enhanced if member countries are at similar development and income levels. Similar levels of per capita income are also important in that countries would tend to have similar levels of institutional development as a result and more generally a convergence of interests, which could otherwise be a reason for friction between potential members.

Monetary integration or monetary union can in itself imply significant economic shock (Jefferis, 2007) and if this is intended, as was the case when Argentina decided to adopt a currency board and peg it to the US dollar so as to rein in hyper-inflation and to allow the implementation of strict rules on monetary expansion. However, outside such a case, joining a monetary union will be easier when driven by a smooth transition and this will often make for a credible and sustainable union. Hence, gradual movement towards macroeconomic convergence is generally accepted as part of the transition

to monetary union. It is the issue of deciding how much convergence *prior* to the union taking place, and how much can follow afterwards that should be at the centre of this convergence debate.

#### 2.4.2 BRIDGING THE GAP: OCA THEORY AND CONVERGENCE CRITERIA

The preceding sections have focused on outlining the nature and arguments for and against OCA theory and Maastricht-type convergence criteria. There is a great divide in academic writing about which approach is most suited when forming a monetary union, with some advocating for OCA theory on the grounds of its emphasis on real economic variables to facilitate integration. While others vouch that it is the Maastricht-type convergence criteria's nominal macroeconomic concerns that are most practical and applicable. It is necessary to distinguish between the two set of criteria as they tell us different conditions about a country's economy. In doing so it is important to note one key difference between the two, unlike OCA criteria, Maastricht criteria have reference values (i.e. set targets presented in percentage form) which makes detailed comparisons of the two rather difficult (Jygert, 2008: 33).

The Maastricht criteria display the extent of economic stability (nominal convergence) whereas the OCA criteria reveal the extent of the economy to act in a currency area (real convergence) and places less emphasis on economic stability (Lein-Rupprecht *et al.*, 2007: 9). Real convergence is described as a planned approach towards the economic level of another more developed country or a faction of countries (within an integration group). It is usually measured by GDP per capita in the purchasing power parity, excluding the impact of different price levels and reveals the volume of goods and services produced by the relevant economy.

Conversely, the theoretical foundation of real/absolute convergence lies in the neoclassical growth theory, which assumes convergence towards a steady state, is influenced by an array of country specific characteristics and parameters such as population growth, savings rates as well as the degree of depreciation of the capital assets used. Nonetheless, this theoretical paradigm lacked sufficient explanation of the reality of alternate results when less developed countries attempt to catch up with more developed countries (Lein-Rupprecht *et al.*, 2007: 10). The process of real convergence (OCA criteria) has diverse consequences for catching-up countries and has been observed to be a driver of nominal convergence (convergence criteria) making the two more closely linked than has previously been argued.

The process of real convergence and asymmetric shocks associated with this process may entail higher return on capital for some time for counties moving towards meeting convergence criteria as well as a substantial appreciation of the real exchange rate. Within a monetary union, such an appreciation may take place through higher inflation rates which may fuel an inflationary spiral that entails the overshooting of inflation. In this context, the continued process of real convergence (through increased factor mobility and openness) will be inconsistent with nominal convergence (higher inflation rates and hence higher real interest rates). The emphasis on flexibility governing the OCA criteria could be the key to solving this dilemma. The process of real convergence requires significant shifts in the real exchange rate and since in a monetary union the nominal exchange rate cannot be used as an adjustment tool, it is vital that prices can move speedily in the required direction. A key factor is thus wage formation whereby, real wages will need to adjust swiftly (and in the opposite direction) to changes in the real exchange rate in order to safeguard the counties competitive position. The OCA requirement for increased financial integration coupled with globalisation will lead to demand shocks in different sectors of the economy, this will call for factor mobility and flexibility to allow the needed factor shift from one sector to another (Smaghi, 2008: 186).

The empirics seem to show that whether hypotheses of the earlier growth models are valid or not, growth paths are significantly driven by state interventions (Kumo, 2010: 8). This includes, among others, the creation of a macroeconomic climate that will foster deeper regional economic integration as well as facilitate the implementation of policies that are in harmony with the overall objectives of macroeconomic convergence. Zyuulu (2010) argues that economic benefits may accrue to countries that coordinate tariff, fiscal and monetary policies and liberalize labour and capital movements instead of attempting to secure short term advantages by setting own optimal policy targets. Viner (1950) emphasized the role played by trade creation and trade diversion in promoting economic integration while Balassa (1961), reiterated that regional markets, with their free movement of economic factors across national borders, naturally generate demand for further economic integration, and economic unions ultimately lead to political unions.

Thus, in contrast to the earlier literature, which emphasised the number and severity of asymmetric shocks among countries as a criterion for choosing union membership (*ex ante*), endogenous OCA literature concludes that participation itself will result in a reduction in the incidence of asymmetric shocks among participants. From this perspective it is less important that the convergence and OCA criteria are met prior to a monetary union being established, and membership will induce convergence, institutional and structural changes that will assist members of the union to find new methods of adjusting to economic shocks. However, what was often overlooked was that the endogenous responses needed to be strong enough to considerably promote the internal adjustment process.

Wihlborg *et al.*, (2010: 54) argue that while there is evidence of some success on proving the endogenous nature of OCA criteria, most of the improvements occurred before the EMU was launched as countries moved towards meeting the requirements and continued only a short period following its formation. Once the euro was in full force, there was an immense slowdown in the pressure for further reform in a number of countries resulting in a situation where stronger responses to the competitive discipline of the common currency was greater in surplus countries (like Germany) than in deficit countries (like Greece).

This introduced yet another complication in both setting up the steps towards monetary union as well as ensuring that the conditions agreed upon will continue to promote an environment that supports a reduction in internal imbalances. The EMU experience suggests that although some endogeneity of criteria exists, it can be very short lived and thus inadequate in affirming the insignificance of OCA and convergence criteria prior to monetary union formation. As such it seems both OCA and Maastricht-type convergence will continue to play a significant role in future monetary union formation efforts.

In essence, although OCA and convergence criteria differ in numerous aspects, they are both centred on issues of monetary, economic and financial integration and they both influence or are influenced by the success of the other. The two concepts are more closely linked than the existing literature seems to suggest as they work in unison in promoting an economic and social environment that fosters conditions for monetary union formation. Possibly most important in this analysis is that macroeconomic policy co-ordination should be conditional upon the level of actual structural convergence in the economy. More specifically, the level of convergence of per capita income and economic growth across economies should be emphasised as this will result in a balanced regional community that will be empowered to focus on achieving the other convergence goals without too much political tension.

## **2.5 FISCAL SUSTAINABILITY: INTERTEMPORAL BUDGET CONSTRAINT**

In the years prior to the 2008 financial crisis, growing attention had already been paid to fiscal sustainability in Europe. The importance of fiscal integration, as mentioned above, was identified as a key precondition for union membership by Kenen (1969) and is closely linked to the notion of fiscal sustainability. A number of empirical studies have examined the sustainability of the budget deficit and public debt while others have investigated the effect fiscal rules have had in improving the fiscal position of the governments in the EU member countries<sup>5</sup>. One area of the literature suggests that,

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<sup>5</sup> See for example, Caporale (1995), Vanhorebeek *et al.*, (1995), Papadopoulos *et al.*, (1999), Bravo and Silvestre (2002), Alfonso (2005), Prohl and Schneider (2006) and Westerlund and Prohl (2007)

because of borrowing constraints, government faces the problem of balancing its budget intertemporally, requiring that the discounted value of public debt revert to zero in the long run. This often forms the premise of the sustainability hypothesis in the literature with the intuition being that if the public debt goes to zero, then the intertemporal budget constraint of the government ensures that the current market value of public debt is equal to the discount sum of all future budget surpluses (Westerlund *et al.*, 2007:2).

Earlier studies on the EU that attempted to test this hypothesis did this by analysing the time series behaviour of the member states' public deficit and debt, which should be stationary for the sustainability hypothesis to hold. The results obtained by using this approach were both inconsistent and unsupportive of the sustainability hypothesis<sup>6</sup>. The disappointing results from the earlier stationarity-focused studies prompted researchers to find alternative means to evaluating sustainability. A more flexible econometric approach based on co-integration soon became popular. This framework postulated that fiscal policy will be strongly sustainable if government revenues and expenditures are co-integrated with a unit slope coefficient on expenditures, and it will be weakly sustainable if the slope is less than unity (Quintos, 1995). Although the new approach was an advancement, it produced equally disappointing results. To avoid the problems of the earlier studies, the panel co-integration framework was employed and allowed researchers to consider any information contained in the cross-sectional dimensions of the data. This approach has produced more consistent and reliable results (see Prohl *et al.*, (2006) and Westerlund *et al.*, (2007))<sup>7</sup>.

## 2.6 THE EMU EXPERIENCE: MONETARY UNION FORMATION AND ECONOMIC INTEGRATION

### 2.6.1 EMU FORMATION

The EMU is undoubtedly the most prominent example of a currency union and the empirical evidence presented in this chapter was solely made up of the experiences of the EMU, reason being that much of the literature on monetary union comprises studies on the EMU and not much else. In addition, the model adopted by SADC in moving towards monetary union is based on that employed by the EMU. Other examples of currency unions include the East Caribbean Dollar comprising a number of small Caribbean states and the CFA Franc comprising a number of West and Central African countries. Unfortunately, very little research has been done to analyze actual monetary unions until around the early 2000s. This is probably because the unions that preceded the EMU consisted

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<sup>6</sup> Refer to Vanhorbeek *et al.*, (1995)

<sup>7</sup> This approach will be explained in more detail in Chapter 4: Method and Analytical Framework

mostly of small and often underdeveloped economies, making data availability and thus analysis a challenging endeavour. This gap in the literature allowed researchers to focus their attention on the costs and benefits of currency union leading to the consequent rebirth of the theory of OCA. This theory formed the foundation of most of the steps taken in evaluating the feasibility and planning the final steps in EMU formation.

According to Rosenthal (1975) and Tsoukalis (1977), the initiative to create an EMU dates back to the 1960s and 1970s. The “Werner Report” (1970) formed the basis of the then six European member states committed to creating EMU. When the plan failed due to a combination of internal and external circumstances, a revised plan to implement EMU in three key stages was reintroduced (Verdun, 2000). The first stage was initiated on 1 July 1990 and was characterised by the abolition of all internal barriers to the free movement of goods, services, persons as well as capital within EU member states. On 1 January 1994 stage two began with the establishment of the European Monetary Institute (EMI), which would later become the European Central Bank (ECB). This stage focused on the technical preparations for creating a single currency, the enforcement of fiscal discipline and enhancement of economic and monetary policy convergence. The ECB was established in 1998 and given six months to implement the preparatory work of the EMI. The third stage commenced on 1 January 1999 and involved the fixing of the conversion rates of the currencies of the 11 member states (Belgium, Germany, Ireland, Spain, France, Italy, Luxembourg, Netherlands, Austria, Portugal and Finland) initially participating. Greece later joined the euro area on 1 January 2001 (European Central Bank, 2011). The first changeover to the euro was completed in 2002 with the introduction of euro banknotes and coins. Slovenia became the thirteenth member of in early 2007 with Cyprus and Malta joining in early 2008, Slovakia in early 2009 and Estonia in early 2011 (European Central Bank, 2011). The “Delors Report” (1989) described what EMU would entail and this was incorporated into the Maastricht Treaty.

EMU was created to build on a number of pre-existing developments in European integration including, the European Monetary System (EMS) which contained an exchange rate mechanism aimed at maintaining fixed but adjustable exchange rates, as well as efforts towards capital liberalisation, political restructuring, integration of policy making and market integration (Verdun, 2010: 145). The fundamental idea is that the absence of a political union is an important flaw in its governance. Dating back to the 2001 economic slowdown where the lack of political union had the unfortunate effect of putting all the burden of macroeconomic management in the eurozone on the shoulders of the ECB, which was and possibly still is neither ready nor willing to carry such a burden (De Grauwe,

2006: 728). This is in contrast with the case in the US where both the central bank and the federal government have used their respective instruments to stabilize the business cycle.

## 2.6.2 LESSONS FROM THE EMU

There are a number of important lessons to be learnt from the steps employed in forming monetary unions like the EMU. Although there is a consensus amongst the signatories of the SADC Treaty that underdevelopment and backwardness in Southern Africa will best be overcome through economic cooperation and integration, recent issues of debt management in the eurozone highlight some important issues.

Verdun (2010) reviews a selection of five prominent political and five prominent economic claims that were publicised in the 1990s about the potential faults in the structure of the EMU. Based on Verdun's (2010) assessment of the first ten years of the EMU, almost none of the claims turned out to be a problem. However, since the onset of the recent financial crisis and EMU debt crises, a number of these faults have begun to crack. In fact, six of the ten claims are believed to have played some role in triggering and fuelling the EMU debt situation. The ten issues can be summarised as follows: to begin, the EMU (1) was formed and will only endure if it remains in the interest of large member states; (2) needs an economic government (or political union) or it will be prone to instability; (3) is illegitimate and requires more democracy, accountability and transparency; (4) needs a common identity to be stable; (5) will lead to welfare state retrenchment and also to (6) war; (7) participating countries need to form an OCA in order for EMU to work; (8) ECB will be too weak; (9) Growth and Stability Pact will stifle growth and finally (10) currency will be too weak/strong (depending on views).

The debt crisis that became public in the spring of 2010 in Greece culminated into a crisis of the eurozone as a whole by the end of that year. Since then, vast commentaries on the causes and drivers of the crisis have been presented; most of which give rise to four key explanatory themes. These can be summarised as follows, firstly the EMU has experienced a shift in the decision making power from the European Union's federal institutions back to national governments. This move has been fuelled by the growing disinterest by powerful members in the political arena and poor fiscal foundations governing EMU formation (Barysch, 2010: 1). According to Barysch (2010:4); Kupchan (2010:1) and Sarotte (2010: 3) underlying this shift are several historical and structural issues including the nature of Germany's current leaders who no longer live the memories of the challenges that engulfed the euro area post-WWII and who no longer feel obliged to pay for the social injustices their past.

Secondly, and most relevant to this research are issues related to eurozone's faulty design, its authorities, its inability to develop adequate internal adjustment mechanisms as well as its incomplete monetary and fiscal policy framework (De Grauwe, 2010: 2, Wihlborg *et al.*, 2010: 54; Maurer, 2010: 3 and Gianviti *et al.*, 2010: 1). Hesitation on the part of and ambiguities (mentioned above) created by the eurozone governments and the European Central Bank allowed the crisis to unfold and was further aggravated by disagreements concerning how to best respond to the Greek crisis. This was further exacerbated by Maastricht's faulty design, which following its final ratification in 1992, contained insufficient crisis contingencies allowing monetary union formation to continue without real political and fiscal coordination governed by excessive faith in the power of financial markets. Thus, resulting in an environment in which the implementation of the treaty relied on the hope that its terms would become self-fulfilling, averting the need for *real* enforcement.

The third issue pertains specifically to Greece and the mismanagement and deception by its authorities about the sizes of its fiscal and current account deficits coupled with an overall lack of fiscal discipline in the EMU (Wihlborg *et al.*, 2010: 52) (De Grauwe, 2010: 1) (Maurer, 2010: 3). It is this deception that fuelled the substantial revision of these statistics and projections triggering an immediate sense of panic within the eurozone.

Lastly, the destabilising role of financial markets together with their inability to perform as efficiently as the models of efficient and altruistic markets predicted (rational expectations and efficient market models) and the central role of rating agencies in amplifying the destabilising movements in financial markets. According to Wihlborg *et al.*, (2010: 55) the biggest failure of financial markets was to not register early warning signs of the underlying deterioration of a number of the euro countries' financial positions. Coupled by added pressure by rating agencies for government to reduce their own and private sector debt levels lead to a self-defeating dynamic in which neither the private nor public sector could effectively reduce their debt.

According to De Grauwe (2007: 23), it was observed that once the euro was in operation, many countries failed to sustain efforts towards reform and there was a tendency for the stronger responses to the competitive discipline of the common currency in surplus countries like Germany than in deficit countries like Greece, thus adding to the already existing internal imbalances (Wihlborg *et al.*, 2010: 54). Furthermore, the Growth and Stability Pact failed to limit severe fiscal imbalances with the EMU and it became increasingly clearer that a union without political union, or at least a fiscal union, is bound to fail leaving the eurozone in a rather difficult predicament.

It is evident that the recent challenges faced by the EMU go beyond Greece's lack of fiscal discipline and lie at the core of the union's foundations. Two main issues related to the feasibility of a SADC monetary union immediately come to the fore: First is the question of whether SADC can learn from the mistakes of the EMU in its efforts toward forming its monetary union. Secondly, Southern Africa already seems to be going through a situation much like the PIIGS (Portugal, Italy, Ireland, Greece, Spain) crisis in Europe. The recent fiscal crises in Lesotho and Swaziland stem from large reductions in the Southern African Customs Union (SACU) transfers due to the negative trade effects of the financial crisis, and have proven just how challenging it is to manage even the smallest of monetary union-type communities. SACU made up of Lesotho, Namibia, Botswana, South Africa and Swaziland, is but a small step towards increasing regional integration within SADC; the fact that debt crises are already evident in this region (before monetary union implementation) is worrying. Unlike the EMU, which has a number of core economies, Southern Africa has only one (South Africa); this *may* make political decisions easier here than in the EU. The complex nature of political decisions such as these cannot, however, be stressed enough and whether countries on the outside will support aggressive fiscal policies to manage such debt will depend on a number of regional and international factors. What is even more relevant about sovereign debt and default in this context, is that it more significant an issue in a regime of monetary union than in one where member states have full control over monetary policy tools.

### 2.6.3 A CALL FOR A CENTRALISED FISCAL AUTHORITY AND POLITICAL UNION

The challenges currently facing the EMU have led economists to think differently about the general governance of a monetary union. The fundamental idea is that the absence of a political union is an important flaw in its governance. Dating back to 2010 where the lack of political union had the unfortunate effect of putting the entire burden of macroeconomic management in the eurozone on the shoulders of the ECB, which was not, and is possibly still not, ready or willing to carry such a burden (De Grauwe, 2006:728). This is in contrast with the case in the US where both the central bank and the federal government have used their respective instruments to stabilize the business cycle. While the EMU has undeniably defied a number of sceptics' predictions about its potential to succeed, it remains a fragile body due to flaws in its governance and the absence of a sufficient degree of political union. A politically and fiscally unified government is imperative to promote the macroeconomic management of the eurozone, currently entrusted solely to the ECB. The absence of a minimal degree of budgetary integration that forms the basis of an insurance (transfer of funds) mechanism is another flaw in the design of the EMU. Keeping member countries motivated (through efficient supervisory efforts) to fulfilling their commitments to integration requirements could greatly facilitate addressing the issues faced by union.

## 2.7 CONCLUSION

This chapter explored various issues regarding the process of forming a monetary union as well as the complexities associated with such union formation. Like any new venture, it is imperative to consider the various costs and benefits of forming/joining a monetary union with the ultimate goal being to come to some idea as to the feasibility of pursuing the venture. Although this does not form the core purpose of the study, a brief cost-benefit comparison is useful in identifying potential issues SADC could face going forward. The benefits can broadly be defined in two categories namely, efficiency and welfare gains. The main costs are those associated with member states' obligation to relinquish their national currency as well as monetary, fiscal, economic and socio-political policy independence in the wake of union formation. The central insight of the OCA theory is that countries or regions that experience a high divergence in output and employment tend to need flexibility in their labour markets as well as to meet certain criteria if they wish to form a monetary union and if they wish to avoid major adjustment problems. The larger the degree of real divergence, the greater will be the efforts to meeting these OCA criteria to promote the smooth functioning of the monetary union. With this being said, this chapter tracks the history of OCA theory highlighting the key contributors to the theory as well as the numerous challenges to the theory.

This in turn brought light to the important idea of endogenous OCA criteria, this notion suggests that the need to meet these OCA criteria *a priori* was unnecessary as the process of union formation would create conditions most favourable for their attainment post union membership. The EMU experience suggests that although some endogeneity of criteria exists, it can be very short lived and thus inadequate in affirming the insignificance of OCA and convergence criteria *prior* to monetary union formation. The gap between the OCA prescription and convergence theory is bridged with the key argument being that, although OCA and convergence criteria differ in numerous aspects, they are both centred on issues of monetary, economic and financial integration and they both influence or are influenced by the success of the other. The two concepts are more closely linked than the existing literature seems to suggest as they work in unison in promoting an economic and social environment that fosters conditions for monetary union formation. As such it appears that both OCA and Maastricht-type convergence will continue to play significant a role in monetary union formation.

In light of Kenen's (1969) argument for the need for fiscal integration between countries looking to form monetary union, the chapter proceeded by briefly discussing the importance of fiscal sustainability as a precondition for union membership in light of the intertemporal budget constraint. This often forms the premise of the sustainability hypothesis in the literature. The intuition being that

if the public debt goes to zero, then the intertemporal budget constraint of the government ensures that the current market value of public debt is equal to the discount sum of all future budget surpluses thus creating an environment for fiscal sustainability.

The historical experiences with monetary union formation presented in this chapter was solely made up of the experiences of the EMU, tracking its history as well as the steps employed in its formation. The core of much of the literature reviewed focuses on the lessons that regions like SADC, looking to form a monetary union, should consider when formulating the policies that will govern their transition. These can be summed up in four key points, first is the need for efficient, effective and active management in the efforts towards union formation. Second, are the evident flaws and gaps in what has been dubbed an 'incomplete' model the EMU adopted. Third, is the call for increased fiscal discipline pre- and post-union formation. Lastly, a more centralised fiscal authority is identified as the key to ensuring that the three aforementioned issues are addressed and that sound union formation must be governed by both an economic/financial as well as political union.

The next chapter takes a closer look at the SADC case with a view to establish if the region has made any progress in meeting OCA as well as its own convergence criteria. Together with this chapter, the next chapter lays foundation for the empirical analysis.

## CHAPTER THREE:

### A CLOSER LOOK AT SADC

#### 3.1 INTRODUCTION

This chapter will briefly review the literature on the progress that SADC has made towards meeting the OCA and convergence criteria as well as to provide a brief look at the region's current position<sup>8</sup>. The extent to which the SADC members are making progress towards meeting both the OCA and convergence criteria plays a significant role in identifying the feasibility of forming a monetary union in the region. As discussed in the previous chapter, the experiences of the eurozone in forming the European Monetary Union highlight the significance of both attaining as well as maintaining these targets. The EMU debt crisis has shed some insightful lessons that SADC should consider going forward as well as necessitate a detailed analysis of the regions current fiscal stance. The chapter is divided into five sections as follows: Section 3.2 looks at the progress SADC member states have made in meeting OCA criteria. Section 3.3 evaluates the extent with which the macroeconomic convergence criteria have been met. Section 3.4 takes a close examination of the developments pertaining to the regions' fiscal position. Lastly, Section 3.5 concludes the chapter.

*Table 3.1 - SADC Basic Indicators (2009)*

Country	Population (thousands)	Land area (thousands of km <sup>2</sup> )	Population Density (pop / km <sup>2</sup> )	GDP based on PPP valuation (US \$ Million)	GDP per Capita (PPP valuation, \$)	Annual real GDP growth (average over 2001-2009)
Angola	18 498	1 247	15	100 459	5 431	11.6
Botswana	1 950	582	3	25 764	13 214	3.9
Congo Dem. Rep.	66 020	2 345	28	21 304	323	4.7
Lesotho	2 067	30	68	2 482	1 201	3.1
Madagascar	19 625	587	33	18 230	929	3.0
Malawi	15 263	118	129	8 395	550	4.9
Mauritius	1 288	2	631	17 489	13 576	3.7
Mozambique	22 894	802	29	21 746	950	8.0
Namibia	2 171	824	3	13 737	6 327	4.3
Seychelles	84	0.455	185	1 480	17 563	0.9
South Africa	50 110	1 221	41	487 107	9 721	3.6
Swaziland	1 185	17	68	5 806	4 900	2.2
Tanzania	43 739	945	46	53 167	1 216	6.9
Zambia	12 935	753	17	19 606	1 516	5.4
Zimbabwe	12 523	391	32	2 193	175	-5.4
<b>Africa</b>	<b>1008 354</b>	<b>30 323</b>	<b>33</b>	<b>2 825 691</b>	<b>2 802</b>	<b>5.3</b>

Source: African Economic Outlook (2010)

<sup>8</sup> Table 3.1 provides a brief summary of SADC basic indicators.

Table 3.1 above briefly summarises the basic indicators for the SADC members for the month ending July 2009. Of the members, DRC had the largest population and the occupies the largest land area. In terms of population size and land area respectively, South Africa and Angola come a close second. South Africa had the highest GDP based on PPP valuation. Of most relevance however, are the average annual real GDP growth rates over the 2001-2009 period where Angola, Mozambique and Tanzania recorded the top three rates. Not surprisingly though, Zimbabwe recorded negative growth over the period, mainly attributed to the economic and political issues that burdened the nation during that pre-dollarisation period. It will be interesting to see how these countries have performed in terms of the OCA and macroeconomic convergence criteria, this is tackled in the following sub-sections.

### 3.2 MEETING OCA CRITERIA<sup>9</sup>

OCA theory centres on the characteristics which make the adoption of a fixed exchange rate and monetary unification more or less desirable for all joining members. A number of empirical studies have been done to assess the SADC regions' progress towards the attainment of these criteria. In addition, by analysing and comparing a variety of OCA properties and applying several econometric techniques; these studies have often identified a group of SADC countries that could form an optimum currency area. Due to a lack of sufficient data on financial market variables, labour mobility and wage/price flexibility, a lot of the empirical literature on regional integration in SADC dealing with the traditional OCA criteria has focused on three key areas. These include: (i) evaluation of the level of correlations of movements of real exchange rates and/or the terms of trade among the economies; (ii) analysis of the nature of shocks affecting the countries under investigation and (iii) assessment of co-movements in cyclical real growth rates among the economies. The rationale behind focusing on each of these three areas is the assumption that countries facing a high degree of symmetry in shocks and/or high correlations of cyclical movements of real output and/or real exchange rates do not need country-specific monetary and exchange-rate policies. Furthermore, according to Vaubel (1978) and Masson and Taylor (1992), the analysis of shock absorption and movements in exchange rates is believed to merge the *net* effects of several of the criteria.

#### 3.2.1 CORRELATION OF OUTPUT GROWTH RATES

Apart from the impact of economic trends, movements in output are driven mainly by shocks. As such, studies reporting the correlations of real per capita growth rates aim to provide information on these underlying shocks. An early attempt to evaluate correlations of per capita output growth was

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<sup>9</sup> For a detailed review of the literature evaluating monetary union in Southern Africa, see Tavlas (2008).

made by Bayoumi and Ostry (1997); these authors calculated bilateral trade correlation of growth rates for 11 Southern African economies over the period 1963-1989. Karass (2007) adopted a similar approach by calculating correlations of de-trended output growth of 9 SADC countries over the periods 1960-2000 and 1980-2000 using real GDP based on purchasing power parity real exchange rates. Unlike Bayoumi and Ostry (1997), who calculated bilateral output correlations among country pairs, Karras (2007) employed a less informative process by estimating correlations of each country's cyclical output component against the total for SADC members. Key limitations of both these approaches are that the techniques employed fail to distinguish disturbances to output growth from the policy responses to the disturbances thus failing to comprehensively capture the impact of shocks. This is because part of the time profile of de-trended growth is likely to reflect authorities' policy responses. Secondly, the approaches fail to consider the condition that an identical shock may influence individual nations differently. This, according to Melitz, (1991:321) Tobin (1993), illustrates differences in the nations initial positions and variation in behavioural parameters about fundamentals such as price/wage flexibility, tax arrangements and trade responsiveness.

The results revealed weak correlations of output growth between the economies (Bayoumi and Ostry, 1997). Of the 55 bilateral growth correlations, 42 were positive however very low with only 4 correlations exceeding 0.04. Karras (2007) only found three - those for Zimbabwe, Zambia and Mozambique - of the eight sets of correlations (excluding those involving South Africa) to be above 0.04, which the author interpreted as the countries that comprise an OCA alongside South Africa.

### 3.2.2 CORRELATION OF OUTPUT SHOCKS

In dealing with the limitations of the first set of studies, formal econometric techniques were employed to separate the underlying disturbances from real output. Bayoumi and Ostry (1997), Yehoue (2005) and Wang *et al.*, (2006) employed a 3-step autoregressive estimation procedure looking at 11 countries over 1963-1989, 15 countries over the period 1980-2000 and 5 countries over 1980-2005 respectively. These studies provided only weak correlations of shocks to output growth thus providing little support for monetary union formation. Yehoue (2005) employed a similar approach by using second-order autoregressive processes to generate output shocks, the author's results differed slightly in that all the of the co-movements obtained were positive and high. This difference in findings is due to the fact that Yehoue (2005) estimated autoregressive equations for levels of real GDP, which may be expected to show higher degrees of co-movements than per capita GDP growth. And although Yehoue's results supported the general hypothesis that a monetary union among the

entire SADC region is feasible, they failed to account for non-stationarity that is characteristic of output data expressed at levels.

In taking the analysis a step further, Buigut (2006) and Buigut and Valev (2006) used a 2-step statistical methodology developed by Blanchard and Quah (1989) to 21 Eastern and Southern African countries over the period 1970-2002 to extract underlying demand and supply shocks from GDP data. The weak co-movements of shocks in studies using autoregressive methods could suggest a prevalence of asymmetric demand shocks, which may be policy induced (Tavlas, 2008: 25). By extracting the demand and supply shocks and calculating the correlation of these shocks for all the prospective monetary union member countries, Buigut and Valev (2006) were able to identify whether or not asymmetric supply shocks continued and asymmetric demand shocks declined following monetary unification. The results of this analysis indicated that supply shocks were symmetric among Lesotho, South Africa, Mozambique and Swaziland, offering what the authors viewed as considerable support for monetary union formation for these countries. However, the studies considering correlation of output growth rates and exchange rates/terms of trade have been criticised on the grounds that the variables considered are in fact endogenous, and capture both the effects of shocks and the policy responses of the authorities.

### 3.2.3 CORRELATION OF EXCHANGE RATES AND/OR CASUAL INSPECTION OF DATA

Masson and Pattillo (2005) estimated correlations of percentage changes in the terms of trade for 14 SADC countries over the period 1987-1999. Wang *et al.*, (2006) computed correlation of percentage changes in the terms of trade for Botswana and four Common Monetary Area (CMA) economies over the period 1980-2005 and Jefferis (2007) calculated correlations of movements of bilateral nominal exchange rates of 12 SADC countries against the rand over two periods, 1990-1996 and 1997-2002. The result obtained in these studies lacked substantial support for monetary union. Of the 91 pairwise correlations derived by Masson and Pattillo, only 14 were positive and significant with 4 of involving South Africa. Similarly, Wang *et al.*, found that 2 of 10 correlations were above 0.2.

Grandes (2003) and Khamfula and Huizinga (2004) dealt with the correlations of exchange rates in a statistically more elaborate manner. Grandes tested for co-integration among bilateral real exchange rates (using the rand as the base currency) and Khamfula and Huizinga used the generalized autoregressive conditional heteroskedasticity (GARCH) model to estimate correlations of unanticipated components of bilateral real exchange rates against the rand respectively. The results

obtained were as equally ambiguous as those obtained for the output growth analyses. Grandes (2003) results are similar to those reported by Buigut (2006), observing evidence of common stochastic trends among Lesotho, Namibia and Swaziland against the South African rand. Khamfula and Huizinga (2004) observed results supporting a 4-member union comprising Malawi, South Africa, Zimbabwe and Mauritius.

To summarise the findings discussed thus far, most authors either (a) failed to find results supportive of monetary unification among the countries considered or (b) found support for a monetary union comprising a relatively small group of countries, typically including South Africa, and at times with other CMA countries and/or Botswana. Two key factors can aid in accounting for these findings. First, most SADC countries lack sufficient diversification in export bases and the composition of exports varies considerably among the countries. As such, it would be expected that changes in variables such as de-trended real GDP and the terms of trade would not exhibit high correlation. Second, some SADC countries (like Botswana, Namibia, Lesotho and Swaziland) have high shares of trade with South Africa. Therefore, it is expected that those countries exhibit relatively high co-movements of output growth with South Africa. In fact, until the late-1990s, empirical work using the methodologies similar to those described above typically showed that only a small group of countries (even in the eurozone) showed high correlations of output growth and/or shocks to output growth.

Exceptions to the foregoing results are findings in studies by Dutu and Sparks (2004), Yehoue (2005) and Jefferis (2007) who each suggested a monetary union containing at least seven countries is feasible. Yehoue (2005) found high co-movements of shocks in output levels among 9 SADC countries, suggesting that those countries could form a monetary union. Furthermore, using his framework based on endogenously formed trade externalities, Yehoue (2005) found that, with the CMA countries as a core group, dynamic trade links would lead to a 23-member monetary union among African economies. In their consideration of the desirability of a monetary union among 14 SADC countries, Dutu and Sparks (2004) found low levels of nominal convergence among most of the countries considered and concluded that the CMA could be expanded to include Botswana, Mauritius and Seychelles.

### **3.3 MEETING MAASTRICHT-TYPE MACROECONOMIC CONVERGENCE CRITERIA**

SADC macroeconomic convergence targets and convergence criteria can be summed up as follows: ensuring the administrative completion of negotiations by 2015, promoting the diversification of

industrial structures and exports, macroeconomic convergence of inflation (single digits by 2008, 5% by 2012 and 3% by 2018 for all members by 2018), ratio of budget deficit to GDP not exceeding 5% by 2008 and ensuring the nominal value of public and publicly guaranteed debt is less than 60% of GDP by 2008 and maintained throughout the planning period (SADC, 2003). Table 1 below outlines these convergence criteria and goals for SADC together with other important financial indicators.

**Table 3.2 - Macroeconomic Convergence Criteria and goals for SADC**

Criterion	2008	2012	2015	2018
Inflation rate	Single digit	5%	5%	3%
Budget deficit	5% or less of GDP	3% or less of GDP as anchor, with 1% range	3% or less of GDP as anchor, with 1% range	3% or less of GDP as anchor, with 1% range
Govt foreign and domestic debt & debt guaranteed by govt	Less than 60% of GDP	Less than 60% of GDP	Less than 60% of GDP	Less than 60% of GDP
Current account balance % of GDP	Less than 9% of GDP	Less than 9% of GDP	Less than 9% of GDP	Less than 3% of GDP
Foreign reserves	3 months' import cover	More than 6 months' cover	More than 6 months' cover	More than 6 months' cover
Central Bank credit to govt	Less than 10% of previous years' tax income	Less than 10% of previous years' tax income	Less than 5% of previous years' tax income	Less than 5% of previous years' tax income
Level of savings	At least 5% of GDP	Up to 30%		
Domestic investment levels	At least 30% of GDP			

Source: Adapted from (Rossouw, 2006) and (SADC, 2010)

Progress towards achieving the SADC convergence criteria has been tracked by a only a handful of authors over the years; see for example (Rossouw, 2006) (Jefferis, 2007) (Zyuulu, 2010) and (Kumo, 2011). Other studies have investigated the rate of SADC convergence and most of the earlier studies (dating from around 2005 – 2008) came to similar conclusions, the essence of which can be summed up as follows: SADC countries had made considerable progress towards the achievement of the goals set for 2008. In addition, the degree of compliance with the criteria was predicted to increase even further between 2008 and 2012 indicating that the regions was initially on track to its goal of a single currency and regional central bank by 2016. Although there were early signs of convergence, the

process had been observed to be unequal whereby a said 'convergence group' comprising only a few countries was identified. Lastly, and most importantly, a SADC union was perceived as impractical in the near future for two key reasons first, deeper and more equal convergence is still required and second, the exclusion of the regions' political dimensions in previous analyses meant a number of complexities which could override progress in convergence were not considered.

**Table 3.3 - Achievement by 2010 of SADC Macroeconomic Convergence targets and goals**

Country	Inflation (end of period % change)		Budget Deficit (% of GDP)*		Govt debt (% of GDP)		Current Account Balance (% of GDP)		Foreign exchange reserves (months of imports)		Gross Net Savings (% of GDP)		Domestic Investment (% of GDP)	
	2008	2010	2008	2010	2008	2010	2008	2010	2008	2010	2008	2010	2008	2010
Angola	13.2	15.3	8.9	7.9	29.5	31.4	8.6	-1.8	5.1	4.7	24.8	8.6	16.2	10.4
Botswana	13.7	7.4	-5.8	-11.3	6.2	13.7	7.5	-2.5	21.6	15.6	39.9	24.9	32.4	27.4
Congo, DRC	27.6	9.8	-5.9	-11.7	136.3	29.5	-17.5	-6.8	0.7	1.7	4.9	20.2	22.4	27
Lesotho	10.6	3.1	2.8	-16.5	53.4	37.8	7.9	-16.2	6.4	4.1	37.4	21.3	29.5	37.5
Madagascar	10.1	9.2	-5.4	-1.7	30.4	35	-20.6	-13.4	3	3.2	20.4	12.4	40.9	25.8
Malawi	9.9	6.3	-17.1	-11.5	42.6	40.3	-10.2	-1.3	1.5	1.5	16.1	28.8	26.3	30.1
Mauritius	6.8	6.1	-3.4	-3.9	44	50.5	-10.1	-9.5	4.1	4.2	18.3	16.2	27.3	25.1
Mozambique	6.2	16.6	-11.9	-12.5	34.4	32	-11.9	-12.7	4.2	4.4	5.7	9.3	17.6	21.9
Namibia	10.9	3.1	2.5	-7.5	17.6	19	2.7	-1.1	3.1	4.3	31.6	26.6	28.9	27.6
Seychelles	63.3	0.4	2.1	-1.3	135.4	83	-48.9	-50.7	0.7	2.3	-8.8	3.3	40.1	54
South Africa	10.1	3.5	-0.5	-5.8	27.3	36.3	-7.1	-2.8	4.6	4	15.4	20	22.5	21.7
Swaziland	12.9	4.5	0.5	-12.7	16.9	18.9	-11.1	-20.6	3.8	3.3	5.7	-5.3	13.9	12.5
Tanzania	9.3	7.2	-6.9	-11.6	40.1	43.8	-11.1	-8.6	4.4	4.8	17.3	19.7	29.7	28.8
Zambia	16.6	7.9	-5.2	-4.9	26.9	26.9	-7.2	3.8	3.2	3.4	13.8	27.6	20.9	23.8
Zimbabwe <sup>1</sup>	--	3.2	-2.8	-2.3	90.8	56.3	-23.2	-18.3	0	0.4	--	--	--	--

Adapted from: International Monetary Fund (2011: 78-104)

\* Following Rossouw (2006), budget deficits including grants are used.

<sup>1</sup> The Zimbabwe dollar ceased circulating in early 2009. Data are based on IMF staff estimates of price and exchange rate developments in U.S. dollars. Staff estimates of U.S. dollar values may differ from authorities' estimates.

Table 3.3 above, provides an updated look at the SADC convergence situation. First it shows 2008 values for the SADC convergence targets and goals (excluding Central Bank credit to government due to data issues). Second, it shows 2010 figures in an attempt to shed some light on the feasibility of the countries meeting their 2012 targets.

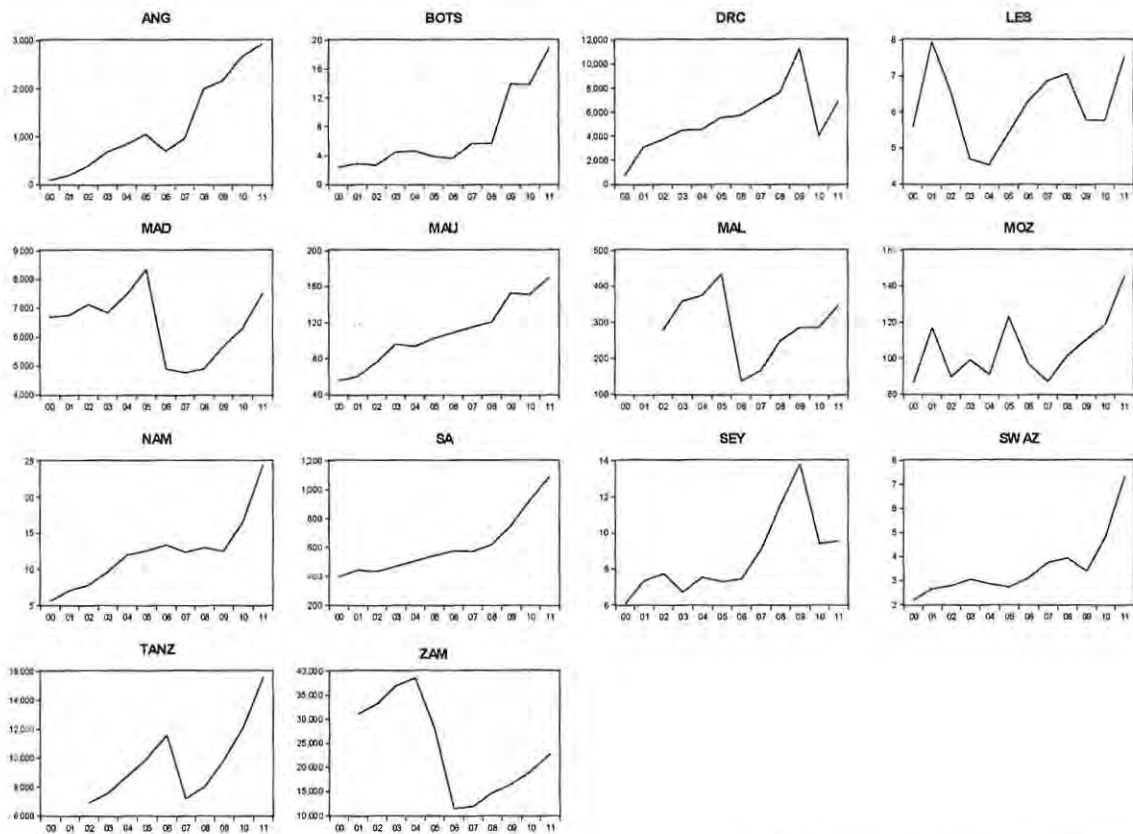
### 3.3.1 INFLATION TARGETS

The 2008 single digit inflation target was only achieved by 4 of the 15 SADC countries i.e. Malawi, Mauritius, Mozambique and Tanzania; with Mozambique having the lowest rate of 6.2%. Surprisingly enough by 2010 the numbers had taken a more positive turn for all the countries with the exception

of Angola (whose inflation rose by 2.1%) and Mozambique (whose inflation climbed a staggering 10.4% from its 2008 figure). This seems to suggest that the SADC countries are making impressive progress towards monetary policy convergence however, given the Mozambique situation this progress is exposed to shock and is thus unpredictable and could be indication of how these economies are struggling to recover from the financial and economic crisis.

### 3.3.2 GOVERNMENT DEBT

*Figure 3.1 – Government Debt (stock) 2000-2011*



Data: International Monetary Fund (2011)

The lack of consistent data on domestic and external government and government guaranteed debt in SADC states makes the evaluation of the progress with regard to this convergence criterion considerably difficult. However, the existing information indicates that debt levels in most member states have showed a tendency of borrowing policy convergence. Direct interpretation of the numbers is flawed however, due to measurement discrepancies across the region (Kumo, 2010: 23). Figure 3.1 above is a graphical representation of the government debt (stock) for the 14 SADC

countries under consideration in the study. The series all seem to be trending in an upward direction with most showing a noticeable change between the 2007 and 2008. South Africa's debt stock appears to be the most 'consistent' almost no sudden up- or downturns. Conversely, the Mozambique debt stock appears to be the most inconsistent in nature, boasting a series of up- and downturns throughout the period under analysis.

### 3.3.3 CURRENT ACCOUNT BALANCE

South Africa, and Zambia were able to meet the 9% less than GDP target by 2008 and Namibia, Botswana, Angola, Lesotho all had favourable balances in the same year. Kumo (2010: 23) and the 2010 figures shown in Table 3.3 show more promising results. A total of 10 (almost 67%) of the member states had reached the 2012 target by 2010. Although the current account positions of several member states were worsened following a sharp drop in foreign demand for commodities during the build up to the crisis. Global economic recovery and revival in commodity prices since mid-2009 conveniently improved the export performance of most member states resulting in brilliant current account performances. The two worst performers in current account balance in 2010 were the Seychelles and Swaziland with a deficit of 50.7 % and 20.6% of GDP respectively. And the two best performers by 2010 were Zambia and Namibia with a positive balance of 3.3% being held by Zambia and Namibia with a 1.1% deficit.

### 3.3.4 FOREIGN RESERVES

Of the SADC member states, 73% had achieved the foreign exchange reserve level equivalent to 3 months or greater of import cover in 2008. This dropped to only 40% of the member states meeting the 2012 target of 6 months' cover in 2009. Conversely, the DRC; Malawi; Seychelles and Zimbabwe were the only countries failing to meet the 2008 target. And even more disappointing are the 2010 figures with only Botswana continuing to hold a foreign exchange reserve level equivalent to 6 months or greater. A number of the member states including the DRC, Malawi, the Seychelles and Zimbabwe experienced severe foreign exchange shortages in 2009 which had serious implications on the stability of their exchange rates. In addition, Zimbabwe's adoption of the US dollar had added destabilising effects on that economy.

### 3.3.5 SAVINGS AND DOMESTIC INVESTMENT

Regarding the savings requirements by 2008, all the countries except for 2 (DRC and Seychelles) had met the 5% or more of GDP goal. Seychelles was the only member to be characterised by dissavings

with a -8.8% of GDP savings value. By 2010 Seychelles had still failed to meet the 2008 target, but had shown a significant advancement to 3.3%. The most significant twist was the drastic decline in Swaziland's savings, dropping a total of 11% from 2008 to 2010. This could have been a warning sign for the recent developments in the Swazi economy. Nonetheless, most countries including Botswana, Malawi, Namibia and Zambia seem well on their way to attaining the 2012 target of saving up to 30% of GDP. It would be interesting to observe what happens to the savings levels of SACU member states Botswana and Namibia in the wake of debt crises in its fellow union members Lesotho and Swaziland.

With regard to the goal of investment levels being at least 30% of GDP by 2008, a number of countries were well in reach of the target with a number of them fluctuating within the mid and high 20% range. The same is true for the 2010 values, again suggesting favourable performances in this regard and satisfactory efforts to maintaining these levels.

### 3.3.6 BUDGET DEFICIT

Regarding the fiscal policy indicator, 3 member states i.e. Mauritius, South Africa and Zimbabwe attained budget deficit of less than 5% in 2008. According to Kumo (2010: 22), 4 additional member states, i.e. Swaziland, DRC, Madagascar and Seychelles attained budget deficit of less than 4% in 2009. However, in both years (2008 and 2010) more than 50% of the member states showed divergence in fiscal policies as they failed to achieve the convergence goal set for 2008 and seem to be lagging behind in achieving the 2012 goal. In light of the recent fiscal issues experienced in the EU, such divergence should be an immediate cause for concern regarding the feasibility of forming a currency union in a fiscally divided SADC region.

The recent experience with Swaziland would seem to indicate that the challenge of forming the necessary 'political union' may be a lot more complex than envisaged, even supposing that a sense of 'regional identity' can be created and fostered. As recent EU experience has shown, this is not an insignificant issue. This is because often the fiscal policies of a number of Africa states are driven by misaligned political forces which, as evidenced in the Swaziland case, can result in an unstable and at times unmanageable situation.

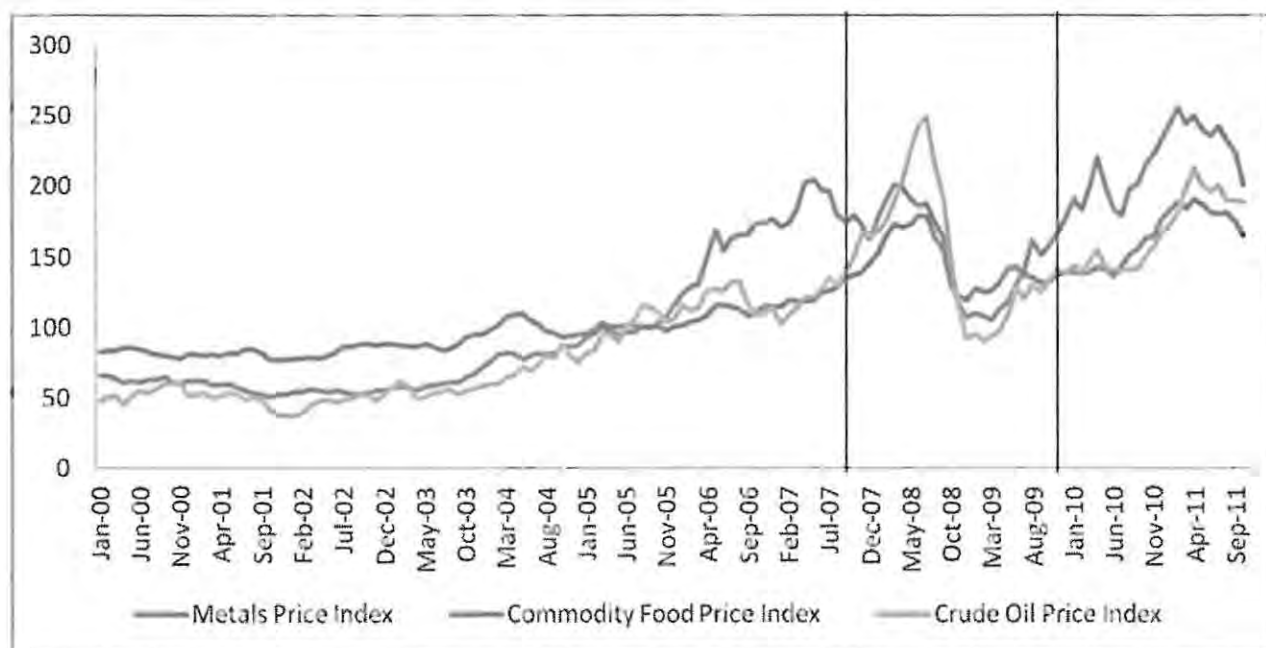
*Prima facie*, it would seem that the SADC community is in fact moving towards achieving a state of increased macroeconomic convergence. As mentioned above, this progress continues to be asymmetrical as well as unstable and unpredictable. The presence of a number of other issues that are

not immediately apparent to the data does, however, mean that the picture may not be as favourable as it first appears to be. Firstly, the lack of focus on intra-regional trade flows in tracking such convergence could give biased and unreliable results. The crux of the convergence debate should be how the growth and diversification of intra-SADC trade will be facilitated and promoted. Burgess (2009) observes that intra-regional trade flows in SACU account for about 20% of total trade, but only 5% if South Africa is excluded. The case for SADC is similar, providing a clear indication of the union's dependence on South Africa which, if not addressed, could cause obstacles against promoting a political union within the region.

Secondly, with respect to the convergence targets relating to the current account and the government debt balance, it must be remembered that many of the SADC countries are primary commodity producers and exporters. Progress with regard to the achievement of these convergence targets may thus be argued to be the result of fortuitous movements in commodity prices rather than being the outcome of fiscal policy action undertaken. *Figure 3.2* shows the pre- and post- financial crisis World Commodity Price Indices for the period 2006 to early 2011. The shaded area on the figure represents the business cycle downturn phase as identified by the South African Reserve Bank (2001: 24). In an attempt to emphasise the fluctuation in the indices in relation to all SADC member states' current account balances, the assumption made is that the downturn should be similar for most SADC members. The advent of the financial crisis in late 2007 had an immense negative impact the international demand for commodities and the stability of commodity prices. Nonetheless, due to the nature of these commodities, demand soon recovered and commodity prices moved in a similar light.

The post crisis recovery in commodity prices is synonymous to the advanced improvements in the SADC member state's achievement of more favourable current account and government debt balances, more so following the last quarter of 2009. Divergence from the targeted levels in the future is thus plausible, or even probable, in the event of a failure to achieve adequate diversification. The structure of the proposed member economies also means that shocks to the union members will be *symmetrical* and adjustment accordingly made more difficult.

*Figure 3.2 World Commodity Price Indices*



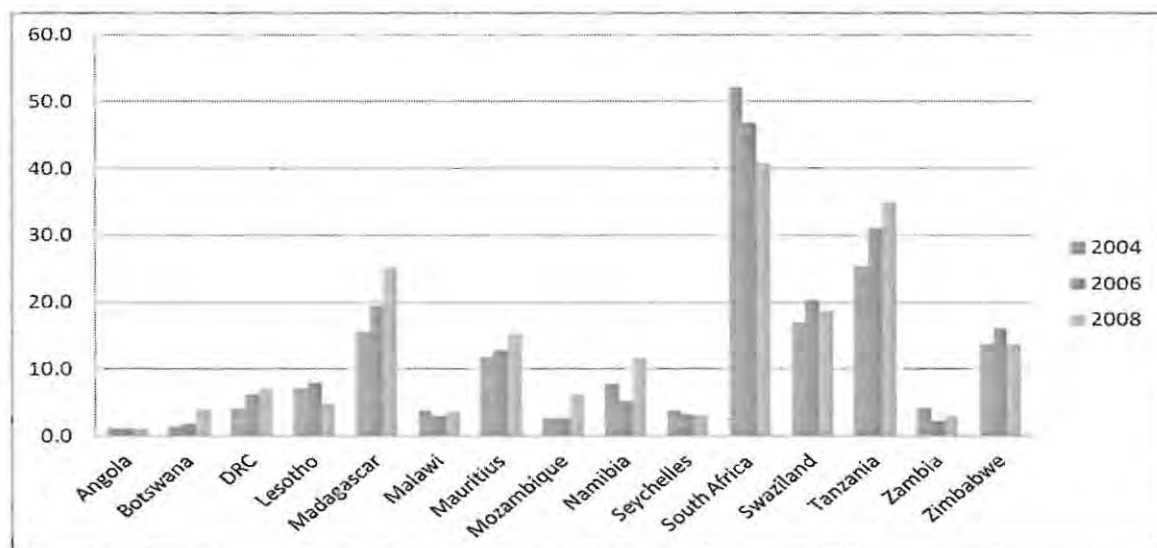
*Data Source: Index Mundi (2011)*

According to the International Monetary Fund (2011: 8), the sharp rise in commodity prices will have an asymmetric effect on current account balances in the Sub-Saharan region. Oil exporters are expected to benefit from the favourable oil prices that are predicted to prevail in 2011. For the region as a whole, it is expected that their current account balance will experience an improvement from 2¼ percent of GDP in 2010 to 10¼ percent of GDP in 2011. With the surge in oil prices, it is predicted that the situation for oil importers will not be as favourable, with predictions that their current account deficits will widen by 1½ percentage points of GDP among the middle-income countries (which includes 7 of the SADC members) to 4¾ percent of GDP, this movement is in line with the decline that was experienced between 2007-2009 (International Monetary Fund, 2011: 12).

The key lessons from the EMU - the need for a political union as well as a centralised fiscal authority - together with Kenen's (1969) proposal of the idea that product diversification is a key tool in identifying both the desirability and feasibility of forming a currency union, highlight the need to examine SADCs progress in this regard. It can be fairly argued that both the nature and degree of dependence of SADC members on commodity exports as drivers of current account balance adjustments could have immense political implications if the region was to form a currency union. As evidenced in the SACU case - where adjustments in the distribution of trade revenues amongst the

members lead to the debt crises in both Swaziland and Lesotho in early 2011- there are huge political implications associated with the regions' dependence on commodity exports. Figure 3.3 below illustrates the state of diversification within the SADC region. The graph highlights the urgent need for increased focus on improving the level of product diversification across the region as a whole. Of the 15 member states, only South Africa and Tanzania show noticeable levels of diversification, with very poor performances being reported for Angola (possibly due to its heavy reliance on oil exports), Botswana (heavily reliant on diamond exports), the DRC, Malawi, Mozambique, Zambia and the Seychelles. It is interesting to note the case for South Africa, its diversification index, although the highest in the region, has declined somewhat over the years, which is a cause for concern given that it is the largest economy in the region (in terms of trade and financial sector) and should be paving the way for other countries in the region.

**Figure 3.3 – SADC Diversification Index**



*Data Source: International Monetary Fund (2011)*

### 3.4 A CLOSER LOOK AT FISCAL ISSUES

When the global financial crisis hit the region in 2009, in comparison to past experiences, fiscal policy was able to be appropriately countercyclical in most Sub-Saharan countries. Fiscal policy remained supportive in 2010 in a number of countries through a process which allowed automatic stabilisers to operate on the revenue side and staying in pre-crisis spending growth rates (International Monetary Fund, 2011: 8). However, with output growth already recovering (and likely to do so further) to pre-crisis rates in numerous countries, there could arise a situation whereby fiscal policy will revert to a

more neutral stance across the region. This is even more important given the rise in public indebtedness, especially among middle-income countries like Swaziland and Lesotho, fuelled largely by the fiscal deficits of recent years. As suggested by the International Monetary Fund (2011: 9), to gauge the extent to which fiscal policy is countercyclical, it is necessary to examine revenue trajectories. Naturally, these revenues are heavily determined by each countries' respective tax revenues, which, in the SADC and Sub-Saharan African case, tend to be affected much more by commodity prices as well as the business cycle in some countries relative to others.

#### 3.4.1 GOVERNMENT REVENUE

The overall outlook for revenue-to-GDP ratios is improving but it seems unlikely to recover to pre-crisis levels for middle-income countries (Figure 3.5) which include countries like Lesotho, Mauritius, Namibia, Seychelles and Swaziland. This is because the low-income diversified exporters' revenues were only modestly affected by the crisis and are set to recover close to the pre-crisis trend path. The key obstacle in many of these countries however, is that the level of revenues, while on a recovering trend, remains low. In most of the middle-income diversified exporters (which includes the SACU members), the revenues have proven to be strongly pro-cyclical (with the exception of South Africa) however, the IMF does not expect them to return to pre-crisis levels in the near future<sup>10</sup>. As might be expected, for the natural resource-intensive exporters, the behaviour of commodity prices determines the level of revenues. The average revenue-to-GDP ratios in these countries fell to nearly 6 percentage points in 2009 as commodity prices fell. In 2011 and 2012, on the basis of the current outlook for commodity prices, which are expected to remain elevated, the revenue-to-GDP ratio in these countries is expected to recover to around 26 percent of GDP, relatively comparable to the 2004-2008 average.

#### 3.4.2 GOVERNMENT EXPENDITURE

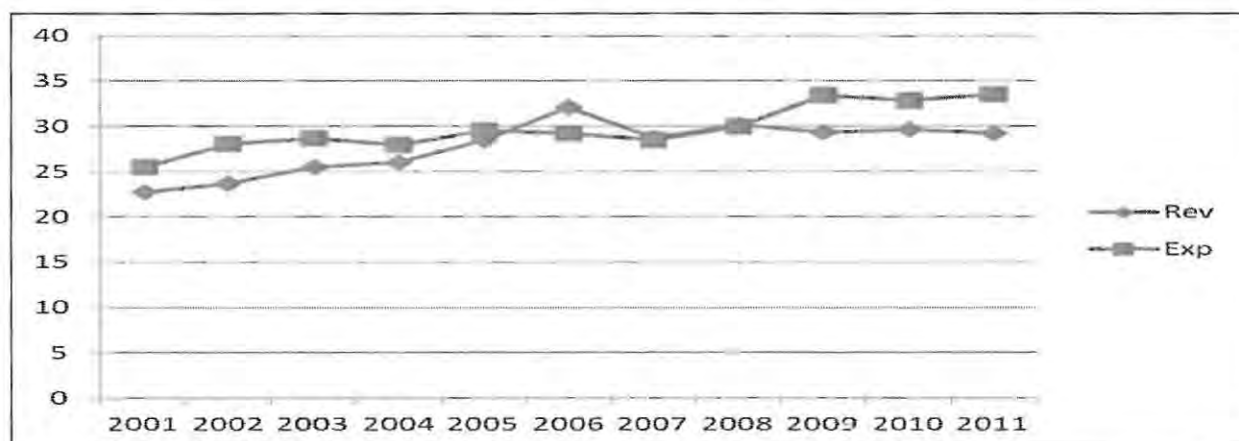
With regards to expenditure, there has been more stability in real expenditure growth in most cases. In the low-income countries i.e. Madagascar, Malawi, Mozambique, Tanzania, Zimbabwe and DRC, spending growth pre- and post-crisis has been stable at around 6 percent in real terms. Notable exceptions where spending growth is expected to be negative in real terms in 2011 are Madagascar and Malawi, mainly fuelled by expected declining tax revenues. Spending increased somewhat in the middle-income countries as the economies slipped into recession in 2009, the largest economies in

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<sup>10</sup> The main reason for this is linked to the permanent reduction in SACU imports in relation to GDP from the 2008 peak as well as the large repayment over the next two years of revenue advances (International Monetary Fund, 2011:10).

this grouping (Mauritius and South Africa) are expected to increase real expenditures considerably in 2011. In the resource-intensive exporters, spending had been considerably pro-cyclical in recent years (International Monetary Fund, 2011: 11), in contrast to the authorities' varied plans for 2011, with some countries calling for large expenditure increases and others only modest growth in spending and possible cuts.

**Figure 3.4 - Total Government Revenue- and Expenditure-to-GDP (annual average for SADC region)**



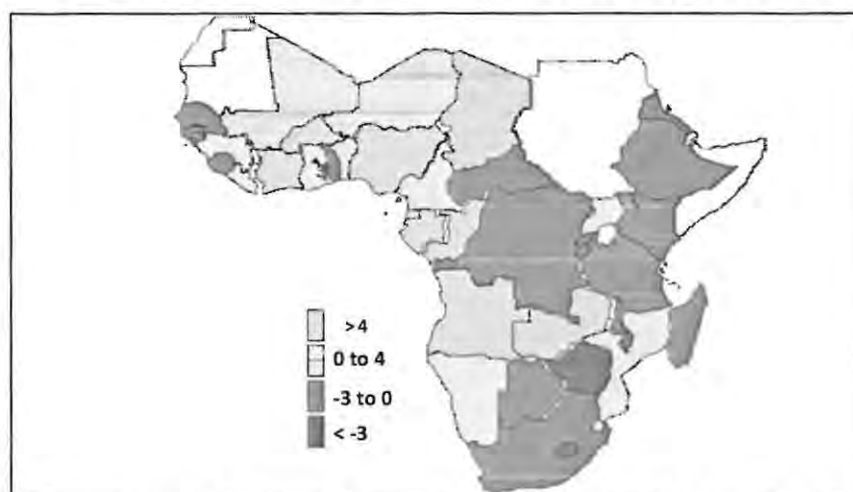
*Data Source: International Monetary Fund Database (2011)*

### 3.4.3 FISCAL BALANCES

Upon reflection of these trends, it appears fiscal balances in resource-intensive exporting countries and low-income diversified exporting countries could improve in the next year. The low-income diversified exporting countries could if aided by a continuation of the revenue trend see their fiscal deficits revert to pre-crisis levels however; this could be hampered by rising food and fuel prices. For many of the sub-Saharan African countries, the 2008 food and fuel price spike resulted in broad social and economic disturbance. The product of which was a general and rapid movement in key prices which created sudden big winners and losers in the region, further complicating macroeconomic management efforts. Food price variations in the region have been extremely varied throughout SADC with countries like South Africa, Malawi and Zambia finding refuge in their strong 2010 harvests which limited price increases and thus guarded their overall inflation rate from sudden and drastic upward pressure.

Given that some net food- and fuel-importing countries could benefit from higher prices for other commodities, the IMF (2011: 15) analysis the net impact of recent commodity price movements. In terms of the impact on external accounts, commodity price movements observed through December 2010 are likely to adversely affect the trade accounts of a number of countries in the region including; Lesotho, Seychelles and Zimbabwe, where trade balances are projected to deteriorate by more than 3 percent of GDP in 2011 (see Figure 3.5). Nonetheless, there will also be gainers namely, the oil and mineral resource exporters. The trade balance of Angola and five other oil exporting countries in the sub-Saharan region are projected to improve by more than 10 percent of GDP in 2011 because of oil price increases. Zambia, due to favourable copper prices, is expected to see an improvement of more than 6 percent of GDP.

*Figure 3.5 Trade Balance Effects of Commodity Price Changes in 2011*



*Graph Source: United Nations Economic Commission for Africa (2011)*

Overall, the additional debt burdens of some of the SADC countries should not be problematic, provided they do not continue to increase much more. However, in the case of a few countries, the increase in indebtedness since 2008 has been fairly pronounced, including Mauritius and South Africa (IMF, 2011: 24). The recovery in revenues has aided in keeping fiscal policy countercyclical in low-income countries during the upswing. Among the middle-income countries, deficits are set to remain high and the corresponding rise in the public debt ratio is constraining fiscal policy. Since the advent of fiscal crises in the EU, issues pertaining to fiscal sustainability have become increasingly topical. Sustainability is challenged when the government revenues are insufficient to keep on financing the costs associated with the new issuance of public debt and is sometimes associated with financial solvency of the government (Afonso, 2004: 3). However, in practice what the empirical literature ends up examining is whether both public expenditures and revenues may continue to display in the

years to come, their historical growth paths. If a given fiscal policy is observed to be unsustainable then it has to be adjusted so as to ensure that future balances are both consistent and maintainable<sup>11</sup>.

### 3.5 CONCLUSION

The aim of this chapter was to take a closer look at the SADC case for monetary union formation. The various issues outlined in the previous chapter necessitated the need to examine more closely where the SADC members stand in terms of meeting OCA and convergence criteria as well regarding issues of fiscal sustainability. This is done by first providing a review of the literature on the progress SADC has made to meeting OCA criteria whereby three key areas of interest are identified. To summarise, researchers have investigated the correlation of output growth rates, the correlation of output shocks and lastly the correlation of exchange rates. From these studies, most authors either (a) failed to find results supportive of monetary unification among the countries considered or (b) found support for a monetary union comprising a relatively small group of countries, typically including South Africa, and at times with other CMA countries and/or Botswana.

The next section outlined the SADC region's progress towards meeting its Maastricht-type macroeconomic convergence criteria. Inflation rate targets, government debt levels and current account balances were amongst the various variables analysed. The literature and the statistics seem to suggest an overall transition towards meeting the set targets. However, the results are questioned in light of two critical criteria; first is inadequate level of product diversification amongst the SADC members which Fleming (1971), identified as an important prerequisite to forming a monetary union. The fact that a number of the SADC members depend so heavily on resource exports as economic drivers/stabilisers means that they would naturally exhibit favourable economic performance in the wake of the higher commodity prices that accompanied the recent financial crisis. What then should happen should commodity prices experience a sustained reduction? This could suggest that the convergence in SADC macroeconomic variables could in fact be heavily driven by fortuitous movement in commodity prices and not specifically formulated policy efforts by the respective governments.

The chapter concludes by examining the fiscal health of the region as a whole, the findings suggest that a handful of countries, including Swaziland and Lesotho, could be a cause for concern and thus calls for the establishment some form of fiscal authority to govern practices in this regard.

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<sup>11</sup> The theory behind this is discussed briefly at the beginning of Chapter 4. Cuddington (1997) and Henin (1997) discuss this topic. Blanchard et al. (1990) present as a definition of sustainable fiscal policy one that follows, in the short term, that the debt-to-GDP ratio returns to its original level after some excessive variation.

## CHAPTER FOUR:

### METHOD AND ANALYTICAL FRAMEWORK

#### 4.1 INTRODUCTION

This chapter sets out the analytical framework employed in providing an empirical analysis of the objectives set out in Chapter 1. The chapter also discusses the proxies and data used in this study. As mentioned earlier, the study assesses the feasibility of a SADC currency union on the basis of its progress towards macro-economic convergence. Furthermore, lessons from the EMU debt crisis have underscored for an evaluation of the level of fiscal sustainability of the region. In this light, this chapter together with the previous chapter address the two specific goals of this study.

Chapter three assesses the feasibility of forming a currency union in SADC by 2018 with a view to analysing the extent to which each member country is meeting the SADCs macroeconomic convergence criteria as well as monetary and real convergence considerations. Thus, this chapter evaluates the sustainability of public debt and budget deficits of the SADC member states.

The chapter is organised as follows: Section 4.2 briefly discusses the theoretical model within the fiscal sustainability argument. Section 4.3 outlines the co-integration approach employed in assessing the level of fiscal sustainability while section 4.4 gives a brief description of the data and sources. Section 4.5 concludes the chapter.

#### 4.2 THE THEORETICAL MODEL WITHIN FISCAL SUSTAINABILITY

The theoretical concept of fiscal sustainability is based on the notion of a budget constraint for government  $i$ , which is given in nominal terms at time  $t$  as:

$$G_t + (1 + r_t) B_{t-1} = R_t + B_t \quad [1]$$

Where,  $B_t$  is the current stock of public debt,  $r_t$  is the nominal interest rate payable on the public debt,  $R_t$  is government revenue including interest revenue, and  $G_t$  is gross government expenditure excluding interest payments. What this equation states is that the public debt should either be paid off or refinanced by issuing new debt. Rewriting equation (1) for the subsequent periods, and recursively solving the equation leads to the following intertemporal budget constraint:

$$B_{t-1} = \sum_{s=1}^{\infty} \frac{R_{t+s} - G_{t+s}}{\prod_{j=1}^s (1 + r_{t+j})} + \lim_{s \rightarrow \infty} \prod_{j=1}^s \frac{B_{t+s}}{(1 + r_{t+j})} \quad [2]$$

When the second term on the right-hand side of equation (2) is zero, the present value of the existing stock of public debt will be identical to the present value of future primary surpluses. However, equation (2) is inappropriate for empirical testing. Therefore, it is useful to make several algebraic modifications of equation (1). Assuming that the real interest rate is stationary, with mean  $r$ , and defining

$$E_t = G_t + (r_t - r)B_{t-1} \quad [3]$$

It is now possible to obtain the following Present Value Budget Constraint (PVBC):

$$B_{t-1} = \sum_{s=0}^{\infty} \frac{1}{(1+r)^{s+1}} (R_{t+s} - E_{t+s}) + \lim_{s \rightarrow \infty} \frac{B_{t+s}}{(1+r)^{s+1}} \quad [4]$$

A sustainable fiscal policy should ensure that the present value of the stock of public debt, the second term on the right-hand side of (4), reverts to zero in infinity, constraining the debt to grow no faster than the real interest rate. In other words, it implies imposing the absence of Ponzi games and the fulfilment of the intertemporal budget constraint. Faced with the transversality condition, the government will have to achieve future primary surpluses whose present value adds up to the current value of the stock of public debt.

It is also possible to derive the solvency condition, with all the variables defined in terms of GDP<sup>12</sup>. The PVBC, with variables expressed in terms of GDP, with  $y$  being the GDP growth rate, is then written as:

$$\frac{B_t}{Y_t} = \frac{(1+r_t)}{(1+y_t)} \frac{B_{t-1}}{Y_{t-1}} + \frac{G_t}{Y_t} - \frac{R_t}{Y_t} \quad [5]$$

Assuming the real interest rate is stationary, with mean  $r$ , and considering also constant real growth, the budget constraint is given by:

<sup>12</sup> Hakkio and Rush (1991: 430) show that an analysis based on ratios is more appropriate for growing economies.

$$b_{t-1} = \sum_{s=0}^{\infty} \left(\frac{1+y}{1+r}\right)^{(s+1)} [\rho_{t+s} - e_{t+s}] + \lim_{s \rightarrow \infty} b_{t+s} \left(\frac{1+y}{1+r}\right)^{(s+1)} \quad [6]$$

Where,  $b_t = B_t/Y_t$ ,  $e_t = E_t/Y_t$  and  $\rho_t = R_t/Y_t$ . When  $r > y$ , it is necessary to introduce a solvency condition, given by  $\lim_{s \rightarrow \infty} b_{t+s} \left(\frac{1+y}{1+r}\right)^{(s+1)} = 0$ , in order to limit public debt growth<sup>13</sup>. This yields the familiar result that fiscal policy will be sustainable if the present value of the future stream of primary surpluses, as a percentage of GDP, matches the ‘inherited’ stock of government debt<sup>14</sup>.

### 4.3 FISCAL SUSTAINABILITY: A CO-INTEGRATION APPROACH

#### 4.3.1 TESTING FOR A UNIT ROOT AND STATIONARITY

Amongst the set of methods to evaluate fiscal sustainability, a common practice in the literature is to investigate past fiscal data to obtain a better idea of whether government debt follows a stationary process or to establish if there is co-integration between government revenues and expenditures. The standard ordinary least squares (OLS) approach requires that the series be integrated of order 0 [ $I(0)$ ]; i.e. the series is stationary at level. Lütkepohl *et al.*, (2004: 11) describe a stationary process as one with a constant mean and variance over time and one in which covariances are not serially correlated. A process of this nature is often referred to as ‘white noise’. The examination of whether the data being used is stationary or not is important for a number of reasons firstly, a shock to stationary process will eventually die away. Thus a shock experienced at time  $t$  will have a smaller effect in time  $t+1$ , a smaller effect in time  $t+3$  and so on. Second, a stationary process minimises the possibility of spurious OLS regressions.

It is a necessary, although not sufficient, condition for co-integration testing that all the series being analysed are integrated of the same order (more than zero) or that all series contain a deterministic trend (Granger, 1986). Several methods of testing for stationarity can be employed, for instance visual plots of data, the autocorrelation function, unit root test and those that directly test for stationarity, among others. This study will employ unit root tests.

<sup>13</sup> Implying that the growth rate of the debt-to-GDP ratio should be less than the factor  $\left(\frac{1+y}{1+r}\right)^{(s+1)}$

<sup>14</sup> According to Buiter (2002), the intertemporal budget constraint should be satisfied always and not only in equilibrium. This is his main criticism of the fiscal theory of price level.

A combination of two I(1) series is usually an I(1) and generally if series of different order of integration are combined, then their combination will take the highest order series [i.e. a combination of I(1) and I(2) is an I(2)] (Brooks, 2008: 335). However, if the series are co-integrated, this might not be the case. For instance, if it has been proven that a combination of I (1) is co-integrated, then this combination is I (0).

Recalling the PVBC, equation (4), it is possible to present analytically two complementary definitions of sustainability that set the background for empirical testing:

Firstly, the value of public current debt must equal the sum of future primary surpluses such that:

$$B_{t-1} = \sum_{s=0}^{\infty} \frac{1}{(1+r)^{s+1}} (R_{t+s} - E_{t+s}) \quad [7]$$

Second, the present value of public debt must approach zero in infinity

$$\lim_{s \rightarrow \infty} \frac{B_{t+s}}{(1+r)^{s+1}} = 0 \quad [8]$$

In order to test empirically the absence of Ponzi games, one can test the stationarity of the first difference of the stock of public debt using unit root tests developed by Dickey and Fuller (1981) and by Phillips and Perron (1988). Since the two techniques are very common and have been used in a number of empirical studies, their theoretical underpinning will not be discussed here<sup>15</sup>.

#### 4.3.2 ENGLE-GRANGER APPROACH

Following Afonso (2004), this study tests for the existence of co-integration between government revenues and expenditures taken as a percentage of GDP and this is done by using the Engle-Granger approach. Using the procedure depicted in Figure 4.1 (in appendix) which outlines the steps employed at each stage of the analysis. This approach uses the auxiliary equation (3) and the additional definition;  $GG_t = G_t + r_t B_{t-1}$  the intertemporal budget constraint may then also be represented as follows:

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<sup>15</sup> See for example Brooks (2008) for a comprehensive discussion of the theoretical underpinning of the two approaches.

$$GG_t - R_t = \sum_{s=0}^{\infty} \frac{1}{(1+r)^{s-1}} (\Delta R_{t+s} - \Delta E_{t+s}) + \lim_{s \rightarrow \infty} \frac{B_{t+s}}{(1+r)^{s+1}} \quad [9]$$

And with no Ponzi game condition,  $\Delta R_t$  and  $\Delta E_t$  must be co-integrated variables of order one for their first difference to be stationary. Assuming that  $R$  and  $E$  are non-stationary variables, and that their first differences are stationary, implies that the series  $R$  and  $E$  in levels are in fact I (1). Then, for equation (9) to hold, its left-hand side will also have to be stationary. If it is possible to conclude that  $GG$  and  $R$  are integrated of order 1, these two variables will be co-integrated with a co-integrating vector (1, -1), to ensure stationarity of the left-hand side of the equation.

More specifically, to assess the sustainability of the intertemporal government budget constraint involves testing the following co-integration regression:

$$R_t = a + bGG_t + u_t \quad [11]$$

If the null of no co-integration is rejected (with a significantly high test statistic), this means that one should accept the alternative hypothesis of co-integration. For that result to hold true, the residual series  $u_t$  must be stationary as well and should display no unit root. Following this, several assumptions about the intertemporal budget constraint can be made:

- i. When there is no co-integration, the fiscal deficit is unsustainable.
- ii. When there is co-integration with  $b=1$ , then the deficit is sustainable.
- iii. When there is co-integration with  $b<1$ , government revenues grow at a slower rate than expenditures thus, raising the possibility of deficits being unsustainable<sup>16</sup>.
- iv. When there is co-integration with  $b>1$ , government revenues grow at a faster rate than expenditures thus, raising the possibility of deficits being sustainable

In addition, if  $GG$  and  $R$  are non-stationary in levels, then the condition  $0 < b < 1$  will suffice in ensuring that the budget constraint is obeyed (Hakkio and Rush, 1991: 442). However, when the revenues and expenditures are expressed in terms of GDP, it is necessary to have  $b=1$  in order for the trajectory of the debt to GDP not to diverge in an infinite horizon.

In essence, what the Engle-Granger test entails is testing the for the existence of a unit root of the residual series. Table 4.1 below shows the critical values for the Engle-Granger co-integration test where the null of no co-integration is tested (Lütkepohl *et al.*, 2004: 11).

<sup>16</sup> See Ahmed and Rogers (1995), Quintos (1995) and Bergman (2001) for a discussion on the necessary conditions for sustainability in terms of order of co-integration.

*Table 4.1 – Engle-Granger critical values*

	1%	5%	10%
<b>No lags</b>	-4.07	-3.37	-3.3
<b>Lags</b>	-3.73	-3.17	-2.91

If it is observed that the variables are co-integrated conventionally, the next step would be to use the residuals to estimate and ECM and to analyse the long- and short-run effects of the variables. However, given the short time period analysed in this study this function is not performed and a preliminary assessment of the results is presented as an initial indication of the state of fiscal sustainability in the SADC region.

#### **4.4 DATA DESCRIPTION AND SOURCES**

All the data used in the study is obtained from the International Monetary Fund (IMF) World Economic Outlook (WEO) Database updated September 2011. Due to the limited data availability for the SADC region, annual data over a rather short period spanning from 2000 to 2011 (values estimated by IMF staff) is studied. Zimbabwe is left out from the study for two reasons, firstly due to the lack of sufficient data (with data only being available from 2005). Second, due to the unique economic and political conditions in Zimbabwe make it a difficult country to analyse fairly together with other SADC members. The expenditure and revenue amounts are in terms of GDP as supplied by the IMF.

It is important to note that the due to the limited number of observations used, the accuracy problems of unit root tests with small samples should be remembered. The alternative approach of using quarterly data would constrain the time period.

#### **4.5 CONCLUSION**

This chapter chronologically sets out the approach employed to address the questions regarding the degree of fiscal sustainability of the SADC members which are being studied. To begin, a brief discussion of the theoretical model within fiscal sustainability is provided. The government budget constraint is used as both the key element of the analysis, as well as the starting point to deriving the

analytical approach suitable for empirical testing. Formally, the Present Value Borrowing Constraint (PVBC) calls for all future tax revenues less transfers of current and all future generations measured in present value terms to be sufficient in covering the present value of future government consumption and to service the existing stock of government<sup>17</sup>. Thereafter, the Engle-Granger co-integration approach employed in the study is outlined.

Lastly, the proxies and data used in this study are discussed, the issues arising from use of annual data are identified. Having set out the analytical framework, we now move on to apply it to the 14 SADC member states under study with a view to achieve the objectives of this study as set out in Chapter 1.

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<sup>17</sup> This does not assume that government debt is ever completely paid off.

## CHAPTER FIVE:

### ANALYSIS OF EMPIRICAL RESULTS

#### 5.1 INTRODUCTION

In chapter one, the following objectives were specified: (i) to assess the feasibility of forming a currency union in SADC by 2018 with a view to analysing the extent to which each member country is meeting the SADCs macroeconomic convergence criteria as well as monetary and real convergence considerations (ii) outline the key lessons from the EMU experience (iii) evaluate the sustainability of public debt and budget deficits of the SADC member states. Having reviewed the empirical literature, analysed progress made to meet OCA and convergence criteria and laid out the empirical approach, this chapter will apply the analytical framework to address the issue of fiscal sustainability. Here the results obtained from the empirical analysis of the fiscal sustainability for 14 of the SADC countries (excluding Zimbabwe) will be outlined. It is worth noting here however that, given the short time period under analysis (due to limited availability of reliable data) as well as the assumption of the absence of structural breaks, the results found by this study should purely be observed as a preliminary attempt to quantify the fiscal environment within the SADC region.

This rest of the chapter is organised as follows: section 5.2 provides a look at the stationarity of the respective debt series of the SADC members, section 5.3 outlines the cointegration test results; finally, the last section concludes the chapter.

#### 5.2 DEBT SERIES: UNIT ROOT TEST

As outlined in the previous chapter, Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests are used in an attempt to validate the sufficient sustainability condition. In this section, the stock of real government debt is utilised in attempt to study fiscal policy sustainability for each of the SADC member states. Table 5.1 reports the stationarity test results for the level and first difference of the stock of public debt for the period under study. Since graphical plots of most of the debt series were trending<sup>18</sup>, the tests were done with both an intercept and trend with lag length determined by the Schwarz information criteria. Both the Augmented Dickey-Fuller and Phillips-Perron tests test the null hypothesis that the series have a unit root thus, rejection of a null hypothesis would mean that the series does not have a unit root (i.e. is stationary).

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<sup>18</sup> See Figure 3.1 in Chapter 3.

*Table 5.1- Stationarity tests for the stock of public debt, with constant and trend*

Country	ADF level		ADF (d)		PP level		PP (d)	
	t-stat	p-value	t-stat	p-value	z-stat	p-value	z-stat	p-value
Angola	-1.48	0.77	-3.02	0.18	-1.44	0.79	-4.39*	0.03
Botswana	-1.13	0.86	-5.01**	0.01	-0.60	0.95	-5.01**	0.01
DRC	-2.54	0.31	-1.93	0.56	-3.93*	0.05	-6.94***	0.00
Lesotho	-5.40***	0.01	-3.50	0.10	-1.64	0.71	-3.01	0.18
Madagascar	-1.53	0.76	-2.78	0.24	-1.53	0.76	-2.76	0.24
Malawi	-1.87	0.59	-2.77	0.25	-1.93	0.56	-4.25*	0.05
Mauritius	-2.61	0.28	-4.56**	0.03	-2.61	0.28	-4.74**	0.02
Mozambique	-2.45	0.34	-5.46*	0.01	-2.49	0.33	-11.10*	0.00
Namibia	-3.11	0.16	-0.10	0.98	-0.35	0.97	0.12	0.99
Seychelles	-2.76	0.24	-2.88	0.21	-1.55	0.75	-2.90	0.21
South Africa	-0.64	0.95	-1.47	0.76	1.27	1.00	-1.82	0.62
Swaziland	0.53	1.00	-2.66	0.27	2.54	1.00	1.19	1.00
Tanzania	-1.07	0.87	-2.08	0.48	-1.26	0.83	-2.00	0.52
Zambia	-2.27	0.41	-2.46	0.33	-1.07	0.88	-1.34	0.80

Note: \*, \*\* and \*\*\* denote statistical significance at the 10%, 5% and 1% level respectively.

The results allow the rejection of the null of a unit root (at levels) for the DRC according to the PP test and for Lesotho according to the ADF test. This could indicate that the solvency condition could be satisfied in these cases where public debt is in fact I (0). In addition, the results allow the rejection of the null on a unit root (for the first difference) for Botswana, Mauritius and Mozambique, according to the ADF test. For Angola and Malawi, the null of a unit root is rejected according to the PP test for their first differences. However, if one considers only a constant and no time trend, then the ADF test reports that the first difference for almost all the debt series are stationary (with the exception of the DRC, Namibia, South Africa, Swaziland, Tanzania and Zambia). Suggesting that the series of the first difference of public debt might be I (0) for some countries, and the solvency condition could be satisfied in those cases.

It is important to note however that the number of observations used is very small, spanning at most 10 years thus, accuracy problems of unit root tests with small samples need to be considered. First is the issue of structural breaks, the results reported above assume there exist no structural breaks in the debt series. However, Perron (1989) argues that most macroeconomic variables are not unit root processes; they are trend stationary with structural breaks. Such breaks will alter the mean of a process like government debt and if the structural breaks are not adequately identified, one will find a unit root where there is in fact none. Due to the short nature of the period under analysis, this study does not consider such a possibility any further and assumes that no structural breaks exist.

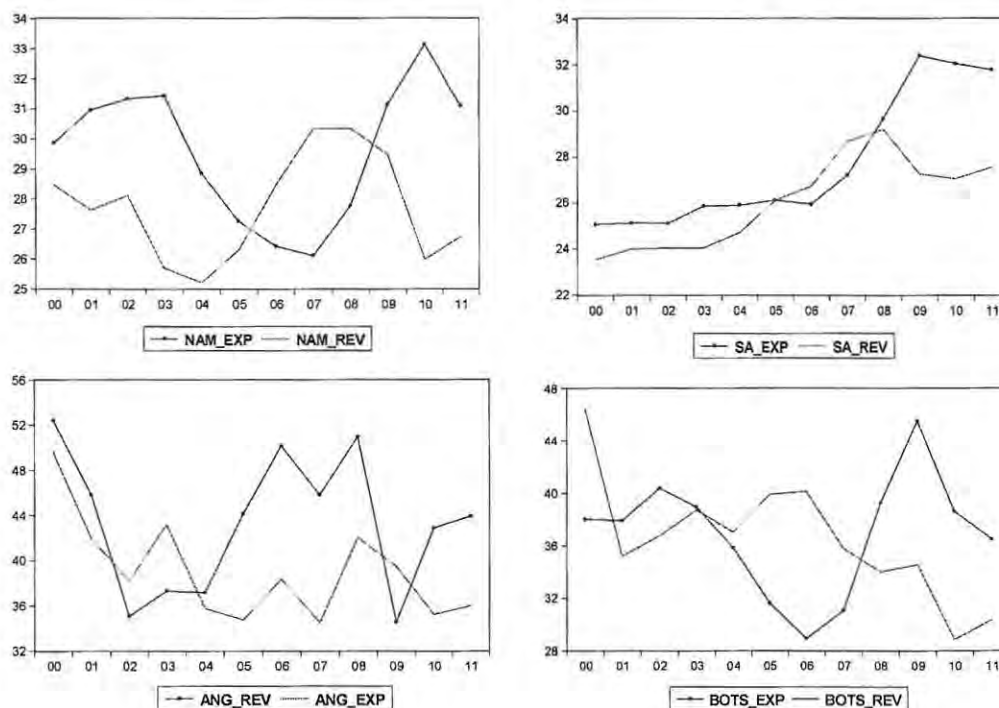
### 5.3 CO-INTEGRATION TEST RESULTS

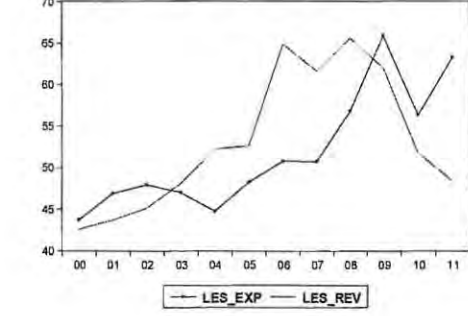
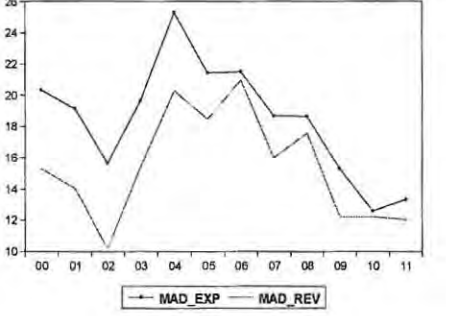
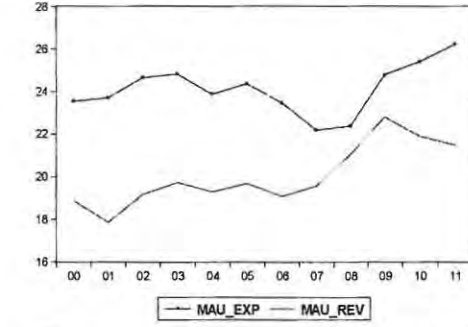
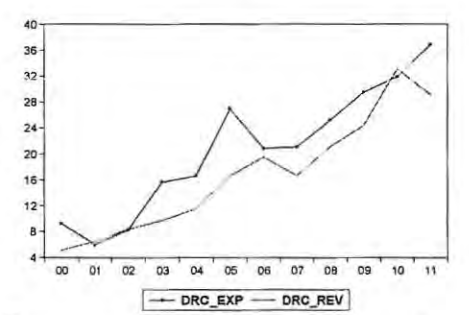
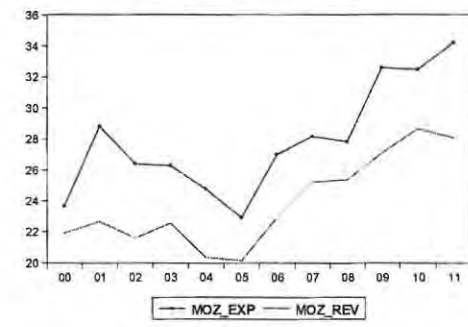
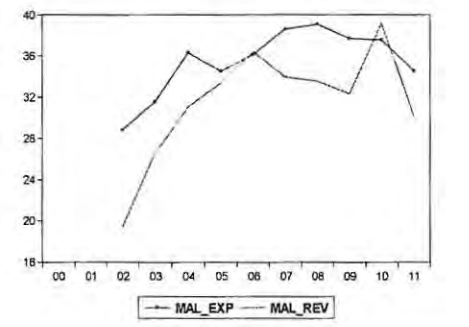
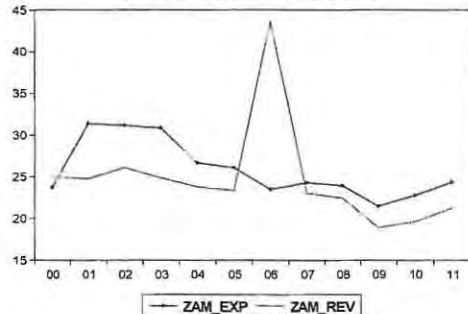
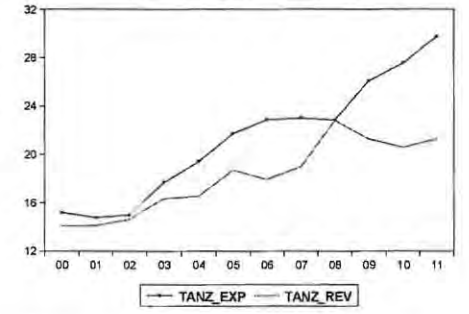
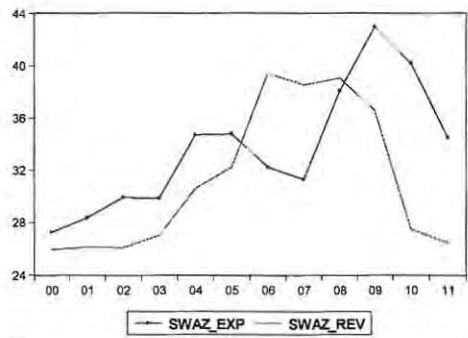
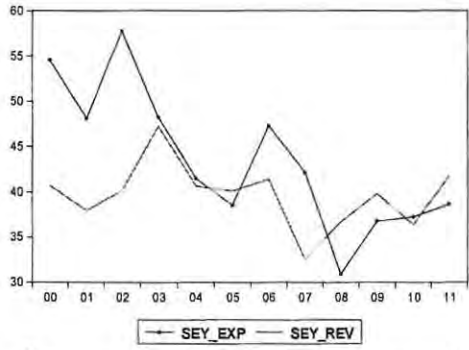
The study now proceeds to study the fiscal sustainability of the SADC members by testing the existence of co-integration between government revenues and expenditures, both taken in terms of GDP, and using the sequential procedure depicted in Figure 4.1.

#### 5.3.1 VISUAL INSPECTION OF GOVERNMENT REVENUES AND EXPENDITURES

First, in an attempt to provide an early clue, visual inspection of the time series for each country is made. Figure 5.1 depicts government revenues and expenditures as a percentage of GDP, for the 14 countries under study. The intuition being that the greater the difference between the deficit (i.e. distance between the government revenue and expenditure curve), the greater the possibility that country will not pass the sustainability test. From these figures one could suspect in advance, based on the difference between the respective revenue and expenditure curves, that a group of countries comprising South Africa, Mauritius, Mozambique and possibly Botswana, Namibia and Tanzania may not pass the sustainability tests.

*Figure 5.1 – Government expenditures and revenues (percentage of GDP)*





### 5.3.2 GOVERNMENT REVENUES AND EXPENDITURES: UNIT ROOT TEST

The next step in the analysis is to test the existence of a unit root for the government expenditures and revenues as a percentage of GDP as well as to assess whether they are best characterised as I(0) or as I(1) processes. The results of those tests for the series in both level and first difference are presented in Table 5.2 below.

*Table 5. 2 - Stationarity of government revenues and expenditures, percent of GDP (with constant and no trend)*

Country	Dependent Variable	Original series				First difference			
		ADF		PP		ADF		PP	
		t-stat	p-value	z-stat	p-value	t-stat	p-value	z-stat	p-value
Angola	Rev	-6.89***	0.00	-2.92*	0.07	-5.14***	0.01	-3.83**	0.02
	Exp	-3.00*	0.08	-5.68***	0.00	-4.57***	0.01	-6.23***	0.00
Botswana	Rev	-0.50	0.83	-2.60	0.12	-1.36	0.54	-5.56***	0.00
	Exp	-2.89*	0.08	-1.83	0.35	-2.81*	0.09	-1.81	0.36
DRC	Rev	-0.54	0.85	-0.17	0.92	-4.01**	0.02	-5.76***	0.00
	Exp	-0.25	0.90	0.68	0.98	-4.34***	0.01	-5.21***	0.00
Lesotho	Rev	-3.23*	0.06	-1.48	0.51	-2.54	0.13	-2.54	0.14
	Exp	1.28	0.99	-0.57	0.84	-4.50***	0.01	-6.12***	0.00
Madagascar	Rev	-1.75	0.38	-1.66	0.42	-3.65**	0.03	-3.65**	0.05
	Exp	-1.08	0.68	-1.08	0.68	-3.01*	0.07	-3.01*	0.07
Malawi	Rev	-4.04**	0.02	-5.76***	0.00	-2.61	0.13	-2.61	0.13
	Exp	-2.62	0.13	-2.90*	0.08	-1.96	0.29	-1.96	0.29
Mauritius	Rev	-0.99	0.72	-0.85	0.76	-3.23**	0.05	-4.65***	0.01
	Exp	-1.77	0.37	-0.93	0.74	-2.25	0.20	-2.22	0.21
Mozambique	Rev	-0.28	0.90	-0.35	0.89	-2.59	0.13	-2.56	0.13
	Exp	-0.90	0.75	-0.85	0.76	-4.42***	0.01	-4.30***	0.01
Namibia	Rev	-2.91*	0.08	-1.57	0.46	-3.40**	0.05	-2.32	0.18
	Exp	-4.00**	0.02	-1.44	0.52	-2.58	0.13	-1.71	0.40
Seychelles	Rev	-2.74	0.10	-2.75	0.10	-1.25	0.60	-4.89***	0.00
	Exp	-1.92	0.31	-1.87	0.33	-3.62**	0.03	-6.93***	0.00
South Africa	Rev	-1.18	0.64	-1.19	0.64	-2.29	0.19	-2.16	0.23
	Exp	-0.93	0.73	-0.24	0.91	-1.87	0.33	-1.87	0.33
Swaziland	Rev	-2.37	0.17	-1.33	0.58	-2.10	0.25	-2.08	0.25
	Exp	-0.66	0.81	-1.61	0.45	-4.89***	0.01	-0.84	0.76
Tanzania	Rev	-1.05	0.70	-0.91	0.74	-3.86**	0.02	-5.53***	0.00
	Exp	0.58	0.98	0.97	0.99	-2.60	0.13	-2.97*	0.07
Zambia	Rev	-2.90*	0.08	-2.90	0.08	-4.81***	0.00	-8.65***	0.00
	Exp	-1.46	0.52	-1.58	0.46	-4.85***	0.00	-5.05***	0.00

Note: The symbols \*, \*\* and \*\*\* denote statistical significance at the 10%, 5% and 1% respectively. Some consistency in the asterisk signals for the significance levels may be lost due to rounding

From the above results, it is possible to conclude that almost all the series are non-stationary in levels. The most noticeable exceptions to this conclusion being for Angola and Namibia which both report stationarity of both the revenue and expenditure series under both the ADF and PP tests. Given these results, it is thus necessary to test for the stationarity of the first differences of the series. In general, one would not reject the stationarity of the first differences of the government revenues and expenditures series under both the Augmented Dickey-Fuller and Phillips-Peron tests.

### 5.3.3 ENGLE-GRANGER CO-INTEGRATION TEST

Subsequently, the Engle-Granger co-integration test was performed on the government revenues and expenditures as a percentage of GDP and these results are presented in Table 5.3 below. The co-integration tests were performed for all the SADC countries, including those for which the ADF test statistic (but not necessarily the PP test) allows rejecting the null of unit roots for the first difference of both the revenue and expenditure series. The test results allow the rejection of the co-integration hypothesis for the majority of the countries, with the exception of the DRC, Mozambique and Namibia. It is interesting to note that the estimated coefficients for both the government expenditures and revenues, are always greater than one. As a matter of fact, for each one percentage point of GDP increase in public expenditures, for instance in the DRC, Mozambique and Namibia, public revenues increase respectively by 3.73, 3.38 and 3.59 percentage points of GDP.

Upon further analysis it is observed that these three countries are the ones where the estimated coefficient of  $b$  in the co-integrating vector  $(1, -b)$  has the highest absolute value. Although no significant co-integration vector is observed for any other country, it is interesting to note that estimated coefficient of  $b$  in the co-integrating vector for Malawi and Zambia are also of high absolute value. Where, for each one percentage point of GDP increase in public expenditures leads to a 3.01 and 3.13 percentage increase in public expenditures respectively.

In other words, for the period 2000-2010, government expenditures in the abovementioned SADC countries exhibited a lower growth rate than public revenues, therefore supporting the hypothesis of fiscal policy sustainability. Recalling the conclusions concerning the intertemporal budget constraint outlined in chapter three, when there is co-integration with  $b > 1$ , government revenues grow at a faster rate than expenditures thus, raising the possibility of deficits being sustainable. Thus, these results suggest that fiscal policy may be unsustainable for almost all of the SADC countries with the possible exceptions of the DRC and Mozambique (not so much Namibia as only public expenditure was observed to be statistically significant).

**Table 5.3 - Engle-Granger co-integration results**

Country	Dependent Variable	Engle-Granger (aug) co-integration test (REAL)	
		Vector	P-value
Angola	Rev	-2.44	0.36
	Exp	-2.96	0.19
Botswana	Rev	-2.43	0.14
	Exp	-2.72	0.09
<b>DRC</b>	<b>Rev</b>	<b>-3.73**</b>	<b>0.07</b>
	<b>Exp</b>	<b>-3.79**</b>	<b>0.06</b>
Lesotho	Rev	-1.02	0.90
	Exp	-0.67	0.95
Madagascar	Rev	-1.54	0.75
	Exp	-1.54	0.75
Malawi	Rev	-3.01	0.19
	Exp	-2.44	0.37
Mauritius	Rev	-2.41	0.37
	Exp	-2.39	0.38
<b>Mozambique</b>	<b>Rev</b>	<b>-3.38**</b>	<b>0.11</b>
	<b>Exp</b>	<b>-4.50***</b>	<b>0.02</b>
Namibia	Rev	-2.42	0.37
	Exp	-3.59**	0.09
Seychelles	Rev	-3.22	0.14
	Exp	-2.23	0.45
South Africa	Rev	-2.22	0.45
	Exp	-2.29	0.42
Swaziland	Rev	-2.28	0.43
	Exp	-3.24	0.12
Tanzania	Rev	-2.65	0.28
	Exp	-2.76	0.25
Zambia	Rev	-3.13	0.16
	Exp	-1.59	0.73

Note: The symbols \*, \*\* and \*\*\* denote statistical significance at the 10%, 5% and 1% respectively. Some consistency in the asterisk signals for the significance levels may be lost due to rounding

## 5.4 CONCLUSION

This chapter presented and discussed the estimations and results with regard to the fiscal sustainability of the 14 SADC members under analysis. To begin, was the study of fiscal policy sustainability whereby ADF and PP tests were used in attempt to validate the sufficient sustainability condition, using the stock of real public debt. Overall, the results allow the rejection of the null of a unit root for only one country according to both the ADF and PP tests at levels. However, the results for the first

difference allow the rejection of the null of a unit root for two and six countries according to the ADF and PP tests respectively. Suggesting that the series of the first difference of public debt may be  $I(0)$  for some countries, in which case, the solvency condition could be satisfied.

The results for the cointegration tests identified only three co-integrating vectors for the DRC, Mozambique and Namibia suggesting that fiscal policy may be unsustainable for most countries with the possible exceptions of these three countries. These results correlate closely with those suggested by the debt series analysis, where both the DRC and the Mozambique first difference debt series were observed to be  $I(0)$ . Although the visual inspection of the respective government revenues and expenditures represented in Figure 5.1 suggested that Mozambique and Namibia could fail the sustainability test, they did not.

## CHAPTER SIX:

### SUMMARY OF FINDINGS AND AREAS FOR FURTHER RESEARCH

#### 5.1 SUMMARY OF STUDY AND CONCLUSIONS

The study analysed the feasibility of forming a monetary union in the SADC region with the ultimate goal being to provide a preliminary indication of whether the region should continue its pursuit of this agenda. Doubts concerning the continuing stability of the European Monetary Union have recently emerged as a result of fiscal crises in certain member states. This has raised questions about, *inter alia*, the adequacy of the convergence criteria that were adopted and implicitly, whether some attention should have been directed to the theory of optimum currency areas (OCA). These problems and the related questions are relevant to the proposed SADC monetary union in terms of both the stated convergence criteria and other problems that have become evident in the EU. The purpose of the study was to address three main issues, namely: assess the progress the SADC members have made towards achieving their desired state of macroeconomic convergence, outline the key lessons from the EMU experience thus far and lastly to evaluate the regions' level of fiscal sustainability.

The first step in this study was to review the literature on the theory of OCA tracking its inception, foundations and challenges. This entailed briefly touching on the costs and benefits associated with monetary union formation, outlining how the OCA theory can be interpreted as a useful tool in measuring convergence, looking at the relevance of Maastricht-type convergence criteria and their usefulness compared to OCA criteria. Furthermore, the pertinent issue of fiscal sustainability was introduced in accordance with the intertemporal budget constraint which paved the way for an analysis of the empirical evidence from the EMU. Efficiency gains in the form of the elimination of transaction costs of exchanging currencies and simplified banking and treasury management together with welfare gains associated with reduced uncertainties about exchange rates were identified. In essence, the review of the OCA theory identified a collection of criteria believed to be mandatory conditions prior to union formation including, amongst others, labour and factor mobility, openness, as well as fiscal integration. The foundations of OCA criteria were later questioned by the introduction of the endogeneity of OCA criteria argument which proposed that it is less important that OCA criteria are met *prior* to a monetary union being established. It argued that monetary union membership will induce convergence, institutional and structural changes that will assist members of the union to find new methods of adjusting to economic shocks. Endogenous OCA theory identifies

two main channels of transmission through which a monetary union may affect the economic performance of a country, these being trade integration and enhanced credibility.

Although OCA theory does not mention a need for the attainment of *prior* convergence of macroeconomic variables such as inflation, interest rates and budgetary policies; such convergence played an integral part in the EMU approach. According to traditional OCA theory, these convergence criteria are unnecessary because countries with say different inflation rates *prior* to the union may be characterised by similarities in other key economic variables. In fact, the transition to a monetary union has traditionally not called for the need for member countries to first slowly meet specific convergence criteria before forming a union. It was later argued in chapter two (section 2.4.2) that although the existing literature fails to point out, there exists an important link between OCA and Maastricht-type convergence criteria. A key feature of the EMU approach to monetary union formation, compared to previous experiences of a similar nature (German), was its gradual, long-term approach dedicated first to the attainment of convergence criteria. The empirical evidence was purely focused on analysing the EMU experience, tracking its formation and identifying the key lessons SADC can learn from it. Efficient, effective and consistent management of progress towards meeting convergence criteria as well as the need for a complete approach towards union formation were identified as key lessons. Additionally, and possibly most importantly given the current EU debt issues, the need for tightly governed fiscal practices pre- and post-union formation as well as the establishment of a centralised fiscal authority were possible recommendations for SADC moving forward.

A review of the literature on the efforts SADC has made to meet OCA as well as Maastricht-type convergence criteria is then presented in chapter three. It was found that most of the existing literature has been dedicated to evaluating the correlation of output growth rates, output shocks and exchange rates between the SADC member states. To summarise the findings from these studies, most authors either (a) failed to find results supportive of monetary unification among the countries considered or (b) found support for a monetary union comprising a relatively small group of countries, typically including South Africa, and at times with other CMA countries and/or Botswana. Two key factors can aid in accounting for these findings. First, most SADC countries lack sufficient diversification in export bases and the composition of exports varies considerably among the countries. Second, some SADC countries (like Botswana, Namibia, Lesotho and Swaziland) have high shares of trade with South Africa. Therefore, it is expected that those countries exhibit relatively high co-movements of output growth with South Africa. In fact, until the late-1990s, empirical work showed that only a small group of countries (even in the eurozone) showed high correlations of output growth and/or shocks to output growth. Exceptions to the foregoing results were studies

which suggested that a monetary union containing at least seven countries was feasible. Finding high co-movements of shocks in output levels among 9 SADC countries as well as the possibility of a 23-member monetary union among African economies (with the CMA countries as a core group), these studies expanded on the existing literature.

With a scant pool of literature on the progress SADC has made to meet its Maastricht-type convergence criteria, this paper takes a look at the most recent statistics in this regard. In an attempt to get an updated overview of the current progress, the six key macroeconomic variables comprising; inflation rates, government debt levels, current account balances, foreign reserves, savings and domestic investment levels and budget deficits were considered. It was observed that most of the SADC members had made considerable progress towards the achievement of the goals set for 2008. In addition, the degree of compliance with the criteria was predicted to increase even further between 2008 and 2012 indicating that the region was initially on track to its goal of a single currency and regional central bank by 2016. Although there were early signs of convergence, the process had been observed to be unequal with a said 'convergence group' comprising only a few countries was identified.

Lastly, a SADC union was perceived as impractical in the near future for two key reasons first, deeper and more equal convergence was still required and second, the exclusion of the regions' political dimensions in previous analyses meant a number of complexities which could override progress in convergence were not considered. Following this study's consideration of the recent stats, the following findings were brought to light: it would appear that the SADC community has continued to move towards achieving a state of increased macroeconomic convergence. This progress has continued to be asymmetrical as well as unstable and unpredictable. The presence of a number of other issues that were not immediately apparent in the data does, however, mean that the picture was not as favourable as it first appeared to be.

To begin, the lack of focus on intra-regional trade flows in tracking such convergence could give biased and unreliable results. The crux of the convergence debate should be how the growth and diversification of intra-SADC trade will be facilitated and promoted. Naturally, this will have a bearing on the political dimensions of monetary union formation which, after observing the EMU experience, plays a pivotal role in a successful union. Secondly, with respect to the convergence targets relating to the current account and the fiscal balance, it was noted that many of the SADC countries are primary commodity producers and exporters. Progress with regard to the achievement of these convergence targets was thus argued to be the result of fortuitous movements in commodity prices rather than

being the outcome of policy action undertaken. Divergence from the targeted levels in the future is thus plausible, or even probable, in the event of a failure to achieve adequate diversification. The structure of the proposed member economies also means that shocks to the union members will be *symmetrical* and adjustment accordingly made more difficult.

Finally, recent experience with Swaziland seemed to be an early indication of the challenge of forming the necessary 'political union' and how this may be a lot more complex than envisaged, even supposing that a sense of 'regional identity' is created.

As an introduction to the empirical analysis, chapter three concluded by taking a brief look at the fiscal stance of the SADC region. The overall conclusion made was that the fiscal conditions differ considerably between the resource intensive and the non-resource exporting nations. With the overall conditions looking more favourable for oil exporters and less so for low-income countries.

In order to address the empirical objective of the study, which was to evaluate the sustainability of fiscal deficits, Engle-Granger co-integration tests between public revenues and expenditures were performed for the SADC members for the period 2000-2010. However, first the study took a brief look at the respective debt series whereby ADF and PP tests are used in attempt to validate the sufficient sustainability condition. The series of the first difference of public debt was observed to be  $I(0)$  for almost all the countries, an early indication that the solvency condition could in fact be satisfied in some SADC countries. Although this analysis assumes the existence of no structural breaks in the debt series for all the countries under analysis, the results were used as an initial indication of the more formal analysis. Prior to completion of the Engle-Granger co-integration tests, stationarity of the series using the ADF and PP tests were completed. It was established that almost all the series were stationary at first difference (i.e. were  $I(1)$ ) – a necessary condition for co-integration analysis. Engle-Granger co-integration analysis was then applied to examine the nature of fiscal sustainability in the SADC countries under study. Two co-integrating vectors were found for the DRC and Mozambique, with the estimated coefficient of  $b$  is observed to greater than 1, suggesting that fiscal policy may not have been sustainable for most countries with the possible exceptions of the DRC and Mozambique.

Overall, the results of this study show that the SADC region has made considerable progress in moving toward a state of increased macroeconomic convergence. Although the theory of OCA criteria has played an insignificant role in the approach employed by SADC in formulating steps towards monetary union, it continues to form the foundations of and is closely linked to the Maastricht-type convergence criteria being pursued. There are numerous lessons SADC can learn

from the EMU experience thus far and the recent debt issues in the eurozone have drawn attention to the flaws and challenges of adopting an approach similar to that of the EMU. The SADC members, together with the SADC Central Bank Governors should learn from the EMU experience and emphasise the importance of making efforts to build first a strong and sound political union within the region. This, together with a centralised fiscal authority whose key purpose is to govern fiscal practices of the SADC members in a fair and impartial manner, will foster an environment more conducive for a more promising union formation process. The empirical results of this study have provided an initial indication of how fiscally unsustainable the SADC region is, further stressing the need for increased focus on matters of fiscus.

## 5.2 SUGGESTED AREAS FOR FURTHER RESEARCH

While this study only evaluated the issues outlined in chapter one over a rather short time period (spanning at most 10 years), it would be of greater benefit to track SADC performance over a longer period. This will assist in eliminating the problems associated with employing a small sample testing for unit roots and co-integrations. Issues pertaining to the limited and often unreliable availability of data for the SADC region as a whole is a cause for concern. Efforts need to be made by SADC Central Bank of Governors to address this issue so as to facilitate any such study in the future.

Secondly, although this study assumed the absence of any structural break in the series analysed, there is a call in the literature to observe how the presence of structural changes in the trend function will be biased towards the non-rejection of a unit root thus, affecting the ADF and PP tests results. Such breaks could be attributed to huge fluctuation in commodity prices, political turmoil or regime changes in the countries under analysis. To address this issue, Zivot and Andrews (1992) suggest estimating the autoregressions in some interval that excludes break dates near the beginning or the end of the sample. Similarly, as in the case of unit roots, a test for co-integration that does not take into account possible breaks in the long-run relationship will have lower power and tend to under-reject the null of no co-integration if there happens to be a co-integrating relationship that has changed at some point during the sample period. Gregory and Hansen (1996) outline tests for co-integration with regime shifts. Given that first, such structural breaks can be efficiently identified and second, that a longer time period is investigated, both these approaches could be employed to enhance the scope of the current study.

Lastly, a panel co-integration approach could be employed as opposed to the more limited Engle-Granger approach employed in the current study. The main advantages of using the panel co-integration methodology is that it eliminates power distortions of the conventional unit root and co-integration tests as a result of the small size of sample used.

**APPENDIX**

*Figure 4.1 Fiscal policy sustainability, unit root and co-integration tests*

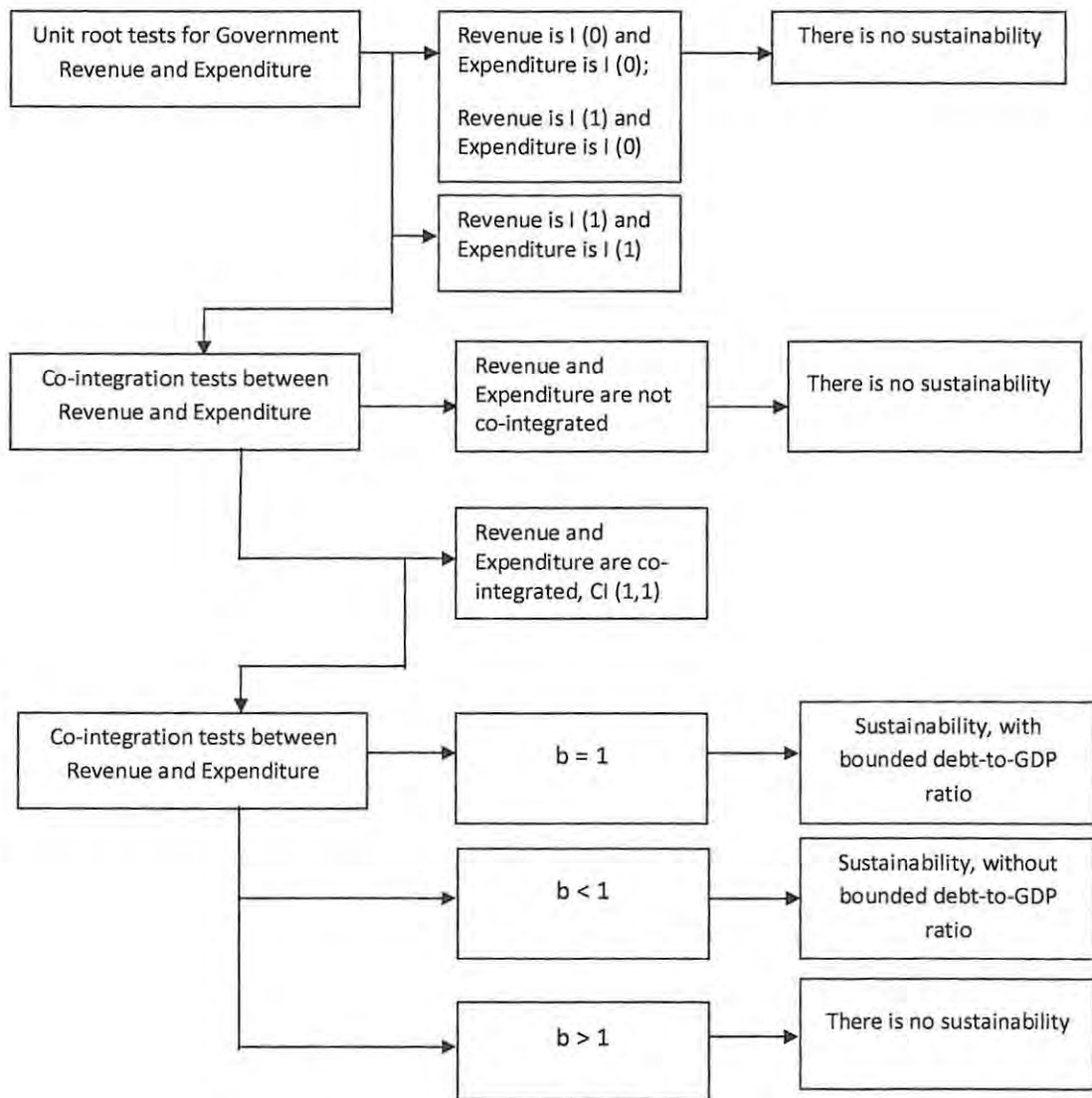


Table from: (Afonso, 2004: 23)

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