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External shocks and policy responses in the Southern African Development Community (SADC)¹ countries

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¹SADC comprises Angola, Botswana, Democratic Republic of Congo, Lesotho, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, Tanzania, Zambia and Zimbabwe.

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Synopsis – This article had a dual objective. The first was to analyse the synchronicity of economic activities between the SADC countries and the more developed economies, with the view to structuring ideas already proposed and testing hypothesis for that phenomenon's behaviour. The second objective, subject to the first, was to ascertain whether economic policy measures adopted in the SADC countries in terms of increases in exports as a proportion of the GDP – deliberate or possible by circumstances – contributed to neutralising the impacts of exogenous shocks on the current-account balance as a whole and on the balance of goods and services, in view of the fact that the synchronicity of intensified activities facilitates the transmission of such shocks from the developed economies to the less developed, such as those of the African economic bloc. The tests undertaken support empirically, both the existence of relatively high synchronisation and the hypothesis that increases in exports/gross domestic product (GDP) are consistent with the adverse impacts of exogenous shocks, depending on the magnitude and the nature of the underlying crisis. The evidence is clearer when the ratio current-account balance/GDP as a shock indicator is used. In the more recent crisis of 2001/05 and the present one that started towards the end of 2008, whatever the indicator used, the results of shocks are, in equal manner, more significant in terms of responses related to increases in exports as a proportion of GDP, oriented by the magnitude or nature of the shock, over the results of the current-account balance. This occurrence was in evidence in 2009.

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EXECUTIVE SUMMARY

The present work aims to review the synchronicity of economic activities between the SADC countries and the more developed economies, as well as test how the external shocks affected the SADC countries. Additionally, it intends to verify the extent to which the measures of economic policies adopted in the SADC countries in terms of increases in exports as a proportion of the GDP – deliberate or possible by circumstances – contributed to neutralising the impact of exogenous shocks on the current-account balance as a whole or on the balance of goods and services, since the synchronicity of intensified activities facilitates the transmission of these shocks from the more-advanced to the less-developed economies, such as those of SADC.

In light of the fact that we are dealing with two closely related issues (synchronicity of economic activities versus responses of shocks' neutralisation policies), a strategy of complementarity, combining tabular analysis to show the difference between the variation rates of real GDP before and after the recent international crisis with correlation and regression analysis, was adopted in the case of synchronisation. In the case of policy responses, apart from the theoretical framework presented by way of literature review, panel data models to estimate the exports/GDP equation were also used as a function of external shocks. The use of this procedure is justified in view of the availability of data in cross-section (at country level) and time series (1990/2009). The speculative rationalisation used was based in the analytical structure proposed by Bacha (1987), whereby: *Variations in current account deficit as a proportion of GDP = Variations in external shocks – Variations in policy responses + error term.*

The study suggests the existence of synchronisation between SADC and the more developed countries, that is, the synchronicity of activities for the period 1989/10 is significant, indicating that the variation rates of SADC's GDP as a whole are, in general, substantially associated to those in the rest of the world, especially with the world economy as a whole (coefficient of 0.57) and the European Union (0.44).

In the same period, there was an intensification of economic relations with China, Japan and the euro zone, against a decline with the United States. Furthermore, an accentuated change in relation to the Chinese economy was noted (correlation of -0.24), without synchronisation for the period 1989–97, against the high level observed in 1998–10 (0.77). Counting the positive coefficients that indicate commercial and/or financial interrelations we observe that when we compare the two periods (1989-1999 e 2000-2010), South Africa, Malawi, Namibia, Seychelles and Zambia experienced increases in synchronisation within the bloc but, although significantly interrelated, there were decreases in the case of Botswana, Mozambique, Swaziland, Tanzania and Zimbabwe. In the rest of the countries, the rates were maintained and there was more inclusive synchronicity. In brief, those results suggest that, in spite of the proximity and the existence of the integration bloc, the economic interrelations of the SADC countries, with the exception of Zimbabwe, have turned more to their trading partners in the rest of the world.

Comparing the data between the two periods, we observe a general accentuated increase in synchronisation of the SADC countries with the more advanced economies, both in the bloc and as a whole. The majority of the countries showed, for the period 2000–2010, stronger synchronisation with the countries of the European Union as a whole and the Euro Zone in particular which, as a consequence, occurred with the SADC aggregate. This result gives empirical support to the hypothesis that old colonial links with Europe still persist.

However, there are redirection changes where China starts establishing significant economic interrelations together with Europe in the case of South Africa, Angola, Madagascar, Namibia and Seychelles, or separately as we see in Malawi, DRC, Tanzania and Zambia. In the case of

Angola and Seychelles, the estimated economic interrelations, though significant with the European countries, are now stronger with China. Lastly, a significant reduction in the synchronisation rates of Zimbabwe in relation to the more developed countries in recent times has been registered.

Meanwhile, it is important to refer the empirical support to the hypothesis of synchronisation of activities between the two economic blocs, which means that events irradiating shocks motivated by crisis in the European Union are transmitted to the economies of SADC, notably those more relevant locally (South Africa and Angola) and/or more intimately associated to that bloc of more developed countries (South Africa, Botswana, Namibia, Madagascar and Swaziland), as demonstrated by the correlation coefficients. As for the impacts in the periods with registers of more intense shocks, there is evidence of differentiated and more intense impacts only in the periods 2001/05 and 2009, when the balance of goods and services/GDP rate was used to capture external adversities. However, with the utilisation of a more inclusive indicator (balance of current account/GDP), the results change significantly, suggesting that the effects of shocks vary in time to depend on the extension and nature of the crises that underpin them.

For the approach from export penetration as a function of external shocks, exports in proportion of GDP from the SADC countries were analysed, and it showed that they are inversely associated to the external shocks, which indicates that adverse external shocks produce negative results in the balance of associated goods and services.

When the exports/GDP levels are higher, it suggests that those countries for the period 1990/2009, in the face of impacts from adverse exogenous shocks, reacted or made adjustments consistent with an increase in exports penetration as a strategy to adopt in order to revert declines in the balance of goods and services: reduction of surplus / increase of deficits.

With the shock indicator, which captures more extensive dimensions of the current-account balance, the results change significantly, giving empirical support to the hypothesis formulated a priori. These results indicate that the impacts of adverse shocks that induce or enable higher levels of exports/GDP are intensified in different phases of the crisis, depending on their extension and nature. Individually, one sees that those effects associated to the equation present distinct levels of statistical significance. In more recent periods, we emphasise the significance of the shocks of 2009, the plausible start of the impacts from the actual financial crisis on the economies with synchronised activities, such as those from the African bloc in relation to the more advanced countries.

Thus, in the SADC countries there exists evidence that, in broad terms, the external shocks for the period 1990/2009 induced reactions in terms of establishing policies to neutralise the effects from shocks, reflected directly in the results of the current-account balance as a whole, or specifically on the balance of goods and services. Amid the possibilities of policy dispositions to neutralise external shocks, exports penetration (Exports/GDP) was analysed as an indicator-synthesis of the actions deliberately undertaken or obtained as a result of other actions and/or possible by circumstances, leading to the reduction or neutralisation of impacts from shocks.

Finally, it was emphasised that, owing to the low interconnection between financial institutions (by means of direct exposure and payment compensation systems), the impacts from those shocks, initially of a more financial nature, manifested themselves slower in the SADC economies. Meanwhile, additional impacts in the face of the crisis' recent outbreak, in the form of economic stagnation of the more developed economies and reduction of the growth rate in emerging countries such as Brazil, China and India are not fully predictable, but are certainly worrying.

Meanwhile, the SADC economies, especially the non-producers of essential commodities such as oil and metals, face the effects of external shocks. Initially, the problems resulting from those shocks tend to affect external accounts, implying always deficits in current accounts and the balance of payments as a whole, thus becoming an obstacle to the resisting capacity of those economies by ways of accumulated international reserves or other instruments.

The manner of policy response from the various SADC countries was also presented. Lastly, so as to orientate the SADC countries to guard against some crisis or to react to them, we leave some recommendations such as the diversification of the SADC economies, as well those of their trading partners and bigger incentives to the agricultural sector, fisheries and others, with a view to export substitution. Strengthening of banking supervision and macro prudential analysis, as well as better co-ordination of the fiscal and monetary policies formed part of the final considerations, with the aim of reducing tribulations from international trade. In broad terms, the SADC countries should consider all constrains and trade-offs and design an appropriate programme of macroeconomic adjustment. Such programme must describe the macroeconomic problems and anchor the expectations of investors relative to the formulation and implementation of macroeconomic policies. Additionally, the programme must reflect the amount of internal policy adjustment and, therefore, the situation of sustainability of its debt.

1. Introduction

1.1 Background: Problematic Context

In the decade that ended in 2008, the economies of the African countries as a whole experienced stable progress, creating thus foundations for higher growth and poverty reduction⁵. Specifically, the economies of the 15 SADC countries follow a similar pattern.

However, this optimistic scenario deteriorated by virtue of factors outside the control of those countries' governments. In effect, the international financial crisis, which erupted in the United States in September 2008 and intensified with the more recent problems of indebtedness of the European Union's countries, especially in the Euro Zone and more specifically Greece, Ireland and Portugal, has originated shocks with possible adverse impacts on the economies worldwide, notably those more exposed to the external scenario through trade and/or financial relations.

Thanks to poor interconnections between the financial institutions through direct exposure and payment settlement systems, the impacts of those shocks, initially of a more financial nature, displayed themselves slower in the least developed countries of Africa, including those in SADC, but intensified after 2009, affecting companies, mines, employment, government revenue and the livelihood of families, etc.⁶. The additional impacts in view of the more recent upsurge of the crisis in the form of economic stagnation of the more developed economies and the reduction of the growth rate in emerging countries such as Brazil, China and India, cannot yet be fully predicted, but are certainly, worrisome.

Seen from a historical perspective, the economies of LDCs, especially those that do not produce essential raw materials such as oil and metals, have always faced the effects of external shocks, originating in general, in the more developed economies. Initially, the problems created by those shocks tend to affect external accounts, implying always deficits in current accounts and the balance of payments as a whole, mining thus, the resisting capacity of those economies through accumulated international reserves or other tools.

Because adverse external shocks affect directly the balance of payment's behaviour, especially current account flows, the adjustments carried out to balance external accounts are varied, and range from policies to stimulate exports and activate the economy, to reducing consumption and investment in the form of retraction of imports and/or substitution of goods and imported services. That report of policy arrangements includes combating inflation as a way to maintain the population's purchasing power, the stimuli to credit and economy to stimulate increases in fiscal spending, with the view to activate production and employment.

1.2 The Problem of Research

The search for answers to the questions implied in this problematic context is not an easy task. These are far reaching issues, especially because they include the economies of 15 countries with different characteristics, even if geographically close and with a certain degree of integrated activities, for being part of an economic bloc.

Given this, it is necessary to identify within that general context, specific issues susceptible to answers with scientific criteria. Thus, among these issues is the focus on the articulation process between the economies of SADC and those of more developed countries, and if this is so, one enquires to which extent penetration of exports (exports/GDP) constituted, among the various policy arrangements possible or in combined mode, a form of dealing with external shocks in the SADC countries, in the long run.

We point out that this problem involves two complementary dimensions that together form a whole. Indeed, it only makes sense to analyse the efficiency of policies that will reverse the impacts of adverse

⁵ Cf. *Report of the Committee of African Finance Ministers and Central Bank Governors* (2009)

⁶ See *Committee of African Finance Ministers*

external shocks through the increase of export penetration, if those exogenous adversities are effectively at the origin of the process of simultaneous articulation or synchronicity of economic activities between regions, by virtue of trade and/or financial links.

For that reason, the analysis developed consisted initially, of the verification of the degree of activity synchronisation, and afterwards the strategies adopted to face the resulting shocks within the economic interlinking process.

1.3 Objectives and Justification

So as to answer the research problem's consubstantial issues, we follow the general objective of analysing the synchronicity of economic activities between the SADC countries and the more developed economies, to verify if external shocks stimulated or not macroeconomic adjustments in the form of exports as a proportion of GDP in the countries part of the bloc.

The achievement of this general objective required necessarily and complementarily the following secondary objectives:

- a) Characterize the SADC countries in order to better understand their relevant individualities;
- b) Examine to what extent the present international financial crisis has affected the economies of the SADC countries;
- c) Describe concisely, the nature of the more important economic crisis of the last 40 years.

This analysis is justified insofar as the knowledge generated and the organized information contributes to indicating ways to consider adverse external shocks.

Besides, the results obtained may be a starting point to expand the debate on the complex issues associated with the topic.

1.4 Methodology

As a methodological approach, it was decided to choose specialized literature, debating or presenting relevant theoretical and conceptual aspects with each developed theme. As these two themes are closely related (synchronisation of economic activities vs. policy responses to shock neutralisation), in the case of synchronisation, a strategy of complementarity that combined tabular analysis to contrast real GDP's variation rates before and after the recent international crisis, was adopted.

In the case of policy responses, apart from the theoretical framework presented by way of literature review, panel data models to estimate the exports/GDP equation were also used as a function of external shocks. The use of this procedure is justified in view of the availability of data in cross-section (at country level) and time series (1990/2009)⁷.

In addition to this introduction, the text is structured into four more general topics. In the next one are described the relevant characteristics of the 15 countries in the SADC region. The third topic debates the concepts and theory of how the mechanisms of transmission of external shocks generated in the more developed economies, in general, perform on the less developed economies and especially on the SADC economies, in order to identify some pattern of synchronised economic cycles, besides the demonstration of synchronicity evidence between the SADC countries and that of more developed countries. Afterwards, the evolution of the global economy in the last 40 years will be succinctly analysed, with the view to identifying shock irradiating events, describing the experience of the SADC countries in terms of macroeconomic adjusting policies in front of external shocks, presenting finally, a model structured to examine the responses of countries in the region to these shocks. Lastly, by way of considerations, some conclusions that will assist us to expand the understanding and support possible anti-cyclical actions from

⁷ Sobre as vantagens de modelos de dados em painel, apresentadas no Capítulo, ver, entre outros, Asteriou e Hall (2007), p. 344.

the governments in the region will be aligned, and policy measures emerging from the analysis, will be suggested.

2. Brief Characterisation of the SADC Economies

The proposal to examine the impacts of external shocks on the SADC economies and the respective reactions of governments in the region to try and neutralise them requires the preparation of information that characterises and identifies them as a whole, and their components in particular.

The SADC (Southern African Development Community), is a community structured as an economic bloc in 1992, it includes 15 countries located in the south of Africa, namely: South Africa, Angola, Botswana, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Democratic Republic of Congo, Seychelles, Swaziland, Tanzania, Zambia and Zimbabwe. The SADC objectives, as a bloc, are briefly the following: a) to promote economic growth and social development as a way to reduce poverty; b) to promote and defend peace and security in order to attain self-sustainable development levels, based on confidence and the interdependency of the member states; c) to obtain complementarity in national and regional programs and strategies; d) to promote and maximize productive undertakings and the utilisation of the region's natural resources; and e) to reinforce and consolidate the long historical, social and cultural affinities, and the links between the region's peoples⁸.

In spite of their geographical proximity, their historical affinities and the common purposes of projects' undertakings, the economies of the SADC countries display different characteristics in many aspects.

With the objective of contrasting differences and similarities, the characteristics associated with territorial range, demographic density, population, level of urbanisation, economic activities, GDP per capita and the human development index (HDI) for each country in SADC and the region as whole, are presented on Table 2.1.

SADC as a whole displayed a Gross Domestic Product (GDP) of approximately 429.7 thousand million dollars in 2009. The population reached 276.4 million inhabitants in 2010. From that, 35.5 per cent live in urban areas, and the remaining 60.5 per cent are still in the rural areas. The GDP per capita was at around 1.555 dollars and the average Human Development Index was 0.381, way below the levels seen in developed countries. The area of SADC adds up to 9.854 km², a territorial range greater than that of some countries like the United States, China and Brazil.

Individually, the SADC member states are very different. Their territorial expansion varies from the 0,5 km² of Seychelles to the 2.344.5 km² of the Democratic Republic of Congo, passing through the 1.246.7 km² of Angola and the 1.221,0 km² of South Africa, to mention only those countries larger in surface. GDP, on the other hand, is concentrated in South Africa with 66.6 per cent of the SADC total, followed by that of Angola with 8.1 per cent and that of Tanzania with 5.2 per cent.

Urban population is predominant in South Africa with 61.7 per cent of the total, followed by Botswana (61.1 per cent), Angola (58.5) and Seychelles (55.3). The lowest rates of urbanisation are, in that order, in Malawi (19.8 per cent) and in Swaziland (21.4).

⁸ Cf. SADC Today (2005).

Table 2.1: Selected Characteristics of the SADC countries, 2009-2010

COUNTRY	Territorial Extension (Mil km ²)	Population in 2010 (Mil inhabitants)	Population (% over total)	Urban Population 2010 (%)	Demographic Density (Inhabitants/k m ²)	GDP in 2009 (Millions of USD)	GDP (% over total)	GDP per capita (USD)	Human Development Index 2010 (HDI) ¹
South Africa	1,221.0	50,492	18.3	61.7	41.4	285,983	66.6	5,707	0.597
Angola	1,246.7	18,993	6.9	58.5	15.2	34,991	8.1	1,892	0.403
Botswana	581.7	1,978	0.7	61.1	3.4	11,620	2.7	5,959	0.603
Lesotho	30.4	2,084	0.8	26.9	68.7	1,613	0.4	780	0.427
Madagascar	587.0	20,146	7.3	30.2	34.3	8,790	2.0	448	0.435
Malawi	108.5	15,692	5.7	19.8	144.6	4,860	1.1	318	0.385
Mauritius	2.0	1,297	0.5	41.8	635.8	8,668	2.0	6,729	0.701
Mozambique	801.6	23,406	8.5	38.4	29.2	9,579	2.2	418	0.284
Namibia	824.3	2,212	0.8	38.0	2.7	9,310	2.2	4,288	0.606
D.R. of Congo	2,344.9	67,828	24.5	35.2	28.9	11,204	2.6	170	0.239
Seychelles	0.5	87	0.0	55.3	191.2	788	0.2	9,354	...
Swaziland	17.4	1,202	0.4	21.4	69.2	3,161	0.7	2,668	0.498
Tanzania	945.1	45,040	16.3	26.4	47.7	22,351	5.2	526	0.398
Zambia	752.6	13,257	4.8	35.7	17.6	12,748	3.0	985	0.395
Zimbabwe	390.8	12,644	4.6	38.3	32.4	4,056	0.9	324	0.140
SADC Region	9,854.4	276,358	100.0	39.5	28.0	429,722	100.0	1,555	0.381

Original sources: Population: Indicators on population, UN/Statistics Division; GDP: UN/Statistics Division; Territorial Extension: Instituto de Geografia e Estatística (IBGE-Brasil); HDI: Human Development Indices, UN/Development Program Data available on: <http://www.ibge.gov.br/paisesat/main.php>, access on 26.08.2011.

¹ The HDI in the SADC region was obtained by weighting the population of each country with data.

With regards the GDP distribution, the differences are equally accentuated. Effectively, the values per capita observed in 2009 were of 170 dollars in the DRC, 318 dollars in Zimbabwe and 324 in Malawi, which contrasted with 9.354 dollars in the Seychelles, 6.729 in Mauritius, followed by Botswana (5.959) and South Africa (5.707).

Given that the GDP per capita does not take into account the levels of education and health as social growth's closest dimensions, the Human Development Index (HDI) considered was the one calculated by the UN/UNDP. The scores of HDI vary between 0 with a complete absence of social well-being and 1, full human development. This way, the HDI also allows us to observe the pronounced inequalities in development. The lowest scores are in Zimbabwe (0,170), the DRC (0,239) and Malawi (0,284), while the highest are in Mauritius (0,701), Namibia (0,606), Botswana (0,603) and South Africa (0,597). In any event, these numbers are well below the levels registered in the more developed economies, with scores higher than 0,800.

This set of characteristics emphasizes the situation of less developed economies and therefore, their vulnerabilities, isolated or integrated in group, in the presence of external shocks, the control of which escapes us all, including the more developed ones, as is seen in the present crisis.

3. Synchronisation of economic cycles: Theoretic and Empirical aspects

The central focus here is to assess how and to what extent the SADC countries reacted to the shocks in terms of the policies adopted to meet them. However, it is important before that, to debate the nature of such shocks and the mechanisms through which they are transmitted from one country or region to other geographical areas. Moreover, as policy responses are imposed, the impacts of such adversities, originated in the synchronisation process of interregional economic activities, it is equally relevant to assemble evidences of such relations with theoretical plausibility. That is what we do next.

3.1 Theoretical and Conceptual Aspects of Economic Cycles' Synchronisation: Literature analysis

The hypothesis that less developed economies are coupled to more developed economies through commercial and financial connections is recurrent.

Furthermore, it is argued that the financial and productive integrations between the various countries and regions have been growing with the formation of blocs since the 1970s and, consequently, their interconnections have become more and more intense, in a way that what happens in more developed countries or regions tends to spatter the dependent economies, through the transmission channels established by trade and the consequently generated financial flows, causing what is called external shocks.

Before debating how the synchronisation of economic activities in the various countries takes place, we debate the nature and types of shocks sent in that process. By the way, Aarle *et al.* (2008) distinguished, empirically, three types of shocks that they called structural. The first type includes the supply shocks that reflect for example, the total productivity factors, specific investment shocks, of labour supply, the shocks of petrol prices, all reflecting the possibility of production. The second type includes the real demand shocks that comprise among others, preference shocks, tastes and governmental expenses. The third are nominal shocks defined as those that can only affect nominal variables, such as long-term inflation rate or nominal interest rates, but without long term impacts on the real variables. The results obtained by these authors show that the dynamic response of the output gap to those three types of shocks is very similar among the G7 countries⁹.

Taking into account the established transmission mechanisms of that type of shocks from one economy to others, we would be before synchronised interrelations of economic activities between countries, whose causes have been associated to business cycles. Such synchronicity has been explained theoretically in terms of coincidence of cycles and/or is dictated by the commercial interchange and by the flows of capital.

It seems reasonable however, not to ignore that stricter synchronicity between developed economies and those less developed, independently of pure economic-financial reasons, may reside in the raised historical dependency of the latter in relation to those forged in colonial times and kept, for various reasons, for all this time, even after political independence.

Incidentally, the correlation coefficients between Real GDP's growth rates of developed countries and those of less developed ones, calculated by Zhu (2008) give some support to that hypothesis. Indeed, Zhu obtained correlation coefficients statistically significant (0,53) between the Real GDP's growth rates of the Sub-Saharan countries and those of Europe for the period 1973-2005, when compared with the rates of the United States(0,37), Japan (0,21) and the OECD¹⁰ countries (0,17). Despite the indication of other synchronised connections with the economies of the United States, Japan and the OECD countries, a similar pattern to that of Sub-Saharan Africa is seen in the Latin-American countries and those of Central America, specifically in relation to Europe¹¹. In those countries, as in the actual African states situated south of the Sahara, European colonisation predominated, suggesting closer economic links between the African countries and those of the Old Continent. That evidence suggests that cultural and linguistic links contribute to the formation of the process of synchronicity of economic activities over time. From a more common theoretical point of view, economic synchronicity has been explained in terms of coincidence of business cycles. Thus, based on this rationalisation, various studies have examined the integration that includes the economic activities of economies such as the one of Mexico, with those of North America, mainly the United States (Ponce *et al.*, 2010). Some authors studied the susceptibility of the Mexican economy against shocks in economies more to the north (United States and Canada), while other scholars explored the GDP's stochastic properties of the three countries, finding common cycles, but not common

⁹ The G7 comprise the United States, Japan, Germany, United Kingdom, France, Italy and Canada.

¹⁰ Organisation for Economic Co-operation and Development, presently constituted by 34 developed countries with high income and human development index (HDI) and that accept the principles of representative democracy and free market economy.

¹¹ See Zhu (2008), Table 1.

tendencies. In contrast, a third group of scholars identified both cycles and common tendencies (Ponce *et al.*, 2010).

Kraay and Ventura (1995), when examining the high level of synchronisation of economic fluctuations of OECD countries, suggest that the central element in any theory of economic fluctuations must be the explanation of how economic disturbances are transmitted from one country to the next. While examining that, although most recent studies underline productivity shocks as a source of economic activities' fluctuations, such theoretical postulation has not met with empirical support, the reason being, as per those authors, that these models have not properly showed the role of commodities trade in determining those fluctuations. Indeed, Kraay and Ventura, using a stylised model of commodities trade and economic fluctuations, showed how economic disturbances are positively transmitted internationally, creating a high level of synchronisation in GDP's growth rates of OECD countries for the period 1965-90.

This transmission has occurred in virtue of the increasing international price boom of labour commodities rising thus, domestic salaries and stimulating the domestic product and employment.

Incidentally, Imbs (2003), recognising the complexity of interactions between opening international trade, financial integration, specialisation and synchronisation of business cycles, argues also that theoretically, both trade and financial assets may affect the synchronisation of business cycles between countries. This implies that intense bilateral trade tends to generate synchronised activities in a wide range of theoretical models, varying from international multi-sector models with the trade of intermediary goods, to versions of a single sector with monetary or technological shocks.

On the other hand, the impact of financial integration on the synchronisation does not occur without ambiguity. On the one hand, the limited capacity to obtain loans and to lend internationally creates obstacles to the transfer of resources between countries and may increase the GDP's correlations. On the other hand, if investors have incomplete information or face liquidity restrictions, limiting the flow of capitals, the GDP correlations may decline, since the investors simultaneously collect or withdraw capitals from many destinations.

Lastly, specialisation probably affects international synchronisation directly. That would occur naturally in the presence of shocks specific to sectors, seeing that two economies that produce the same type of goods will tend to be subject to similar stochastic developments. However, that may occur only if the sectors differ in their responses to monetary shocks. Therefore, countries with similar patterns of production will be synchronised, although the shocks are purely aggregated, as observed by Kraay and Ventura (2001)¹²

As per Imbs (2003), this theory also points to the potentially important indirect interactions. It is a well-known example that the opening of goods' trade results in specialisation and similarly, financial liberalisations can induce specialisation, seeing that the access to an increasing diversity of titles that disturb the patterns of domestic consumption based on internal production, frees the economy to become specialised, based, for example, in comparative advantages (Imbs, 2003: 3-4).

In brief, the theoretical assumption exposed by those authors, while it may not be applicable to SADC economies in some aspects, always accentuates the role of commercial relations as the transmission vehicle of external shocks, and therefore, the establishment of synchronicity of economic activities. On the other hand, in the chain of causation or simple relationship, the opening of goods' trade results in economic specialisation, that by itself, would probably lead to synchronisation.

In these terms, the opening to international trade and the intensification of commercial interchanges, coupled with the dependency of external markets to buy and sell goods and services, are transmission mechanisms of external shocks originating in more developed economies to the economies of the SADC countries, establishing a synchronisation or coincidence of economic cycles.

¹² Quoted by Imbs (2003), p. 3.

3.2 Evidence of Economic Synchronicity: SADC countries vs. More Developed and Emerging Economies

Having as theoretical background the hypothesis of economic cycles' coincidence, we analyse now to what extent external shocks, generated externally, have affected the economies of SADC countries. Empirically, there are various ways of establishing the association between the level variations of economic activities between the economies of two or more countries.

About that, Ponce *et al* (2010) present a survey of the more important methodologies to examine synchronicity of economic activities or business cycles. Among the methods used, are time series co-integration, spectral analysis, correlations, regression analysis, the Kydland-Prescott method and common cycles.

To verify the level of activity synchronicity between the economies of SADC and those of more developed countries, it was decided to adopt both correlation and regression analysis. This latter consisted on relating, through an equation, the variation rates of the SADC countries' Real GDP aggregate (YSA) as a function of GDP variation rates of countries with which trade relations are more intense, even though it was decided to estimate here only a representative equation that associated YSA with the economic performance rates of a developed country or economic bloc, more closely synchronised with the SADC bloc.

This choice, better than simple correlation, has two advantages: a) the GDP growth rates of countries or blocs of partner countries are exogenous variables par excellence, and b) the use of regression allows for the control of specific characteristics that affect economic performance of SADC economies, such as internal political conflict and special conditions such as raw material producer, for example, of oil.

In the case of correlation analysis, positive coefficients indicate the presence of synchronisation, while negative or zero coefficients suggest non-synchronised economic activities. If negative, they can be interpreted as indicators of economic activities' dissociation, which can of course, be altered over time, with trade relations changes between countries or regions.

Furthermore, with the aim to assess both the synchronisation and the impact of the actual international financial crisis, a tabular analysis was also used to verify the association between the economic performance of the SADC economies and that of more developed economies, before and after the eruption of the crisis in the second semester of 2008. This strategy allows for the comparison of the GDP's variation rates and to extract information that complements the regression analysis. The impact from shocks originated in the international financial crisis are analysed below following this dual strategy of complementarity.

A) Evidence of Synchronicity between More Developed Economies and the SADC Countries: Historical Perspective

Given the theoretical possibility of economic activities' synchronicity between the economies of SADC and those of more developed countries, we will verify to what extent the data give it empirical support. That evidence was organised into three topics. First, it presents a table of indicators of economic activities' synchronicity, measured by the correlation coefficient between the variation rates of Real GDP, including SADC as a bloc and the economies of more developed countries or groups of countries. Then, we examine the internal synchronisation of the countries that make up SADC, as a way of characterising them according to their economic interrelations. Lastly, we present evidence of synchronisation of the countries members of the bloc individually, and SADC as a whole with the rest of the world.

A.1) Synchronicity of activities between SADC and the more developed countries

Correlation coefficients between the GDP's variation rates were used to indicate or measure the level of synchronisation or non-synchronisation of economic activities. That way, the synchronisation itself varies between 0 and 1, or 0 and 100 in percentage terms. Therefore, with the view to analyse the phenomenon

of economic interrelations between SADC as a bloc and the more developed economies, we examined the real GDP's variation rates for the period 1989-2010, divided into two sub-periods to verify how synchronisation occurred in different phases of time. The results for SADC as a whole are displayed by Table 3.1.

Table 3.1: Correlation Coefficients between the Real GDP's variation rates of SADC and the Economic Blocs and Countries Selected – 1989-2010

High Revenue	0.659	0.658	0.355
Euro Zone	0.307	0.560	0.305
OECD	0.648	0.557	0.347
European Union	0.637	0.570	0.443
World	0.789	0.710	0.567
China	-0.239	0.773	0.133
United States	0.475	0.289	0.214
Japan	0.124	0.696	0.226

Source: World Bank Database I

As we can see, the synchronisation of activities for the period 1989/10 is expressive, indicating that SADC's GDP variation rates as a whole are in general, substantially associated to those of the rest of the world, especially with the world's economy as a whole (coefficient of 0,567) and the European Union (0,443). To note also the intensification of economic relations with China and with Japan and the Euro Zone, against a decline with the United States. Moreover, notice the marked change in relation to the Chinese economy (correlation of -0,239), without synchronisation for the period of 1989-97, against the high level observed in 1998-10 (0,773).

A.2 Synchronicity between the countries members of SADC

With regards to the countries of the bloc individually, data for the period 1989/2010 was also used, but subdivided into two sub-periods: 1989/90 and 2000/10, with the objective of examining if the level of economic synchronisation among SADC countries and between these and the more developed countries had increased or not. We opted for this periodisation taking into account the changes that started occurring at the beginning of the years 2000, when the global economy, after a period of economic boom induced by technology, showed signs of fatigue. Moreover, the year of 2011 significantly altered global geopolitics after the terrorist attacks of 11th September¹³. These facts, coupled with increasing economic integration started in the mid-eighties, indicate the broadening prospect of economic synchronisation levels in general.

¹³ See Zhu (2008)

Table 3.2: Correlation Coefficients of the Real GDP's Variation Rates between the SADC countries, for the periods 1989/99 and 2000/2010

Period/Group of Countries/Country	South Africa	Angola	Botswana	Lesotho	Madagascar	Malawi	Mauritius	Mozambique	Namibia	DRC	Seychelles	Swaziland	Tanzania	Zambia	Zimbabwe	SADC
PERIOD 1989-1999																
South Africa	1.00	0.47	0.07	-0.31	0.36	0.18	-0.46	0.58	-0.27	0.64	-0.21	0.10	0.25	0.13	0.47	0.94
Angola	0.47	1.00	0.42	-0.10	0.14	0.06	-0.10	0.16	0.41	0.87	-0.13	0.04	0.49	-0.27	0.31	0.71
Botswana	0.07	0.42	1.00	0.21	0.23	0.05	0.10	0.39	-0.05	0.46	0.65	0.58	0.39	-0.04	0.30	0.30
Lesotho	-0.31	-0.10	0.21	1.00	0.14	-0.58	0.69	-0.39	0.07	-0.05	0.47	0.44	-0.07	-0.31	0.15	-0.25
Madagascar	0.36	0.14	0.23	0.14	1.00	-0.04	0.10	0.25	-0.61	0.31	0.43	0.34	0.46	0.20	-0.18	0.37
Malawi	0.18	0.06	0.05	-0.58	-0.04	1.00	-0.07	0.21	-0.44	0.16	-0.10	-0.04	0.35	0.50	0.10	0.21
Mauritius	-0.46	-0.10	0.10	0.69	0.10	-0.07	1.00	-0.36	-0.07	-0.24	0.54	0.11	0.14	0.10	0.06	-0.34
Mozambique	0.58	0.16	0.39	-0.39	0.25	0.21	-0.36	1.00	-0.39	0.27	0.15	-0.02	0.15	0.30	0.44	0.59
Namibia	-0.27	0.41	-0.05	0.07	-0.61	-0.44	-0.07	-0.39	1.00	0.09	-0.35	-0.33	-0.29	-0.60	-0.05	-0.15
DRC	0.64	0.87	0.46	-0.05	0.31	0.16	-0.24	0.27	0.09	1.00	-0.15	0.26	0.49	-0.28	0.37	0.81
Seychelles	-0.21	-0.13	0.65	0.47	0.43	-0.10	0.54	0.15	-0.35	-0.15	1.00	0.42	0.14	0.37	-0.06	-0.12
Swaziland	0.10	0.04	0.58	0.44	0.34	-0.04	0.11	-0.02	-0.33	0.26	0.42	1.00	0.53	-0.10	0.37	0.17
Tanzania	0.25	0.49	0.39	-0.07	0.46	0.35	0.14	0.15	-0.29	0.49	0.14	0.53	1.00	0.17	0.35	0.45
Zambia	0.13	-0.27	-0.04	-0.31	0.20	0.50	0.10	0.30	-0.60	-0.28	0.37	-0.10	0.17	1.00	-0.03	0.07
Zimbabwe	0.47	0.31	0.30	0.15	-0.18	0.10	0.06	0.44	-0.05	0.37	-0.06	0.37	0.35	-0.03	1.00	0.55
SADC	0.94	0.71	0.30	-0.25	0.37	0.21	-0.34	0.59	-0.15	0.81	-0.12	0.17	0.45	0.07	0.55	1.00
PERIOD 2000-2010																
South Africa	1.00	0.70	0.63	0.14	0.38	-0.07	0.22	0.06	0.60	0.16	0.44	0.36	0.36	-0.17	-0.32	0.96
Angola	0.70	1.00	0.11	-0.17	0.03	0.20	-0.14	0.27	0.34	0.47	0.56	-0.09	0.57	0.02	-0.27	0.81
Botswana	0.63	0.11	1.00	-0.06	0.02	-0.17	0.22	-0.01	0.59	0.04	0.01	0.31	0.22	-0.33	-0.28	0.49
Lesotho	0.14	-0.17	-0.06	1.00	0.69	0.07	0.63	-0.44	-0.15	-0.41	0.11	0.58	-0.53	0.11	-0.02	0.12
Madagascar	0.38	0.03	0.02	0.69	1.00	0.07	0.37	-0.11	0.20	0.06	-0.07	0.30	0.03	0.26	-0.22	0.39
Malawi	-0.07	0.20	-0.17	0.07	0.07	1.00	0.19	-0.32	0.29	0.63	0.18	-0.11	0.40	0.60	-0.14	0.10
Mauritius	0.22	-0.14	0.22	0.63	0.37	0.19	1.00	-0.74	0.34	-0.40	0.07	0.78	-0.35	-0.12	-0.05	0.18
Mozambique	0.06	0.27	-0.01	-0.44	-0.11	-0.32	-0.74	1.00	0.03	0.36	-0.08	-0.80	0.46	0.19	0.11	0.14
Namibia	0.60	0.34	0.59	-0.15	0.20	0.29	0.34	0.03	1.00	0.39	-0.02	0.11	0.57	0.03	-0.28	0.61
DRC	0.16	0.47	0.04	-0.41	0.06	0.63	-0.40	0.36	0.39	1.00	0.09	-0.61	0.90	0.60	-0.21	0.34
Seychelles	0.44	0.56	0.01	0.11	-0.07	0.18	0.07	-0.08	-0.02	0.09	1.00	0.13	-0.04	0.31	0.47	0.53
Swaziland	0.36	-0.09	0.31	0.58	0.30	-0.11	0.78	-0.80	0.11	-0.61	0.13	1.00	-0.53	-0.50	-0.21	0.19
Tanzania	0.36	0.57	0.22	-0.53	0.03	0.40	-0.35	0.46	0.57	0.90	-0.04	-0.53	1.00	0.29	-0.39	0.49
Zambia	-0.17	0.02	-0.33	0.11	0.26	0.60	-0.12	0.19	0.03	0.60	0.31	-0.50	0.29	1.00	0.46	0.04
Zimbabwe	-0.32	-0.27	-0.28	-0.02	-0.22	-0.14	-0.05	0.11	-0.28	-0.21	0.47	-0.21	-0.39	0.46	1.00	-0.24
SADC	0.96	0.81	0.49	0.12	0.39	0.10	0.18	0.14	0.61	0.34	0.53	0.19	0.49	0.04	-0.24	1.00

Source of raw data: World Bank Database

The coefficients calculated are presented on Table 3.2. There is generally low or medium economic synchronisation for the period 1989/99, but higher indexes for the period of 2000/10. However, we cannot say that there was a general increase of synchronisation of activities between the countries part of the bloc in 2000/10 with regards to the previous period.

Counting the positive coefficients that indicate that trade and/or financial interrelations, we see that when comparing the two periods, South Africa, Malawi, Namibia, Seychelles and Zambia experienced increased synchronisation within the bloc, but despite being significantly interrelated, there were decreases in the cases of Botswana, Mozambique, Swaziland, Tanzania and Zimbabwe. In the other countries, the rates were kept. There were more encompassing synchronisations.

In brief, these results suggest that, despite the proximity and the existence of the integration bloc, economic interrelations of the countries members of SADC, with the exception of Zimbabwe, have turned more to their trading partners around the world, which we will examine below.

A.3 Economic synchronisation with the Rest of the World

The indicators of economic activities' synchronisation between SADC as a whole and as components with more developed partner economies are shown in Table 3.3. Comparing data between the two periods, there are generally, sharp increases in synchronisation from the SADC countries with the more developed economies as well as from the bloc as a whole, although with a different observation pattern. Most of the countries displayed, for the 2000/10 period, stronger synchronisation with the countries of the European Union as a whole, and with the Euro Zone in particular, which as a result, occurred with the African bloc aggregately. This pattern is influenced by the more significant economic interconnections of South Africa, Angola, Botswana and Namibia. This result gives empirical support to the hypothesis that old colonial links with Europe still persist. However, there are redirection changes where China starts establishing significant economic interrelations together with Europe in the case of South Africa, Angola, Madagascar, Namibia and Seychelles, or separately as we see with Malawi, DRC, Tanzania and Zambia. In the case of Angola and Seychelles, the estimated economic interrelations, though significant with the European countries, are now stronger with China.

Lastly, there has been a significant reduction in the synchronisation rates of Zimbabwe with regards to the more developed countries recently. But in the meanwhile, the country has more economic interrelations with its neighbouring countries, as observed.

To recap, data indicates that SADC, as a bloc, displays a high degree of economic activities' synchronisation with the rest of the world, and has increased that commitment in the 11 years from 2000 to 2010. Diversification of trading partners at country level is positive, in terms of exposure to external shocks. However, there has been a high degree of synchronisation with the countries of the European Union as a bloc and with those of the Euro Zone (Correlation Coefficient of 0,77).

Table 3.3: Correlation Coefficients of GDP's Variation Rates between SADC and the Member States and Groups and More Developed Countries for the Periods 1989/99 and 2000/10

PERIOD 1989-1999																
Group of Countries																
High Revenue	0.58	0.55	0.46	0.18	0.63	-0.25	-0.16	0.18	-0.10	0.63	0.20	0.64	0.57	-0.18	0.26	0.65
Euro Zone	0.07	0.65	0.71	0.15	0.16	-0.13	-0.10	0.01	0.31	0.63	0.13	0.61	0.59	-0.48	0.24	0.32
OECD	0.56	0.56	0.50	0.21	0.66	-0.26	-0.10	0.20	-0.11	0.62	0.27	0.64	0.59	-0.14	0.27	0.65
European Union	0.44	0.76	0.63	0.06	0.45	-0.14	-0.21	0.26	0.13	0.81	0.04	0.49	0.60	-0.45	0.27	0.63
World	0.72	0.60	0.40	0.09	0.60	-0.19	-0.18	0.27	-0.10	0.65	0.18	0.51	0.51	-0.07	0.31	0.77
Selected Countries																
China	-0.03	-0.36	-0.75	-0.10	-0.32	-0.20	-0.07	-0.17	0.21	-0.43	-0.38	-0.78	-0.83	-0.02	-0.33	-0.26
United States	0.50	0.26	0.10	0.08	0.79	-0.41	-0.14	0.39	-0.23	0.33	0.21	-0.05	0.07	0.02	-0.18	0.47
Japan	-0.02	0.08	0.31	0.29	-0.16	0.15	0.18	-0.33	0.00	0.10	0.18	0.76	0.42	0.01	0.42	0.04
PERIOD 2000-2010																
Group of Countries																
High Revenue	0.84	0.25	0.73	0.18	0.38	-0.19	0.37	-0.16	0.60	-0.05	0.33	0.53	0.11	-0.18	-0.10	0.72
Euro Zone	0.88	0.32	0.73	0.34	0.42	-0.28	0.43	-0.08	0.52	-0.18	0.37	0.55	0.00	-0.23	-0.08	0.77
OECD	0.84	0.24	0.79	0.18	0.37	-0.19	0.37	-0.16	0.59	-0.05	0.33	0.53	0.10	-0.18	-0.09	0.71
European Union	0.89	0.32	0.76	0.30	0.43	-0.29	0.40	-0.07	0.54	-0.15	0.33	0.54	0.04	-0.25	-0.13	0.77
World	0.86	0.33	0.73	0.19	0.42	-0.03	0.38	-0.16	0.64	0.09	0.42	0.47	0.20	-0.02	-0.07	0.79
Selected Countries																
China	0.56	0.76	0.07	0.11	0.27	0.44	-0.01	0.14	0.33	0.58	0.67	-0.09	0.45	0.48	0.06	0.72
United States	0.78	0.18	0.76	0.09	0.33	-0.21	0.33	-0.21	0.59	-0.07	0.24	0.56	0.08	-0.26	-0.14	0.62
Japan	0.75	0.17	0.73	0.12	0.36	-0.09	0.29	-0.09	0.57	0.11	0.34	0.36	0.20	0.04	0.02	0.66

Source of raw data: World Bank Database

High synchronization ($0,5 < r < 1,0$)
 Medium synchronization ($0,2 < r < 0,5$)
 Low synchronization ($0,1 < r < 0,2$)

In order to further explore that raised level of synchronisation between the African bloc and the European Union (EU), an equation was calculated whereby the GDP Variation Rates aggregate of SADC (YSA)

depend on the GDP Variations aggregate of the UE (YUE). As a way of controlling the effects of outliers and level changes, not captured by correlation coefficients, the variable dummies D9093 and D0003 (YSA and level changes) and D9696 (outlier) were incorporated in the equation. The D9093 variable assumes a value of 1 in the 1990/93 quadriennium and zero in the other years. D0003 on the other hand, is 1 in 2000/03 and zero outside that period. And the dummy D9696 was 1 in 1996 and zero in the other years. These structural characteristics associated to SADC's GDP Variation Rates translate changes in economic performance not explained by variations in the European Union's GDP¹⁴. The estimated residual suggests just that.

In this case, the expectation is that the coefficient of the exogenous variable YUE be positive and statistically significant, confirming the hypothesis of strong economic synchronisation between the two blocs.

By incorporating those control variables, we obtained the following results:

$$\begin{aligned} \text{YSA} = & 0,441 + 0,738 \text{ YUE} + 3,053 \text{ DES} - 1,991 \text{ D9093} + 2,900 \text{ D9696} - 1,736 \text{ D0003}, \\ & (0,76) \quad (5,27) \quad (5,23) \quad (-2,92) \quad (2,71) \quad (-2,54) \\ \text{R}^2 = & 0,87, \quad \text{Q}(10) = 4,41 (p=0,93), \quad \text{F}_{\text{JB}} = 0,99 (p=0,61), \quad \text{F}_{\text{AC}}(1) = 0,15 (p=0,71), \quad \text{F}_{\text{HET}} = 0,85 (p=0,37), \\ \text{F}_{\text{RESET}} = & 0,64 (p=0,67), \quad \text{Período } 1989/10, \quad n=22. \end{aligned}$$

From the tests undertaken, we do not reject the null hypothesis of auto-correlation absence (statistic F_{AC}), the presence of white noise [Q(10)], of correct specification (F_{RESET}), heteroscedasticity (F_{HET}) and residual normality (F_{JB}), for the significance levels within the general limits of up to 5 per cent. Therefore, the presuppositions of econometric validity of that estimated equation cannot be rejected.

The estimated coefficients are all statistically significant for probability levels of 5 per cent (variable D0003) and 1 per cent. To note especially that SADC's GDP Variation Rates as a whole (YSA) are highly conditioned by European Union's GDP Variation Rates (YUE) in the 1989/10 period. This gives empirical support to the synchronisation of activities between the two economic blocs, which means that events irradiating shocks motivated by crisis in the European Union are transmitted to the economies of SADC, notably those more relevant locally (South Africa and Angola) and/or more intimately associated to that bloc of more developed countries (South Africa, Botswana, Namibia, Madagascar and Swaziland), as demonstrated by the Correlation Coefficients (Table 3.3). To note that effect control undertaken with the use of variable dummies enabled an improvement of the results already obtained based on correlation, strengthening the empirical support to the synchronisation hypothesis.

B. Additional Evidence of Synchronisation and the Impacts of the International Financial Crisis on the SADC Economies

Now we examine the impacts of external shocks arising from the International Financial Crisis with two objectives: a) to focus closely on the effects of that recent phenomenon, and b) to gather additional evidence about the economic activities' synchronisation of the SADC countries and the economies linked to them by trading and financial associations.

Indeed, the average growth rates of the SADC economies and the trading partner countries, before and after the international crisis, as well as the differentials that enable their comparison between the two periods, are presented on Table 3.4. The adverse impacts of external shocks associated to the crisis, are indicated by average negative differentials, although not comparable in magnitude due to differences in the rates of variation between countries, lower in developed countries.

First, let us examine both clear evidence of economic activities' synchronisation and adverse impacts on 13 of the 15 economies of SADC.

¹⁴ It is obvious that there is a probability of those abrupt variations occurring from GDP measurement errors. In that case, possible errors may be attributed to the source (World Bank).

The exceptions are Zambia and Zimbabwe that showed raised average growth rates during the period after the crisis, in relation to the previous period, specially the case of Zimbabwe. Surely, the explanation resides in the specific conditions of both countries. In the case of Zimbabwe, the resolution of the political conflict and staunching of the subsequent macroeconomic instability in the years pre-crisis explains perhaps the economic recovery. In any case, despite the adverse impacts being possibly differentiated according to the specific conditions, smaller or negative Variation Rates of the Real GDP in 13 of the SADC countries confirm the expectations of adverse effects from shocks associated with the crisis. Individually, there is the marked negative impact in Angola due to the sharp decline in oil prices after the economic stagnation of the commodity buying countries.

Table 3.4: Real GDP's Growth Rates of the SADC countries and the Selected Economies and Groups of Developed and Emerging Countries, before and after the International Financial Crisis – 2006-2010

GROUPS OF COUNTRIES/COUNTRIES	BEFORE THE CRISIS				AFTER THE CRISIS			Average
	2006	2007	2008	Average 2006-08 (A)	2009	2010	Average 2009-10 (B)	Growth Differential (B-A)
SADC Countries								
South Africa	5.6	5.6	3.6	4.9	-1.7	2.8	0.6	-4.4
Angola	19.5	23.9	13.8	19.1	2.4	1.6	2.0	-17.1
Botswana	5.1	4.8	3.1	4.3	-3.7	8.6	2.5	-1.9
Lesotho	4.7	4.5	4.7	4.6	3.0	2.4	2.7	-1.9
Madagascar	5.0	6.2	7.1	6.1	-3.7	-2.0	-2.9	-9.0
Malawi	7.7	5.8	8.6	7.4	7.6	6.6	7.1	-0.3
Mauritius	4.5	5.9	5.5	5.3	3.0	4.0	3.5	-1.8
Mozambique	8.7	7.3	6.8	7.6	6.3	7.0	6.7	-1.0
Namibia	7.1	5.4	4.3	5.6	-0.8	4.4	1.8	-3.8
DRC	5.6	6.3	6.2	6.0	2.8	7.2	5.0	-1.0
Seychelles	6.4	9.6	-1.3	4.9	0.7	6.2	3.5	-1.5
Swaziland	2.9	2.8	3.1	2.9	1.2	2.0	1.6	-1.3
Tanzania	7.0	6.9	7.3	7.1	6.7	6.5	6.6	-0.5
Zambia	6.2	6.2	5.7	6.0	6.4	7.6	7.0	1.0
Zimbabwe	-3.5	-3.7	-17.7	-8.3	6.0	9.0	7.5	15.8
Groups of Countries								
World	5.2	5.4	2.9	4.5	-0.5	5.0	2.3	-2.3
Developed Countries	3.0	2.7	0.2	2.0	-3.4	3.0	-0.2	-2.2
Main Developed Economies (G7)	2.6	2.2	-0.2	1.5	-3.7	2.8	-0.5	-2.0
Euro Zone	3.1	2.9	0.4	2.1	-4.0	1.7	-1.2	-3.3
European Union	3.5	3.2	0.7	2.5	-4.1	1.8	-1.2	-3.6
Developed Countries Selected								
Germany	3.6	2.8	0.7	2.4	-4.7	3.5	-0.6	-3.0
United States	2.7	1.9	0.0	1.5	-2.6	2.8	0.1	-1.4
France	2.4	2.3	0.1	1.6	-2.5	1.5	-0.5	-2.1
Japan	2.0	2.4	-1.2	1.1	-6.3	3.9	-1.2	-2.3
United Kingdom	2.8	2.7	-0.1	1.8	-4.9	1.3	-1.8	-3.6
Emerging Countries Selected								
Brazil	4.0	6.1	5.2	5.1	-0.6	7.5	3.5	-1.7
China	12.7	14.2	9.6	12.2	9.2	10.3	9.8	-2.4
India	9.6	9.9	6.2	8.6	6.8	10.4	8.6	0.0

Source: International Monetary Fund (FMI), World Economic Outlook Database, April.2011 - 2010 data is preliminary

As for the synchronisation of economic activities implicit in the adverse impacts of the actual international crisis, evidence emerges to the extent that the Real GDP's average variation rates are systematically lower after the outbreak of the crisis, both in the SADC countries and the more significant developed and emergent economies (Brasil, China and India). Incidentally, there are marked declines in the Variation Rates of the global economy's GDP as a whole and the developed economies of the countries in the European Union's (differential of -3,6) and the Euro Zone (differential of -3,3), as shown by the data in Table 3.4. The United States, despite not having registered growth in 2008, when the crisis erupted in their real estate market, showed a decline in the Real GDP's variation (-2,6) in 2009, there was recovery in 2010 with growth of 2,8 per cent, but without returning to the levels observed in 2006/07. This is evidence of economic activities' synchronicity among the various economies, whether developed, emerging or less developed.

Additional or clearer evidence of the impacts from external shocks generated by the International Financial Crisis (IC) on the SADC economies can be obtained with the control of the specific conditions that can be observed in Angola, differentiated for being an oil producing country, and in Zimbabwe in light of the political and macroeconomic instability that created highly negative local unemployment before 2009. To this end we used regression analysis which enabled the control of these conditions by means of variable impulse dummies for the pre-crisis period. Thus, dummies Dao and Dzw were defined, worth 1 for Angola and Zimbabwe before the crisis respectively, and zero otherwise. The impacts from the crisis are also captured by means of the IC dummy that assumes the value of 1 for each country after the crisis and zero before it. Indeed, the IC variable coefficient indicates the reduction in the average of the Real GDP's Variation Rates of the SADC country j for the period t (t=2006/08, 2009/10), y_{jt} , and the respective evaluation statistics are shown below:

$$y_{jt} = 5,603 - 1,933CI + 13,464Dao - 13,903Dzw \quad R^2 = 0,738, \quad F = 24,40 \quad (p = 0,00)$$

$$(8,62) \quad (-2,18) \quad (5,54) \quad (-5,72) \quad Q(10) = 9,14 \quad (p = 0,52)$$

$$DW = 1,91, \quad F_{AC} = 0,003 \quad (p = 0,96), \quad F_{HET} = 1,84 \quad (p = 0,16), \quad F_{JB} = 2,21 \quad (p = 0,33), \quad \text{no. of remarks} = 30$$

The tests carried out reject the hypothesis of the presence of autocorrelation problems (statistic F_{AC}), heteroscedasticity (F_{HET}), non-normality of residuals (F_{JB}) and of white noise [$Q(10)$] for raised significance levels, as indicated by the p-values of probability, all of them higher than 0,05, reason why the validity of underlying presuppositions to the estimated equation cannot be rejected.

As for the estimated equation, the coefficient associated to dummy IC is of particular interest, as it indicates the external shocks associated with the international crisis, which is statistically significant for a level of 5 per cent. This means that, when controlling or “discounting” the specific conditions of oil producing of Angola, and of instability in Zimbabwe before the beginning of the crisis in late 2008 (Dao=Dzw=0), the average variation rate of the SADC countries rose from **5,60** per cent before the crisis, to the lower level of **3,67** (=5,60-1,93) during the crisis.

This difference of average growth rate statistically significant constitutes additional and robust evidence of impacts from external shocks resulting from the International Financial Crisis on the SADC economies, confirming and strengthening the results shown in Table 3.3.

4. SADC Countries' Responses to External Shocks

The responses or reactions to the problems caused by external shocks can be more adequately assessed from a historical perspective. The lessons drawn from the experience of coping with adverse external shocks over time provide relevant information to assess what happens in the present, and to define future strategies for further action.

Beforehand, it is important to map succinctly, the global macroeconomic course and its implications for the less developed economies, such as those of the SADC countries. Therefore, we examine below the more relevant characteristics that were irradiating foci of adverse effects to the less developed economies, especially during 1970-2010, with specific emphasis on shocks generated by the International Financial Crisis, which erupted in the United States in 2008 and whose effects persist.

4.1 Evolution of the Shocks Generated by Economic Crisis: 1970-2005

Until the early 1970s, the world economy experienced nearly three decades of unprecedented growth in trade and global integration. Therefore, the macroeconomic scenario was one of stability. Three events in sequence interrupted that bounty. In 1971, the United States suspended the convertibility of the dollar, when they realised that the fixed exchange rate regime had become unsustainable. The second relevant event was the fluctuation of the main European currencies allowed by the governments of the European Economic Community in 1973, as a reflexion of the dollar convertibility suspension. The third and more devastating event also occurred in 1973. It was the first oil price shock that interrupted the flows of trade

and capitals, exposing LDCs and non-oil producers to substantial external shocks; despite these adverse impacts and subsequent increase in protectionism they left intact the integration formed earlier.

During the 1973-77 period, LDCs more interdependent and exposed to the economies of the developed countries plunged into economic recession, due both to the rising oil, commodities and food prices, and the collapse of the Bretton Woods system.

In this scenario, from 1978 to mid-1980, two events were relevant. The first was the second oils prices' shock in 1979, irradiating more adverse impacts and greatly affecting the less developed economies, without sufficient oil derived energy. Then, at the beginning of the 1980s, the United States adopted a mix of monetary and fiscal policies that caused the rise in interest rates all over the world, and attracted high volumes of capital flow, prior and generally deposited in Europe, in the face of low risk financial investments in that country. These financial resources – called petrodollars – originated in oil exports, especially from the Arab countries. As a result, the rise in oil prices, the main import product of many economies, implied a deterioration in the trade terms of LDCs non-producers of oil and more dependent on imports, while the high interest rates, coupled with the preference of capital flows by the United States led to the debt crisis of the countries that previously benefited from the abundant supply of resources from petrodollars.

During the second half of the 1980s, economic growth accelerated in the industrialised economies, due possibly to falling oil prices, expansionist monetary policies and policy cooperation of the developed countries. As a by-product of the acceleration of the economies of developed countries, the world economy became increasingly integrated, which enabled a faster growth of trade and financial flows than of the product generated.

In 1988-89, the savings and loans crisis (S&L) led the economy of the United States as well as the global economy into depression, followed by nearly eight years of economic boom induced by technology. In the early 2000s, the global economy showed signs of reduced performance and the year 2001 witnessed unprecedented geopolitical shocks unchained by the attacks of September the 11th in the United States.

4.2 Scenario before and after the Start of the International Financial Crisis: 2006-2010

After 2005, there is a repetition of the external shocks in the form of rising oil and food prices, but the most relevant event that generated the propagation of shocks throughout almost the whole world was the International Financial Crisis that erupted in the United States in September 2008, and despite having started earlier, stronger effects were felt from 2009.

In fact, the period of 2006-2010 was not characterised by macroeconomic stability. The contrast between the sub-periods of 2006/08 and 2009/10 is the relative calm, in spite of the low performance of the American economy in 2008, of the first three years, and the tumultuous events of the last two years.

The 2009/10 biennium, already tainted by the weak performance of the North American economy in 2008, was characterised by considerable adverse external shocks due to the International Financial Crisis, with more significant macroeconomic effects in the SADC countries from 2009.

The collapse of the North American real estate market, with financing transactions in securities backed by secondary hypotheses (sub-prime), and the subsequent collapse of the American financial market resulted in a credit crunch and recession in the United States, constituting the most serious and recent international crisis, comparable only the financial collapse of 1929. Other developed countries' financial markets were affected from that epicentre, which resulted in the global crisis of September 2008, in view of the international interconnections of large financial institutions, some of them considered too big to fail.

Thus, this restricted financial crisis spilled leading to a global economic crisis, the adverse effects of which were quickly felt on the real sector of economies, in the form of drops in revenue and wealth, demand for goods and services, a decline in labour and unemployment.

As for its nature or origin, various underlying factors may be considered to explain this crisis triggered in the U.S. housing market, noting market inefficiencies, absence of or failure in regulations, lack of supervision, market interdependencies, greed, etc.

Unlike the recent crises in the developing countries of Asia and Latin America, this crisis started in the largest world economy, the United States, on which various economies rely to sell their products and services, as well as in terms of investments, money transfers, etc.

The SADC countries as dependent economies of the developed and developing countries have experienced direct impacts from the crisis, particularly those more open and not producers and exporters of essential commodities to the global economy, such as oil.

4.3 Policy Responses to External Shocks

Two issues are dealt with here. Firstly, we debate some of the implications related to the adoption of policies against the negative effects of external shocks, as well as the underlying theoretical and explicative aspects, and the experience of anti-shock reactions based on those policies by LDCs. Secondly, we examine how the SADC countries particularly, reacted and resisted against external shocks in terms of policies, in the sense of expanding their imports as a proportion of the GDP

A. *Coping with Exogenous Shocks in Least Developed Countries (LDCs)*

Open economies are of course, more subject to external shocks, especially emerging ones and those that export basic goods. The reactions in terms of economic policy, to deal with these adversities can both potentially expand or mitigate those (Céspedes *et al.*, 2005).

Various economic policy arrangements can be defined and put into practice to deal with these exogenous shocks, depending on the macroeconomic scenario of each country, resulting almost always in export incentive policies, substitutions of imported products by similar ones, reduction in public expenditure. In truth, many countries cannot reactor if they do, can aggravate the problems¹⁵.

On the subject, Zhu (2008) tested the hypothesis that economic policy responses in LDCs are guided by external shocks. Related empirical tests were carried out in terms of policy performance of the growing global market share of exports (exports/GDP), substitution of imports for internal production and reduction of aggregate expenditure, in the form of 'tightening' in consumption and investment, as a reaction to external shocks for the 1987/05 period¹⁶.

The theoretical rationalisation used was based on the analytical structure proposed by Bacha (1987), according to which:

$$\text{Variations in current account deficit as a proportion of GDP} = \text{Variations in external shocks} - \text{Variations in policy responses} + \text{error term.}$$

In other words, this means that variations in current account deficit rest directly on the changes in external shocks, but which can be neutralised by changes in policies, as a reaction to shock.

These three components are not only statistically relevant for evaluating the performance of the economy, but are also theoretically significant to explore the transmission mechanisms of the effects of global economic cycles by means of this financial approach.

¹⁵ On the experience of policies adopted by Australia, Brazil and Chile, as responses to external shocks associated with the Asian crisis in 1997-98 and the low world growth rate and high risk aversion in 2001-02, see Céspedes *et al.* (2005).

¹⁶ Zhu (2008), surely, had difficulties in testing the hypothesis incorporated in the models used with historical series from 1973 in view of structural breaks, outliers, tendency changes.

Thus, adverse shocks, such as deteriorating terms of trade, reduced demand for exports and rising interest rates, would directly shrink the national revenue by means of reducing the aggregate demand and/or the power of purchase of the existing product, and even if the national product is sustainable, cuts in revenue would be possible through reaction in the form of policies of governmental austerity. Therefore, real consumption and/or savings should decline. In *ceteris paribus* conditions, a reduction in real savings would imply a drop in investment and inhibition of output and real income in the future. Furthermore, real investments can only be sustainable if the rate of savings rises or if resources are obtained in the rest of the world. Similarly, actual consumption can only be sustainable if saving rates decline or if external resource availability increases. Therefore, external funding would also be a crucially important determinant of external shocks.

In this way, external shocks caused by external funding may be favourable or adverse to LDCs. Economies that rely on external resources can absorb the more adverse impacts of external shocks. Economies more vulnerable to negative changes in the external scenario – deteriorating terms of trade, rise in international interest rates, drop in direct foreign investment and provision of basic commodities – face the biggest challenges. As a result, the lack of adequate strategies to control adverse external shocks can aggravate such economies' problems, rendering them powerless to react to exogenous shocks.

Not only external shocks put in motion the transmission mechanism of business cycles worldwide. Trade and some policy responses also influence them. Thus, faced with low demand for its exports, LDCs may experience slowdown in the level of their product. As a consequence of the lack of essential imported commodities, the product should decline and also reduce its productivity capacity, even without the fall in domestic production resources. Such situation contributes to the decline in availability of external currency, which in turn determines imports' purchasing power in addition to inhibiting investment and future growth of the productive capacity if capital goods cannot be purchased at home. Therefore, on the medium and long terms, structural adjustments to external shocks will be required to offset the decline in earnings in foreign trade in the short term. These adjustments include decreases in investment and/or internal expenditure, as well as import substitution and/or improving the competitiveness of exports.

Zhu (2008), using this theoretical approach, tested the relevance of various external shocks for the 1973-2005 period as motivation from the governments of LDCs in terms of deficit neutralising policies in the balance of payments' current account. The test, carried out by means of regression equations, consisted in verifying how indicators of policy action – exports/GDP, import substitution, reduction of expenditure and investment consumption – are differentiated among the various shocks, limited to periods wisely defined in function of the characteristics of each crisis to such vulnerability.

Regarding the test, it estimated a regression equation in which export penetration (exports/GDP)¹⁷ as policy response is a function of exogenous shocks. The effects of these were captured, for the 1987-2005 period, by means of four variable dummies that took the value 1 in the 1987/91, 1992/95, 1996/00 and 2001/05 periods, and zero otherwise, as well as the interaction terms of such dummies with a variable that differentiated high growth economies (higher than 3 per cent) from those with low growth, presumably due to external shocks (lower than 3 per cent). The results obtained support the hypothesis that exports as a portion of the GDP in LDCs were guided by external shocks. In truth, the results obtained by Zhu (2008), by virtue of using only dummies as exogenous variables, indicate only differences in averages of the variable exports penetration, in each sub-period of the crisis, when controlling the impacts from others, which is still relevant in view of the theoretical confirmation and the statistical significance of the coefficients.

B. Policy Responses from the SADC Countries to External Shocks

Given that external shocks always directly reflect in the balance of payments of a country or region and, consequently, in the components of aggregate demand (Private Consumption, Government Consumption, Investment, Exports and Imports), economic policy actions are always undertaken with the view to carrying out the necessary macroeconomic adjustments.

¹⁷ The other policy indicators did not generate significant results, as per Zhu (2008).

Thus, before carrying out tests to verify the extent to which policies or actions to expand exports as a proportion of GDP are reactions to external shocks, it is worth recording the experience of the member countries facing problems originating in the various external shocks they face due to the economic activities' synchronisation process.

B.1 Experience from the SADC Countries when Faced with External Shocks

Regarding the evaluation of these external crisis' problems, surely, the individual experience of the SADC member countries differ in accordance with their characteristics and the magnitude of the exogenous shocks' impacts faced. Here follows, therefore, a brief description of the experience in the countries for which information was available.

Regarding **Angola**, as an oil-producing country, the external shocks have taken place mainly due to the drop in oil prices in the international market. Thus, the impacts from these shocks always imply shrinking aggregate demand, in view of the reduction in exports. In effect, recent experience shows that, given the adverse impacts of the financial crisis that erupted in September 2008, the country's GDP, as per the available information, went from a growth higher than 20 per cent in that year to levels closer to zero. This was due to a large extent, to reduced exports, almost entirely oil. Total exports grew little more than 11 per cent in 2009, against approximately 23 per cent in the year. On the other hand, exports as a proportion of the GDP went from about 76,3 per cent in 2008 to a mere 52,3 per cent in 2009, at the height of the impacts from the oil price drop.

The measures adopted to mitigate the effects of the drop in exports varied from maintaining the exchange rate to containing inflation and preserving the purchasing power of the population, to efforts to stimulate credit. That was possible because oil exports are not sensitive to the rate of exchange. Thus, efforts to continue exporting persisted with the diversification of partners and in the face of contracts already signed but, nevertheless, the participation of external sales in the GDP declined.

Democratic Republic of Congo (DRC) - the Congolese economy felt also the effects of the 2008 global financial crisis affecting different sectors of the domestic economy. There were Impacts on the real sector due to changes in commodity prices (oil and high food prices). Moreover, the weakening of economic growth of the main partners of the DRC, revealed by the decline in their imports (which constitute DRC exports) and their investments, both direct and portfolio. This is followed by a slowdown in economic growth in the DRC. In general, due to the effects of the global financial crisis, the main partners of the Democratic Republic of Congo suffer losses of 0.27 growth points in 2008 and 1.7 in 2009.

The Impact on Public Finances was felt by the increase in revenues over expenses less than proportional and the resurgence of the budget deficit of which funding through the Central Bank advances/ loans will lead to the resurgence of monetary inflation of budget origin.

The crisis affected also the external relations by deterioration of the balance of the budget in foreign currency as there is a strong positive correlation between the progression of revenue in foreign currency and commodity prices, particularly diamond, copper and oil. The foreign expenditure expanded, mainly because of security conditions in the East, lowering the level of International Reserves. In the Foreign Exchange Market there was a contraction in the supply of foreign currency as a result of lower export revenues caused by the fall in world prices, originating a pressure on the exchange rate due to the excess of demand over supply of foreign currency. The international financial crisis impacted also the export earnings following the slowdown in global demand and falling commodity prices on the international market, and

Lesotho has been hit by several shocks in the past 10 years, and some of them have been discussed below and where applicable, the responses to those shocks have also been discussed. Regarding exchange rate shock, in 2001 Lesotho was hit by an exchange rate shock when the rand (and hence loti which is pegged at par to the rand) depreciated significantly against major currencies. While the depreciation of the rand (hence loti) had a positive impact on Lesotho's export sector (textile and clothing industry), it led to a jump in inflation. However, this shock could not be mitigated since Lesotho is in a fixed exchange rate arrangement of South Africa. Oil Price Shock (Supply shock): in 2008 Lesotho together with other oil

importing countries was hit by an oil price shock. Inflation during that period also picked up quite significantly. Unfortunately this could not be addressed through contractionary monetary policy by the South African monetary authorities as inflation was being propelled by factors outside the control of monetary authorities.

Demand shock (Global financial Crisis): Since the Africa Growth Opportunity Act (AGOA) Initiative, Lesotho has been one of the largest textiles producer and exporter to the US market the second largest employer in the formal sector. However, as the US economy went into recession, demand for Lesotho's products suffered and this led to workers being laid-off. In response to this, the Government provided some liquidity/capital to the textile firms in order to keep them afloat.

Malawi - In order to absorb the oil and fertiliser price shocks, the Malawian fiscal authorities pursued accommodative policy through increased government borrowing. To complement the fiscal authorities' efforts, the Reserve Bank also loosened its monetary policy stance by reducing the Bank rate from 15.0 percent to 13.0 percent in August 2010. Further, the authorities effected a 10.0 percent devaluation in the local currency in August 2011 so as to partially correct the balance of payments disequilibrium brought about by rising import prices.

To contain inflationary pressures induced by rising global food and fuel prices, government continued its support under the Farm Inputs Subsidy programme (FISP) initiative introduced in 2006, aimed at promoting food security in the country.

The Malawian authorities also engaged the International Monetary Fund (IMF) to consider rendering support to the country through the Extended Credit Facility (ECF) Programme. The ECF programme commenced in 2010 and runs up to 2012.

Mauritius – Judging by the GDP's growth rates the adverse impacts of external shocks motivated by the present crisis weren't very significant, which, moreover, is reinforced by the prospect of the growth.

Private investments as a proportion of the GDP, concentrated largely in the hotel sector, experienced a light decline in 2009, due to uncertain conditions that weigh on the prospects of economic affairs. In the external sector, it is worth mentioning an expansion of the surplus in the balance of payments as a whole in 2009, compared with the previous year. The perspectives are for maintaining it in 2010. The ratio current account/GDP experienced a small decline in 2009 (7,4 per cent) in relation to the situation in 2008 (10,1 per cent).

Generally, the impacts from external shocks, although there may be some uncertainty in business conditions, were relatively small in Mauritius, which can be attributed to the characteristics of the country's economy focused on tourism.

Mozambique - in order to cushion the impact of external shocks within the economy, a broad set of measures has been taken by both the government and the central bank. It should be highlighted the following measures, particularly related to the recent financial and economic crises:

- Access to the so called "Exogenous Shock Facility" , an IMF initiative aiming at providing quick-disbursing funds to countries experiencing exogenous shocks;
- Negotiation with donors in order to anticipate the disbursement of foreign aid for budget support (2009);
- Freezing of fuel prices and some administered goods aiming at minimizing the domestic production cost chain; and stimulating domestic production (2008 and 2009)
- The Approval of the "Food Production Plan (2008-2011)" aiming at reducing the country's external dependency;
- Easing monetary policy through lowering the policy rates and the reserve requirement ratio (2009);
- Enhancing the Central Bank intervention within the foreign exchange interbank market in order to contain the depreciation of domestic currency vis-à-vis the US dollar;

- Strengthening of the banking supervision by focusing at macro prudential risks and increasing the frequency of on-site supervisions;
- Mobility and diversification of the country's portfolio investment in order to minimize the exposure to various risks.

Namibia - With respect to this country, here the experience of coping with external shocks is limited to those originating in the 2009 crisis, whose impacts on the country's economy were not completely eliminated. In effect, the slowdown in GDP growth in 2008 intensified in 2009 when a negative rate was registered.

Deteriorating activities in the external sector in 2010, when there was a deficit in the balance of payments surplus against surplus previously, resulted primarily from the significant decrease in the current account balance and in the capital and financial account. It should be noted, as an indicator of the impacts of external shocks, the substantial decrease in revenues from current transfers in 2010 in relation to previous years, while the capital and financial account deficit grew. There was also a significant decline (more than 26 per cent), but in spite of that, direct foreign investment grew substantially in 2010, and this is attributed in part, to reinvested profits. In the case of the exchange rate, there was appreciation of the Namibian dollar against the U.S. dollar and the Euro.

Faced with a situation generated by the reflections of the crisis in the economy of the country, we register as anti-cyclical measures, the reduction of interest rates and fiscal spending in 2009/10. Lower interest rates indicate stimuli to credit availability, while increases in fiscal spending aim to prevent revenue reductions that would require a commitment of economic growth. This led to increased indebtedness of the country.

Seychelles - as a Small Island Developing State with a relatively small open economy which is highly dependent on international trade, Seychelles is particularly vulnerable to external shocks.

In response to the negative impact of the external shocks, in the second half of 2008 the authorities embarked on a series of consultations with the IMF which resulted in an agreement in November 2008, for a comprehensive macroeconomic reform programme. The IMF's endorsement of Seychelles' programme also paved the way for formal negotiations with its creditors on rescheduling and/or part-cancellation of its external debt.

The Global financial Crisis end-2008, 2009 and 2010: as a result of the global financial crisis, a number of Foreign Direct Investment (FDI) related projects were put on hold due to financing difficulties. The tourism industry was particularly affected because of delays in project implementation and cancellation of some projects. The crisis also constrained growth in the tourism trade as a drop in visitor arrivals was recorded. In order to boost visitor arrivals, the Seychelles Tourism Board (STB) adopted a new marketing strategy under the "affordable Seychelles" slogan in 2010. The strategy promoted market diversification aimed at reducing the country's dependency on the European market by targeting other markets such as South Africa, China and Middle East.

European Debt Crisis -2011: the worsening of the sovereign debt crisis in the Eurozone had an adverse impact on the value of the Euro which generally followed a depreciating trend against the USD. Given that the bulk of the country's income is denominated in Euro whilst the majority of external payments are in USD, This has led to a deterioration of the country's term of trade. In addition, the uncertainty about the Euro/USD cross rates has exerted some depreciating pressure on the domestic currency, the Seychelles Rupees (SCR). The liberalization of the Seychelles' economy and the adoption of a free floating exchange rate regime meant that the authorities has had to let the market forces take its course. The Central Bank of Seychelles will only intervene in the foreign exchange market only to smooth out excess volatility and ensure orderly market conditions.

South Africa - Regarding the impacts generated by the financial crisis of 2008 (sub-prime crisis), the impacts on the South African economy were limited, due to the liquidity expansion policy, coupled with the structural characteristics of the financial institutions, whose real estate securitisation market differs in

relation to that of the United States. With regards to the financial crisis, internment and economic downturn of 2008/09, the South Africa government had to increase its expenditure in social programs, in addition to assisting state companies to finance their capital investment projects and stimulate the allocation of resources to education and rural development. Additionally, healthy fiscal and monetary policies have been pursued, with the view to reducing the country's exposure to the tribulations of international trade.

With a view to reducing the impacts of external shocks, in its 2009 budget, the South African government outlined five objectives that guide the government's policy response to the crisis in the medium term: a) protection against poverty, building the capacity of long term growth, sustaining employment creation, maintaining sustainable debt levels and eliminating sectorial barriers to investment and economic growth.

Moreover, among the responses to more specific trade barriers due to the crisis stand out: a) slowing down of foreign trade activities that led to the contraction of output and employment in various sectors, and b) creation of infrastructure.

The present debt crisis in the States and European Union, which led to the deepest recession in seven decades, resulted in the first recession in South Africa in 17 years, with employment losses of nearly one million. The local government's response in 2010 was given by means of various fiscal policy measures but, due to difficulties in solving the problem of job losses, a New Growth Path was announced aimed at creating sustainable employment. The program was anchored on five priorities: education, health, fight against crime, rural development and job creation.

In brief, the adverse shocks on aggregated demand were refuted with fiscal spending, consequently increasing investment and consumption levels, in that it has targeted the creation of sustainable jobs.

Swaziland: Given that the local unit is fixed at par with the South African Rand in the year 2000 there was a sharp depreciation of the Exchange rate owing to systemic capital flight from South Africa. In 2001 there was an introduction of the Africa Growth and Opportunity Act (AGOA) which saw a surge in the manufacturing sector.

Swaziland was affected by the oil price shocks of 2008 to experience two digit inflation rates. In 2006/07 there was a surge of approximately 70 percent in government revenue as economic activity in South Africa picked-up due to the soccer world cup preparations. 2010 saw a slump in government revenue as SACU receipts fell by approximately 50 percent due to the financial crisis.

Tanzania – Tanzania's economy, traditionally linked to the advanced countries of the West, has redirected its trade relations with the East, especially with China and Japan. This certainly explains the low reflection of the current global crisis on the country. In effect, available data indicate a small reduction in performance indicators in 2009, compared with the last three years. The GDP's growth rate was approximately 6 per cent, against an average of about 7 per cent in 2006/08. To notice the slow growth in the Mining sector in 2008/09 (average of 0,7 per cent), due to the significant performance in 2006/07 (average of almost 5 per cent). This reflects possibly a downturn in international demand for mineral products from the country, by more developed countries.

The impacts originating with the International Financial Crisis are seen particularly in the tourism sector, the evolution of direct foreign investment, lower import prices, lower growth in private sector credit and government revenue collection.

Some available indicators allow inferences about neutralising activities of these external shocks, as measures to increase liquidity and the consequent credit, as shown by the reduction of interest rates and increase in fiscal deficit in 2009, compared with what was observed in the 2006/08 triennium. With regards to fiscal deficit, the perspectives are for an increase in 2010.

Zambia – Since 2000, the major external shock experienced by the economy of this country comes from the international financial crisis, associated to the economic disturbances of 2008/09, and resulting in a decline in government revenue from taxes on imports, due to exchange rate depreciation and job losses,

particularly in the mining sector. Also, to note as adverse effects of the crisis, the depreciation of the exchange rate due to the fall in export gains and the flight of capital, as well as the decline in private sector credit, given the banks' aversion to risk in relation to the companies.

Furthermore, the deteriorating performance of the sectors linked to exports, such as mining, the manufacturing industry and tourism due to a weaker global demand, should be noted. This, in turn, adversely impacts the flow of currency, which results in volatility of exchange rates and fiscal deficits.

In order to mitigate these adverse effects, several economic policy measures have been undertaken, in particular: a) increased allocation of funds to the sector of livestock in farms, development of infrastructure in farms and irrigation projects; b) tax benefits to the mining sector; c) promotion of economic zones of multiple facilities by means of tax incentives and the development of quality infrastructures; d) increased allocation of resources in the tourism sector, to improve access to the Northern Tourism Circuit, and e) upward review of energy tariffs to attract investment from the private sector. In the monetary field, the country pursues a policy of accommodation, in order to expand credit availability and at the same time ensure an environment of macroeconomic stability. In future, it will be necessary to diversify exports, seeing that primary commodities were the most affected by recent external shocks.

Zimbabwe – The impacts from external shocks on the balance of payments resulted from falling prices of exportable commodities such as nickel, copper, platinum and, to a lesser extent, gold in 2009, according to data published by Bloomberg. Coupled with this retraction in exports, are the difficulties with imports, in view of the shortage of foreign exchange. As a result, the current account deficit of the balance of payments as a proportion of GDP stood at higher levels in 2008/09, reaching 24 per cent in 2008 and 20 per cent in 2009, against 18 per cent in 2008 and only 6 per cent in 2007.

Regarding production, the impacts of the crisis affected the mining houses, resulting in the closure of businesses. This was due to the falling price of nickel. In the production and export of platinum, we saw the cessation of operations and the cancellation of projects in this branch of activity, for not having access to credit to conclude the expansion works.

Although the Zimbabwean economy has experienced negative growth rates due to the macroeconomic instability and hyperinflation, the decline was exacerbated with the International Financial Crisis of 2008, which affected production in the mining sector and manufacture. From 2009, the growth rates started showing some improvement, especially in the mining sector.

On the other hand, they have been adversely affected by the crisis in 2009 compared to previous levels of investment in portfolio and the prices of crude oil type Brent.

Given this situation, the policy responses against these exogenous shocks have focused on several fronts such as: a) strategies of internal development, in the form of export diversification in order to reduce excessive dependence on import of basic commodities; b) development efforts to accumulate international reserves in line with the objectives of SADC, in order to minimize the effects of external shocks; and c) adoption of aggressive strategies to promote exports for considering them more efficient than import substitution, and because it is a way to promote sustainable economic growth. In this regard, emphasis will be on improving the competitiveness of the country, productivity and efficiency, by means of promoting research, training of human resources and adopting technology.

In brief, most SADC countries experienced some degree of adverse impacts from the actual International Financial Crisis, and it is certain that they have not gone unscathed by earlier crises, before strict levels of synchronisation of economic activities in relation to the more developed countries, particularly those of the European Union¹⁸. The arrangements adopted with the view to adjusting the adverse effects of a crisis, vary among the countries, but it seems that policy measures to minimize these effects focus on increasing public spending to stimulate new productive activities and/or maintain governmental consumption, as well as stimulate the supply of credit to the economy.

¹⁸ See synchronization evidences in section 3 of this article.

These arrangements explained here are not incompatible with measures or strategies clearly deliberated or not, in order to increase exports as a proportion of GDP (Exports/GDP) or export penetration. The explanation resides in the fact that, even if the GDP presents lower or negative variation rates due to external shocks, the ratio Exports/GDP can increase by government deliberated decisions or in view of the inertia imposed by export contracts already signed. Moreover, the governments will certainly try, as hard as possible, to keep open the channels of external trade with their partners.

B.2 Exports Penetration as a Function of External Shocks

Using the periodisation proposed by Zhu (2008), but adding the year of 2009 to capture the specific impacts of the International Financial Crisis started in 2008, a model based on theory inspired, such as Zhu, on the Bacha approach (1987), was conceptualised. Such model constitutes the basic structure used to examine the policy responses in the form of export penetration in the SADC countries.

To evaluate the model's equation we used panel data covering series of the ratio Exports/GDP (PX) and the result of the balance of goods and services/GDP (CEBS) and the current account balance/GDP (CECC) for the 1990/2009 period at country level. We used two alternative measures of external shocks. The more restrict indicator CEBS, seeks to capture the dimensions of external shocks reflected in the accounts of the balance of goods and services, at the basis of deterioration and other barriers to trade and financial flows, exacerbated in times of crisis. The indicator CECC is broader, as it includes all restrictions reflected in the accounts of the current account balance, including therefore, the balance of revenues and the liquid unilateral transfers, headings which include international financial flows more sensitive to situations of crisis, such as remittance of dividends and profits and income transfers of nationals that reside and work in countries affected by the crisis, etc. The use of dual measurement lies in a strategy to locate more precisely where and how shocks are transmitted from one economy to another, by means of the results of the balance of payments accounts.

The total number of panel observations varies in function of the data availability. In the case of the CEBS indicator, there is data available for the 15 countries for all the years of the 1990/09 period. Therefore, the panel contains 300 observations to evaluate the equation.

In the case of the indicator CEBS, there is data available from the current account balance, in the format defined by the balance of payments methodology for 10 countries (South Africa, Angola, Botswana, Lesotho, Mauritius, Mozambique, Namibia, Seychelles, Swaziland and Tanzania). Thus, the panel contains only 200 observations¹⁹.

The basic equation to be evaluated is as follows:

$$PX_{jt} = a + b CE_{jt} + u_{jt}. \quad (4.1)$$

In the equation, PX_{jt} indicates export penetration of the country j in the year t and CE_{jt} expresses external shocks on the country j in the year t , measured alternatively by the ratios Balance of goods and services (CEBS) and Balance on current account/GDP (CECC).

As for the expected signal of CE's coefficient, we hope it is negative, given that the rationalisation is that adverse shocks are necessary and directly related to reductions in surpluses or the increase of deficits that would stimulate strategies for increasing exports as a proportion of GDP or export penetration (PX) as a reaction to shocks. In other words, the higher the impacts of shocks, the more negative is the current account balance in terms of smaller surpluses or bigger deficits and therefore, the higher the efforts to raise exports as a proportion of GDP. As the impacts of external shocks change over time depending on the dimension, nature and duration of the crisis, the first expectation is that the coefficient of EC be variable. This means that the more acute is the crisis the more severe are the impacts on the accounts of the current account balance and therefore, in such case, there is a higher need for neutralising measures in

¹⁹ The source of this series is the World Bank Database, available on the site: <http://databank.worldbank.org>.

the affected countries. For example, there is some consensus that the International Financial Crisis currently underway is the more severe in 80 years. That implies economic recession and stronger reflexes in the less developed economies, today more integrated than ever. To capture these transient changes of the impacts of shocks and test their statistical significance, were used various multiplicative dummies (interaction terms) to indicate and differentiate the various periods of crisis since 1990, as per the periodisation suggested by Zhu (2008) with the addition of 2009, as the start of the effects of the actual crisis.

Thus, five variable dummies were define, namely: a) D9091, value 1 in the biennium 1990/91 and zero in the other years, b) D9295 that takes the value of 1 from 1992 to 1995 and zero otherwise, c) D9600 worth 1 in the period 1996/00 and zero outside these years, d) D0105 which is equal to 1 in 2001/05 and zero otherwise, and e) D0909 worth 1 in 2009 (present crisis) and zero in the other years. The 2006/08 sub-period, considered favourable in terms of international trade, was taken as reference in comparison with the other sub-periods when there was some kind of external shocks generating crisis transmitted to the other economies through the cyclic synchronisation of activities mechanism.

In that way, to the equation 4.1 will be incorporated in the form of multiplicative terms, these five variables, as follows:

$$PX_{jt} = a + b CE_{jt} + c_1 CExD9091 + c_2 CExD9295 + c_3 CExD9600 + c_4 CExD0105 + c_5 CExD0909 + v_{jt} \quad (4.2)$$

Thus, coefficient **b** in each sub-period is increased by the corresponding dummy's coefficient. For example, in the sub-period of 2001/05 with specific effects of the shocks captured by the dummy D0105, the total effect will be (**b** + **c₄**). Thus, if **c₄** < 0, as expected, it means that the adverse impact is intensified. Similar interpretation applies to the other dummies.

As the data sample involves 15 economies with different characteristics, some more variable dummies can be incorporated in the Equation 4.2, in order to capture possible differentials of the ratio Exports/GDP between countries, as must occur in the case of Angola, for being a country with high level of production and exports of oil.

As this data is arranged in panel, the option was the use of single equation model, evaluated by appropriate methods in these cases. Moreover, the use of panel data models has three main advantages: a) they minimise problems of possible omissions of explicative variables, and b) let you explore more appropriately the differences between countries²⁰, and c) the explicative variables used alternatively – ratio of balance of goods and services/GDP and current account balance/GDP as indicators of balance of goods and services/GDP and the balance on current account/GDP as indicators of external shocks – are exogenous par excellence, there not being a reason for the estimate to generate simultaneity bias and inconsistent coefficients, so as to justify the specification in the form of system of equations type simultaneous, conceived by the Cowles Commission, or of Auto-regressive Vectorial Models (VAR)²¹.

By involving time series, the validity of equations evaluated based on panel data for the absence of spuriousness or non-economic significance was attested by the rejection of the unitary root hypothesis of the variables PX and CEBS and CECC [Levin test, Lin and Chu (2002)], and of co-integration [Pedroni test (2004)]²² for significance levels of 5 per cent or less in both cases.

The equation specified in these terms was evaluated by the weighted generalised least squares method (EGLS) for panel data. We opted for this method for taking into account different patterns of correlation between the residuals²³ and allow the use of weighting of variables to correct problems of variance of residuals not listed.

²⁰ See, among others, Asteriou and Hall (2007), *op. cit.*, p.344.

²¹ On these two types of models, see among others, Charemza and Deadman (1997), pp. 150-161.

²² Quoted on Eviews 7 User's Guide II, cap. 15.

²³ See Eviews 7 User's Guide II, p.605.

In that way, it is expected that the estimated standard errors associated with the coefficients are robust.

The results obtained with the estimation of the model with the two alternative ways of measuring the external shocks are shown in Table 4.1²⁴.

Specification	Equation 1	Statistic t	Equation 2	Statistic t
Constant	31.299	126,58***	66.277	89,37***
CEBS	-0.244	-23,15***	-	-
CECC	-	-	-5.909	-1.50
CEBCxD9091	0.372	35,75***	-	-
CEBSXD9295	0.389	49,53***	-	-
CEBCxD9600	0.348	44,1***	-	-
CEBSXD0105	0.037	2,88***	-	-
CEBCxD0909	0.154	22,55***	-	-
CECCXD9091	-	-	-55.859	-14,23***
CECCXD9295	-	-	-36.531	-8,82***
CECCXD9600	-	-	-41.864	-9,4***
CECCXD0105	-	-	-9.262	-1,74*
CECCXD0909	-	-	-28.198	-6,69***
DAO	40.546	16,78***	-	-
BTW	-	-	-17.017	-18,28***
DAS	-	-	-40.559	-39,32***
DMU	28.392	36,86***	-	-
DMZ	-	-	-27.61	-28,63***
DSC	45.138	25,29***	-	-
DTZ	-	-	-38.997	-28,14***
DSW	41.637	32,04***	-	-
D80809	-	-	53.887	10,53***
D90303	-	-	22.886	26,81***
Assesment Statistic				
R ² Adjusted		0.979		0.930
Statistic F		1398,33***		220,74***
Statistic of Jarque-Berado Test		0,125***		1,327***
Statistic DW		1.69		1.35
Number of remarks		300		200
Interactive Effects				
Average Coefficient	-0.244	-	-5.909	-
Period 1990/91	0.128	-	-61.768	-
Period 1992/95	0.145	-	-42.440	-
Period 1996/00	0.104	-	-47.773	-
Period 2001/05	-0.207	-	-15.171	-
Period 2009/09	-0.090	-	-34.107	-

Notes:

1) Asterisks indicate significance levels of 1 per cent (***), 5 per cent (**) and 10 per cent (*).

2) Seeing that the method used was the one of least generalized squares to eliminate serial auto-correlation problems the statistic DW loses its function in this context

3) Interactive effects indicate change in the coefficient of CEBS and CECC variables in different periods and are defined by the sum of that coefficient and the coefficients of the multiplicative terms.

Besides the expected robustness in the face of the evaluation method used, the hypothesis of normality of the residuals ($F_{JB}=1,251$ in Eq.1 and 1,327 in Eq.2) is not rejected for a significance level of 1 per cent, which constitutes appropriate condition for the validity of tests t and F, whose statistics also point

²⁴ See Eviews output reports in the Annexure.

respectively, to the rejection of the null hypotheses of absence of effects of the explicative variables individually and as a whole, for significance levels of 1 per cent.

In relation to the results obtained, we should point out first, the incorporation of four variable dummies, with the aim of capturing differentials of the ratio Exports/GDP in Angola (DAO), Swaziland (DSW), Seychelles (DSC) and Mauritius (DMU), as well as to improve the model's specification (Equation 1). These dummies were added to the equation to capture levels of the ratio Exports/GDP (PX) above the series' average values. In that way, the dummy DAO 1 in the case of Angola, an oil-exporting country with strong participation in the GDP, is zero in the other countries. The others – DSW, DSC and DMU – have the value 1 for Swaziland, Seychelles and Mauritius, respectively, and zero otherwise.

As for the economic meaning of these results note that, initially, exports as a proportion of GDP (PX) of the SADC countries are inversely associated to external shocks (CEBS). This indicates that adverse external shocks generate negative results in the balance of goods and services associated to higher levels of Exports/GDP, which suggests that these countries in the 1990/09 period, faced with impacts from adverse exogenous shocks, reacted or made adjustments consistent with increases in export penetration as the strategy to adopt in order to revert drops in the balance of goods and services: reduction of surpluses or increase of deficits. This empirical result supports the hypothesis and is consistent with the findings of ZHU (2008) for the LDCs.

Possible intensifications of the impact of external shocks during specific crisis along the 1990/09 period, find empirical support only for the impacts of crisis that occurred in the 2001/05 and 2009 periods (beginning of the present crisis), as indicated by the negative effects of interaction shown in Table 4.1 for Equation 1. In the other periods, these effects are positive, which is not consistent with the findings of ZHU (2008).

This result not fully consistent with the theoretical hypothesis under testing occurred in order to measure the external shocks. In effect, when the indicator CECC, which captures broader dimensions of the current account balance, is used, the results change significantly, giving empirical support to the hypothesis formulated first. (Table 4.1, Equation 2).

Please note that, although not statistically significant in this specification, the coefficient of CECC presents a theoretically correct signal. The most important however, is that this estimated coefficient, for not being constant over the sampling period, suggests significant changes in the impacts from external shocks in different phases of the crisis, as indicated by the interactive terms corresponding to Equation 2, in which we use a broader indicator as did Zhu (2008). These results indicate that the impacts from adverse shocks that induce or enable higher levels of exports/GDP are intensified in various phases of the crisis, depending on their extension and nature. Individually, we see that these effects associated to Equation 2 present different statistical significance levels. With the exception of the 2001/05 period (interactive term CECCxD0105), all the multiplicative effects indicative of changes in the average overall impact of CECC ($\hat{b} = -5,909$) are highly significant. Focusing on the more recent periods, it is worth mentioning the significance of the effect of shocks in 2009, the plausible start of the financial crisis' impacts on the economies with synchronised activities, such as those of the African bloc in relation to the more advanced countries.

With respect to the country-specific effects, it is noted that in all cases were recorded levels of the higher and more significant differential ratio exports/GDP from the statistical point of view, indicating local differentials above the general average of the dependent variable PX in the case of Angola, Mauritius, Seychelles and Swaziland in Equation 1, or below the average for Botswana, Mozambique and Tanzania in Equation 2. In the case of Angola, the higher levels of the ratio Exports/GDP (PX) can be attributed to the country's strong position of producer and exporter of oil. In the other cases, although the differential PX indicates specific characteristics reflected in the data, the effective ratios were not identified. This does not prevent economic meanings being assigned to the coefficients associated with these dummies. In any case, the control carried out by means of those auxiliary variables allowed for the more precise identification of the shocks' impacts. In Equation 2, the outlier effect, observed in 2003 for Namibia and level change in Mozambique in 2008/09, was also controlled.

5. Final Considerations and Recommendations

The issues that were initially expressed about the impact of the external shocks on the SADC economies referred to the existence or lack of synchronicity of economic activity in relation to the more developed economies, with which they maintain trade and/or financial relationships and it enquired about the intentional reactions, or those which simply occurred due to circumstances, before the external shocks created by the economic crises and transmitted by the synchronisation process. In truth, without the synchronised interconnections, there is no debate on policy responses, due to the fact that the economies would be independent.

With regard to synchronicity, the evidence that has been gathered allows us to conclude that the SADC economies are generally interlinked internationally due to trade, financial and/or cultural bonds, that is, they are mainly synchronised with the economies of the European Union and, more recently, with the Chinese economy. Individually, the SADC countries show much asymmetry in the synchronisation of activities. As a result, although the bloc as a whole appears to be fairly linked to the exterior, in isolation the situation is very diverse. The external synchronicity occurs basically with South Africa, Botswana, Namibia and Swaziland.

As the synchronicity of activities is relatively strong, the transmission of shocks that originated externally due to the crisis is a natural consequence. With regard to the manner in which those adversities are faced by means of intentional or consequential neutralising policies, there are many methods that can be employed, depending on the characteristics and the capacity of each country. This can be gleaned from the panel of six countries which have specific qualitative information (South Africa, Angola, Namibia, Mauritius, Tanzania, Zambia and Zimbabwe). Among the possible arrangements of policies used to neutralise external shocks, there is exports penetration (Exports/GDP) as a synthesis – indicator of actions that are intentionally taken and/or are a result of circumstances, resulting in a minimisation or neutralisation of the impacts of the shocks.

With regard to the SADC countries, there is evidence that, generally, external shocks for the 1990/2009 period motivated reactions in the sense that policies were established that neutralised the effects of the shocks, which were reflected in the balance of the current account as a whole, or specifically, in the balance of goods and services²⁵.

With regard to the impacts during the period of more intense shocks, there is evidence of differentiated and more intense impacts only in the period 2001/05 and in 2009, when the logic balance of goods and services/GDP is used to capture the external adversities. However, when using a wider indicator (Balance of current account /GDP), there is a significant change in the results, suggesting that the effects of the shocks vary in time depending on the length and the nature of the crises that underpin them.

In broad terms, the SADC countries should consider all constrains and trade-offs and design an appropriate programme of macroeconomic adjustment. Such programme must describe the macroeconomic problems and anchor the expectations of investors relative to the formulation and implementation of macroeconomic policies. Additionally, the programme must reflect the amount of internal policy adjustment and, therefore, the situation of sustainability of its debt.

Additionally, the trade policy could have a fundamental role in facing the economic crisis:

- ✓ Immediately, by way of restoring confidence, if the SADC governments worked together in that direction.
- ✓ In the short term, avoiding protectionist responses that can worsen the economic perspectives.
- ✓ In the medium term, providing real opportunities for the recovery of economic stability.

²⁵ Note that raised deficits mean more negative or lower values in the result of the balance of payments' current account.

At economic policy level, they should opt for higher incentives for the primary sectors of the economy, agriculture, fisheries and others, and for export substitution. Seeing that a major part of the SADC economies faces the problem of single production or dependency on one product export, the suggestion to the governments is a wider economic diversification programme. On the contrary, they should not disregard the need of greater diversification of trade partners.

At the level of financial systems, the suggestion is for strengthened banking supervision and macro prudential analysis, with the view to monitor financial stability and anticipating risk signals.

Lastly, a recommendation on the need for more effort and co-ordination of the fiscal and monetary policies of the SADC countries, directed to reducing the countries' exposure to the tribulations of international trade.

References

AARLE, Bas van et al. *Study on economic integration and business cycle synchronisation* (Final Report). Mannheim e Vienna: Centre for European Economic Research GmbH (ZEW)/Institute for Advanced Studies (HIS), November 2008.

ASTERIOU, Dimitrios; HALL, Stephen G. *Applied econometrics: a modern approach*. Ed. Rev. New York: Palgrave MacMillan, 2007.

BACHA, E. Annex: Terms of reference for the country studies. In: *Balance-of-payments experience and growth prospects of developing countries: a synthesis*. International Monetary Issues for the Developing Countries, United Nations Conference on Trade and Development, 1987. Citado por Zhu (2008)

CÉSPEDES, Luis F.; GOLDFAJN, Ilan; LOWE, Phil e VALDÉS, Rodrigo. Policy responses to external shocks: the experiences of Australia, Brazil and Chile. *Working Paper of the Central Bank of Chile* n.321. Santiago, May 2005.

CHAREMZA, W. W.; DEADMAN, D. F. *New directions in econometric practice: general to specific modelling, cointegration and vector auto regression*. 2nd ed. Cheltenham (UK): Edward Elgar, 1997.

COMMITTEE OF AFRICAN FINANCE MINISTERS AND CENTRAL BANK GOVERNORS. *Impact of the crisis on African economies - Sustaining growth and poverty reduction: African perspectives and recommendations to the G20*.

COMUNIDADE PARA O DESENVOLVIMENTO DA ÁFRICA AUSTRAL (SADC). *SADC Today*, v.8(1), April.2005, Disponível em: <http://www.sardc.net/editorial/sadctoday/>, acesso em 27.08.2010.

IMPS, Jean. Trade, finance, specialization and synchronisation. *IMF Working Paper* n. WP/03/81. Washington: IMF, April 2003.

KRAAY, Aart e VENTURA, Jaume. Trade and fluctuations. *Policy Research Working Paper* n. 1560. The World Bank, December 1995.

PONCE, Ramon A. C.; LLAMAS, Rogelio V.; HERNANDEZ, Juan M. O. Synchronisation of economic activity between Mexico and the US: what are the causes? *Revista de Análisis Económico*, v.25(1);pp.15-48, Junio 2010.

QUANTITATIVE MACRO SOFTWARE (QMS). *EvIEWS 7 User's Guide II, 1994-2009*.

ZHU, Martin K. Impacts of external shocks on nations' policy responses and economic growth: world economic synchronisation. *Journal of Applied Business and Economics*. May 2008.

Annexure

Exports' Penetration Equation, calculated by Eviews (version 7)

Dependent Variable: PE
 Method: Panel EGLS (Cross-section SUR)
 Date: 11/03/11 Time: 07:28
 Sample: 1990 2009
 Periods included: 20
 Cross-sections included: 15
 Total panel (balanced) observations: 300
 Linear estimation after one-step weighting matrix
 White cross-section standard errors & covariance (d.f. corrected)
 WARNING: estimated coefficient covariance matrix is of reduced rank

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	31.29881	0.247267	126.5792	0.0000
CE	-0.224149	0.009681	-23.15400	0.0000
CE*D9091	0.372188	0.010411	35.74803	0.0000
CE*D9295	0.388952	0.007853	49.53166	0.0000
CE*D9600	0.347731	0.007886	44.09517	0.0000
CE*D0105	0.037425	0.012975	2.884382	0.0042
CE*D0909	0.154448	0.006848	22.55396	0.0000
DAO	40.54557	2.415916	16.78269	0.0000
DSW	41.63710	1.299469	32.04162	0.0000
DSC	45.13814	1.784801	25.29030	0.0000
DMU	28.39249	0.770307	36.85868	0.0000

Weighted Statistics

R-squared	0.979751	Mean dependent var	9.020155
Adjusted R-squared	0.979050	S.D. dependent var	18.88821
S.E. of regression	1.014252	Sum squared resid	297.2965
F-statistic	1398.326	Durbin-Watson stat	1.691809
Prob(F-statistic)	0.000000		

Unweighted Statistics

R-squared	0.682056	Mean dependent var	41.24288
Sum squared resid	44489.23	Durbin-Watson stat	0.265792

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