EXPORT EXPANSION AS DETERMINANT OF ECONOMIC GROWTH IN MOZAMBIQUE: A CO-INTEGRATION ANALYSIS

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A research report submitted in partial fulfilment of the requirements for the Masters Degree in Economics in the Department of Economics, Faculty of Economic and Management Sciences, University of the Western Cape

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March 2009

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KEY WORDS:

Economic growth

Foreign trade policies

Export promotion strategy

Import substitution strategy

Export-led growth

Growth-led export

Export expansion/development

Export gains

Co-integration analysis

Error correction modelling

Mozambique

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DEDICATION

To:

My wife, Maria Emilia, and my kids, Jennifer, Walter and Thandi
with love.

DECLARATION

I declare that this document "Export expansion as determinant of economic growth in Mozambique: a co-integration analysis" has resulted from my own research efforts and that this is the first time that it is being submitted to a higher educational institution for obtaining the Masters Degree in Economics.

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[Signature]   March, 2009

ACKNOWLEDGEMENTS

I thank the Almighty God for this achievement, particularly because he gave me the necessary strength and motivation to complete my studies.

I am deeply indebted to my supervisor, Dr Makaudze, for his valuable comments and guidance through my research project.

I would like to express a very special gratitude to the US Agency for International Development (USAID-Mozambique) for sponsoring my studies in South Africa. Equally I say thank you to the Africa America Institute, particularly to Dr C. Diniz, in charge of the USAID-Mozambique's scholarship programme. Their assistance and encouragement have contributed a lot to this accomplishment.

For their unreserved love and support, my wife (Maria Emilia) and my children (Jennifer, Walter and Thandi) merit my special appreciation. They had to endure all kinds of sacrifices whilst I was engaged in my studies.

Last but not least, I would like to give credit to all my lecturers (particularly the HOD, Dr P. Jacobs and the Public Economics Lecturer, Mrs E. Stoltz); fellow students and staff of the Economics Department of the University of the Western Cape for accompanying me during the course of my studies. I give special thanks in particular to Egildo, Paya and Devine, who were in my study group.

LIST OF ABBREVIATIONS

AGOA	African Growth and Opportunity Act
ADF	Augmented Dickey-Fuller
CPI	Centre for Investment Promotion
CTA	Confederation of Business Association of Mozambique
DW	Durbin-Watson
ECM	Error Correction Modelling
ELG	Export-Led Growth
ESRP	Economic and Social Rehabilitation Programme
FAO	Food and Agriculture Organisation
GDP	Gross Domestic Product
GLE	Growth-Led Export
GNP	Gross National Product
GoM	Government of Mozambique
HDI	Human Development Index
HIPC	Heavily Indebted Poor Countries
HOD	Head of Department
IMF	International Monetary Fund
INE	National Institute of Statistics
IPEX	Institute for Promotion of Exports
ISI	Import-Substituting Industrialisation
ISS	Import-Substituting Strategy
LDC	Least Developing Countries
LR	Long run
MDG	Millennium Development Goals
MOZAL	Mozambique Aluminium Smelter Project
NICs	Newly Industrialised Countries
OLS	Ordinary Least Square
R&D	Research and Development
SADC	Southern African Development Community
SR	Short run
TOT	Terms of Trade
UN	United Nations
US$	United States Dollar
UNCTAD	United Nations Conference for Trade and Development
UNDP	United Nations Development Programme
VAR	Vector Auto-regression
VECM	Vector Error Correction Models
WDI	World Development Indicator
WTO	World Trade Organisation

ABSTRACT

Export expansion as determinant of economic growth in Mozambique: a co-integration analysis

The objective of this study is to empirically examine the export-led growth hypothesis in Mozambique using quarterly time series data over the period of 1987-2004, applying a co-integration analysis, Engle and Granger's (1987) Error Correction Model (ECM) and the Granger causality test.

The paper explores the causal relationship between economic growth and other explanatory variables, such as real exports, imports, labour force, gross capital formation, terms of trade, civil war and natural disasters (the last two as dummy variables).

During the period under investigation Mozambique experienced a long cycle of exceptionally high economic growth coupled to a buoyant export sector following a period of economic reforms in which trade liberalisation and attracting foreign investment were Mozambique's mainstream economic policies. Official data show that the annual Gross Domestic Product (GDP) growth averaged 8.4 percent between 1995 and 2005 as compared to 3.8 percent for the period of 1985-1995; during the same period the real exports grew on average by 19 and 9 percent, respectively.

While a number of studies that tried to explain economic performance in developing countries have emphasised the role played by a country's trade policy, particularly export promotion as an engine of economic growth, this study found no evidence of export-led growth for the long period of economic success in Mozambique. The stable and positive long-run (co-integration) relationship between economic growth and exports detected is one-way and runs from GDP to exports, suggesting a case of growth-led export (GLE). This means that most of the changes to GDP were internally generated and mainly explained by the previous growth of GDP rather than by exports or any other variable included in the regression equation. Only for a short period of time (2000-2004) was the export-led growth hypothesis found to be valid for Mozambique, of course, when accounting for structural breaks observed in the

data related to the impact of natural disasters and influx of mega-projects. It seems that ELG detected was in fact associated with a surge of mega-projects producing huge manufacturing output and targeting mainly foreign markets.

From the policy viewpoint this result would suggest that the government would need to pursue domestically oriented policies, particularly the ones that aim at fighting poverty and inequality of income that are critical for expanded domestic markets, and to promote growth-driven exports, in which the internal growth of the domestic economy leads to export development. However, it is believed on the basis of this research that from a certain point in time the country policy of attracting foreign investments in the form of mega-projects that targeted international markets has had an impact on economic growth and therefore should be pursued in conjunction with domestically oriented policy measures.

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CHAPTER I: INTRODUCTION AND BACKGROUND

1.1 Introduction

Export-led Growth (ELG) is defined as a development strategy in which export and foreign trade in general, play a central role in a country's economic growth and development (Sentsho, 2000:01). In contrast to an ELG strategy, some researchers such as Veron (1966, as cited in Jin, 2002:64) suggest that internally generated growth can lead to export development, a case known as growth-led exports (GLE). Another situation considered in the literature arises when a country's export promotion and economic growth are reinforcing each other in the process of economic development, resulting in a case known as a feedback relationship (Jin, 2002:64; Giles and Williams, 2000:265).

With the surge of trade liberalisation policies during the last three decades or so, many developing countries have made export promotion a mainstream policy, with the aim to promote their economic growth (Kreinin, 2006:151). This surge was associated with the belief that a country's exporting sector is the driver of economic growth in developing and developed countries alike. A striking case in the literature, frequently used as an evidence of the driving power of exports to a country's economic growth, refers to the Asian emerging economies[1] (Hong Kong, Taiwan, South Korea and Singapore). During the late 1960s up to the 1970s the four Asian countries, also called as "Asian Tigers", achieved high rates of economic growth, reaching 10 percent in some cases, which were attributed mainly to the changes undergone in their trade policies as well as in the incentives structure offered to the business sector. From inward-looking trade policies,[2] the Tigers introduced trade

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[1] In general, the real GDP growth in the four 'Asian Tigers' averaged 8 to 9 percent between the mid-1970s and 1997, despite the Asian crisis. During the same period the growth rates in developed countries such as the United States of America and in many Western European countries ranged between 2 to 3 percent (Krugman and Obstfeld, 2006: 252). The system of incentives was changed in favour of exports. Taiwan, for instance, established export duty-free zones to encourage the export industry (World Bank, 1993 cited in Sazanami, 1995) and overall selective subsidies were awarded by the Asian Newly Industrialised Countries (NICs) to targeted export industries (Richards, 2001:130).

[2] Inward-looking trade policy is based on tariffs, quotas and subsidies designed to protect and promote domestic industrialisation against imported manufactured goods from well-established industries in developed countries. This strategy was popular in many developing countries before the 1960s and it

policies that encouraged exports of manufactured goods, on a large scale, to the markets in industrialised countries (Krugman and Obstfeld, 2006: 252).

A number of arguments have been put forward in the literature to support the outwardly oriented trade policy as it is seen to be associated with a number of economic benefits. First, it is argued that export expansion is associated with job creation, consumption and higher wages that, in turn, lead to increased domestic demand for a country's output (Jung and Marshall, 1985:03; Mahadevan, 2007:1071). The thought behind this is that domestic exporting firms respond to the increased international demand of their goods by increasing production, employment and domestic consumption, which together amount to increased domestic output.

Second, another argument postulates that a large market size, associated with a booming export sector, leads to economies of scale in production and hence allows domestic firms to attain low unit costs in production (Mahadevan, 2007:1071). In addition, proponents believe that a large market size can also assist domestic firms to achieve greater utilisation of the capacity of the economy (Ram, 1985:418; Awokuse, 2006:593).

Third, the export sector is believed to achieve greater specialisation in the production of commodities that use the country's abundant factors intensively (Tyler, 1981:127). This argument is based on David Ricardo's law of comparative advantage, according to which a country will specialise in production and exportation of goods that render relative, rather than absolute, lower costs (Du Plessis, 1987:12). This, in turn, leads to further efficiency gains in the use of economic resources and hence economic growth (Jin, 2002:64).

Fourth, some researchers argue that, because of exposure to global markets and international competition domestic firms are compelled to attain rapid technological changes and to produce quality products that meet the demand of high-income earners located in the developed world (Awokuse, 2006:593). In supporting this view, Richards (2001:130) observed that the spill-over effects of technological advancement

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was justified by the need for protecting an infant industry that was seen to have growth potential but was lacking the government's start-up support (Krugman and Obstfeld, 2006:245).

and other trade externalities such as highly skilled labour and improved managerial habits expected to flow from rich to poor countries take place manly through the exchange of goods and services.

Fifth, Jung and Marshall (1985:03), Awokuse (2006:593), Mahadevan (2007:1071) and others agree that export expansion generates foreign exchange that a country usually needs to pay for its imports of capital goods and other production inputs, as well as for debt repayment. In fact, the international system of payment of a country's foreign account uses the internationally accepted currency, namely the US$.

Finally, Balassa (1984) argued that countries engaged in trade are likely to respond promptly and more favourably to eventual external shocks as compared to inward-oriented economies.

Nevertheless, there are conflicting arguments concerning the role of export as a vehicle for accelerating a country's economic growth. For instance, Palley (2000:03) and others, despite sharing the common view about the role of export promotion in economic development, argued that an export-oriented growth strategy is associated with shortcomings that can distort and slow down development in different ways:

- First, it tends to overshadow domestic-oriented growth;

- Second, it creates intense competition for limited international markets for developing countries' growing exports;

- Third, because of differences of working conditions and wages between developing and industrialised countries, it creates conflicts between workers of both sides; and

- Finally, export-oriented trade policy creates a surplus in production and economic slumps with negative effects for the world development.

While these arguments have some merit on their own, nobody has ever suggested a situation of autarky in trade where by no country trades with any others. A common

trend seems to support a world of integrated economic markets through less restricted movement/exchange of goods, labour and capital.

A different possible explanation of economic growth based on trade policy regime considers both strategies discussed above as interrelated and thus as equally relevant. One may think that probably the only reason why the ELG strategy has been so successfully implemented in some countries is probably because the governments of such countries have previously engaged in inwardly oriented trade policies that set a strong basis for the later generation of economic reform to succeed. Jin (2002:64) suggests that an export expansion has a feedback link with economic growth, since the growth of exports promotes economic growth as a result of better resource allocation and production efficiency, on the one hand. On the other hand, economic growth then improves the country competitiveness in international markets, which in turn upholds the growth of exports. However, understanding the contribution of a country's trade policy in fostering its economic growth is paramount and this paper examines a specific case of export-led growth, that is Mozambique.

The study's key empirical results suggest no proof of the existence of export-led growth in Mozambique, as hypothesised. Using quarterly time series data for the period 1987-2004 and applying ECM techniques and the Granger causality test, the study found a stable and positive long-run (co-integration) relationship between economic growth and exports. However, it runs from GDP to exports, which simply means the confirmation of growth-led export (GLE) and the rejection of the ELG hypothesis. Further investigations were carried out in order to account for structural breaks observed in the used time series data. Modelling the quarterly time series data from 2000 to 2004, the study found the export-led growth hypothesis to be valid. The surge in the mega-project exports in 2000 with the emergence of Mozal, the largest aluminium smelter manufacturing exporter in Africa, has boosted economic growth, although other studies found that mega-projects' impact on employment generation, tax revenue and linkages with the rest of the economy was negligible (Castel Branco, 2004). The study's major policy implication is that the government of Mozambique should undertake selective trade policies that do not only focus on the expansion of the domestic market base though poverty reduction and the elimination of

inequalities, but should also target specific export-oriented industries through an appropriate investment policy and a striking incentive structure.

1.2 Statement of the Problem

Since the independence in 1975 and under a planned and socialist economic system adopted by the first nationalist government, Mozambique experienced a long period of economic crisis concurrently characterised by a devastating civil war and widespread poverty (Arndt, Jones and Tarpc, 2006:10-12). During the middle of the 1980s Mozambique was cited as the poorest country in the world, with slow and even negative rates in its economic growth, a disrupted system of basic services (mainly health and education) and highly burdened with unsustainable external debt. It was within this context that Mozambique joined the Breton Woods institutions and, in 1987, it unconditionally embarked on a programme of economic reforms, opening up its market to international trade and private investments (WTO, 2001). The economic programme was backed by the World Bank and IMF and become known as Economic and Social Rehabilitation Programme (ESRP), and had the following main objectives (Government of Mozambique, 1987:14):

1. To reverse the decline of production and to re-establish a minimum level of income and consumption for all Mozambicans;

2. To reinstate the macro-economic balance through a reduced budget deficit;

3. To enhance efficiency and set up conditions for a return to higher levels of economic growth, once the effects of civil war and other exogenous constraints have been reduced; and

4. To line up official and parallel markets and re-establish disciplined relationships with trading partners and creditors.

The ESRP was designed to deregulate the economy and gradually allow it to assume a market-oriented stance. A number of financial, monetary and trade policies were then pursued under the ESRP (Abrahamson & Nilsson, 1995:112).

This paper examines the export-led growth hypothesis for Mozambique. It provides an interesting case study, because economic reforms under ESRP have laid the

foundation for a buoyant export sector and strong and sustainable economic growth in Mozambique (Figure 1). The economic growth rate was far above the African average and has been among the highest in the world since 1996 (World Bank, 2001; WTO, 2001). It is a case of successful story for a group of developing countries that received economic and financial support from the World Bank/IMF under a wider programme of economic structural adjustment in Africa.

Figure 1: GDP and Export Annual Growth Rates
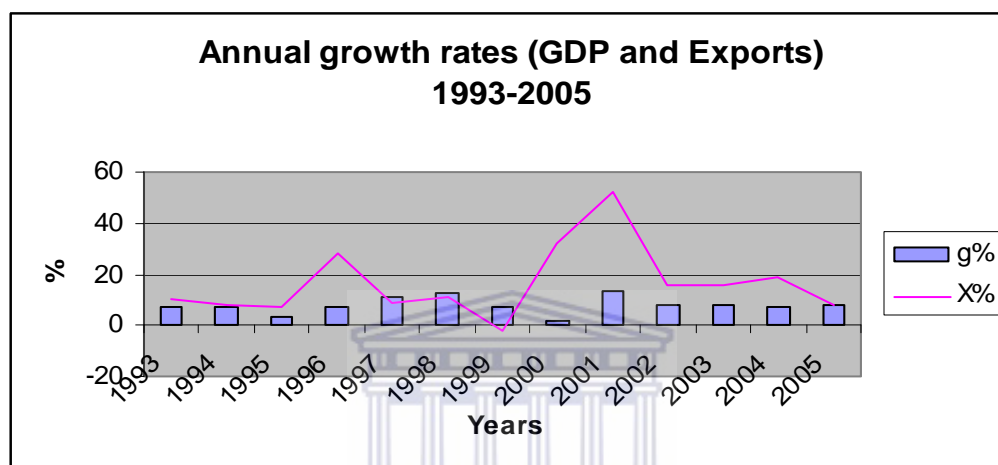
Source: Author's own construction from OWI data base

A glance at Figure 1 above raises the question of what is sustaining the relatively high economic growth rate in Mozambique.

A branch of growth theory explains economic performance emphasising the role played by a country's trade regime. There is theoretical as well as empirical evidence of exports playing a pivotal role in driving economic growth and this strategy has become known as export-led growth. Yet, the ELG nexus is not widely and unconditionally accepted. For instance, Giles and Williams (2000), who provide a comprehensive survey of more than 150 ELG cases in both developing and industrialised countries, found mixed and conflating results with respect to the validity of the ELG hypothesis.

The contribution of this paper will be an examination of whether the export-led growth policy has also been (or not been) beneficial for Mozambique, a small agro-based economy, traditionally dependent upon primary export of goods and more

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recently engaged in mega-project exports. This will be the central question in this research, which will in particular assess the role played by the export sector in promoting economic growth in Mozambique. The study seeks to contribute to the formulation of appropriate trade policies as catalysts for economic development in Mozambique.

1.3 Research Questions

For many years, until recently, many leading economists as well as policy-makers have expressed different (and even conflicting) views about what drives economic growth in developing countries. Some have postulated that the outwardly-oriented trade policies are more effective in achieving quick and sustained economic growth, while others place more trust in inward-looking development policies. A development strategy based on outward-oriented development policy is basically consistent with the export-led growth (ELG) hypothesis. However, economic growth is a very complex process that depends upon many different policies and factors. It has been quite widely accepted that economic growth is determined by a complex interplay of various factors and forces, such as the accumulation of both physical and human capital, international trade, macroeconomic and political stability (including institutional arrangements and good governance), income distribution patterns and geographical aspects (Medina-Smith, 2001:01). Yet the key driver of economic growth varies across countries and changes over time in the same country, therefore requiring thorough research taking into account a country's specific features.

This research therefore investigates the link between export performance and economic growth in Mozambique in relation to other determinants of growth, such as capital and labour, and addresses the following two main questions:

1. What role did exports play in the phenomenal economic growth experienced by Mozambique between 1987 and 2004?

2. How can the role of such forces be enhanced and sustained over time?

1.4 Hypothesis

The main hypothesis for this research is presented below. This formulation is common in the export-led-growth literature. Yet some studies have found that, rather than exports, it is economic growth that drives foreign trade. Others researches have become aware of the feedback relationship that may exist between exports and GDP growth in the sense that both exports and economic growth are inter-related, influencing each other in a recurring and continuous manner. The hypothesis therefore reads as follows:

1. "An increase in Mozambican real exports has a positive effect on the GDP growth rate".

1.5 Study Objectives

The purpose of this research is to produce policy recommendations on an economic development strategy for Mozambique, particularly with regard to trade policy that drives GDP growth. The study investigates the forces behind the strong achieved economic growth in Mozambique during the past two decades. However, the focus will be on examining whether export promotion has been a key determinant of economic growth. If it is, then an export-promotion strategy would need to be pursued in Mozambique. If the formulated hypothesis is rejected, it means that other policies rather than export promotion are relevant for economic growth and need to be followed. The policy recommendation will be the major contribution of this research.

1.6 Limitations of the Study

This study has some shortcomings. The lack of disaggregated data on Mozambican statistics sets became the major limitation encountered during this research. Figures on GDP and trade (exports and imports) are only available on an annual basis and rarely presented in a way that allows for sector analysis. For instance, data on exports were not available in disaggregated format that display exports components. Consequently the analyses were based on available aggregated statistics and the

derivation of quarterly data from annual data was done using Lisman and Sandee's (1964) method.

The use of less aggregated data in ELG studies is vital and some researchers such as Siliverstovs and Herzer (2006:323), and Giles and Williams (2000:282) have even ascertained that the type of exports, rather than total exports, matter in investigating the effect of trade policy on economic growth. An analysis of the link between manufacturing exports and GDP is preferable and more likely to shed more light to the debate.

The structural break observed in the data (see Figure 3 and Appendixes) that are linked to a long period of civil war, the democratisation process, unpredictable natural disasters and the emergence of mega-projects was another problem this research had to deal with. In order to address such breaks Dummy Variables were introduced.

1.7 Organisation of the Study

The rest of the document is organised as follow: Chapter Two will look at the background to the economy of Mozambique, providing a comparative analysis of economic performance before and after economic reforms, with a focus on GDP and the export sector. Chapter Three will examine existing literature with the aim of assessing relevant theoretical works on foreign trade policies and their theoretical contribution to economic development. Chapter Four will provide a description of empirical work, methodological approaches, including co-integration analysis, Error Correction Modelling and the Granger causality test proposed for this research. Chapter Five will present the empirical analysis and the study results. Finally, Chapter Six will discuss policy implications and will sum up the study's general conclusion, before the list of references and Appendices is presented.

CHAPTER II: THE ECONOMY OF MOZAMBIQUE

2.1 Introduction

The primary goal of Chapter Two is to provide a background to the Mozambican economy. Section 2.2 presents a general country profile, which includes important economic features and discusses the main demographic indicators. Section 2.3 discusses Mozambican economic policy and economic growth, followed in section 2.4 by an analysis of the economic structure, with the focus on the contribution of the key economic sectors. Section 2.5 is a summary of the chapter.

2.2 The Country's Profile

Mozambique is situated on the south-eastern coast of Africa along the Indian Ocean. It has a long coast line, of 2,740 km, abundant natural beauty and natural harbours, a hydropower potential and some development corridors, which together provide electricity, ports and transport services to the neighbouring countries (Malawi, Zimbabwe, Zambia, South Africa, Swaziland and Tanzania) as well as having tourist attractions, particularly beaches and coral reefs (Arndt, 2005:02).

The majority (68%) of Mozambican households live in rural areas, with subsistence farming being the main economic activity (INE, 2003). The agricultural sector[3] is the backbone of the economy, as more than 80 percent of Mozambicans households derives their income and employment directly from this sector (FAO, 2001:7). Maize is the main staple, and cotton and tobacco the predominant cash crops. Minor crops include cassava rice and vegetables (UNCTAD, 2001:11).

Mozambique is one of the world's least developed countries, with a GNP per capita of US$230 in 2000, far below the average of US$ 480 income per head in Sub-Saharan Africa (Hatton, Telford & Krugmann, 2002:6). Mozambique was ranked as having the

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[3] Actually, the small-scale farming practised by thousands of members from the family sector is responsible for 90 percent of food production in Mozambique, with a large participation of women, who represent over 60 percent of the agricultural labour force (FAO, 2001:7).

world's lowest GDP per capita of US$80 in 1980, but in 1988 this had improved to just US$100 (Braathen & Palmero, 2002:269). The UNDP's Human Poverty Index (HPI), which shows the levels of privation measured by the likelihood of surviving to the age of 40, acquisition of knowledge and a decent living standard, was estimated at 50.9 in 2000 and had improved slightly to 48.9 in 2003 (UNDP, 2006:22). Similarly, the UNDP's Human Development Index (HDI)[4] was 0.366 in 2000 and it had improved somewhat to 0.428 in 2004 (UNDP, 2006:13). In terms of the position in the United Nations HDI, Mozambique ranked number 168 out of 174 in 2000. About 60% of Mozambicans cannot write or read their names in any language. The illiteracy rate is high, reaching 80%, among the rural population (INE, 2003). As per 2000, the level of access to safe drinking water (only 24% of the Mozambicans) was far below that of the Sub-Saharan average (47%) and the HIV/AIDS pandemic affected 14.5 percent of Mozambicans in 2000 as compared to only 7 percent of the Sub-Saharan population (Hatton, Telford & Krugmann, 2002:6). The HIV/AIDS pandemic has direct consequences for life expectation. For instance, an ordinary Mozambican is expected to live up to 47 years on average, quite far below the 51 years that a Sub-Saharan member was expected to live by 2000 (Hatton, Telford & Krugmann, 2002:6).

A glance at the key social indicators in education and health, the two key sectors, indicate that the country faces a gigantic challenge to achieve the Millennium Development Goals.[5] Before the end of the civil war in 1992, Mozambique had some of the world's worst social indicators, severely disrupted health, and education and transportation networks. Around 3.5 million Mozambicans were internally displaced or refugees in bordering countries (O'Connor, 1991; Braathen & Palmero, 2002).

Data on net school attendance at EP1 (the lower cycle of primary education), which showed a great improvement from 43.6% in 1999 to 75.6% in 2004, is overshadowed

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[4] The value of HDI lies between 0 and 1. The closer it is to 1, the higher is the level of the county's attainment of human development (UNDP, 2006:14).

5 Millennium Development Goals is the UN initiative which seeks to improve global development. The MDG was adopted by all 191 UN member states and it is meant to be achieved over a period of 25 years (1990 to 2015). The main components of MDG include: (i) eradication of extreme poverty and hunger; (ii) achievement of universal primary education; (iii) promote gender equality and empower women; (iv) reduce child mortality; (v) improve maternal health; (vi) combat HIV and AIDS, malaria and other diseases; (vii) ensure environmental sustainability; and (viii) develop a global partnership for development (UNDP, 2006:02).

by high repetition rate of about 21%, which is coupled with a moderate dropout rate oscillating between 8% to 10% (UNDP, 2006:44). Gender imbalances in education still remain high as girl's participation in 2003 was 43.5% of pupils in EP1 and 40% in EP2 (the highest cycle of primary education). In the health sector the prospect remains gloomy as well despite recent major improvements. The 1997 Health and Demographic Survey found that the child mortality[6] was 219 per thousand live births. In 2003 this index had reduced to 178 (UNDP, 2006:6). Similarly, maternal mortality[7] registered a tremendous improvement from 1,056 in 1995 to 408 in 2003. Despite these improvements in child and maternal mortalities, these indexes are high even by Sub-Saharan standards (UNDP, 2006:57).

It must be noted, however, that the above picture represents a striking improvement if compare with the level of human wellbeing that prevailed before the end of the civil war. The poverty headcount fell from 69 percent in 1996/7 to 54 percent in 2002/3 (World Bank, 2005:xi). This means that the proportion of Mozambicans leaving below the poverty line has fallen by 15 percentage point in just 5 years. James, Arndt and Simler (2005:19) have estimated that all percentiles of the populations have seen their consumption per capita grow in real terms at a rate of 3 percent annually between 1996 and 2002, despite the fact that wealthier households have slightly benefited the most from this growth on consumption per capita. In addition, inequality has moderately increased as measured by the Gini-coefficient, which rose from 0.40 in 1996/7 to 0.42 in 2002/3.

2.3 Economic Policy and Economic Growth

Mozambique's mainstream economic policy has been designed to support sustained, broad-based real GDP growth and low inflation, together with improved social services delivery. This is clear from the country's Action Plan for Poverty Reduction 2006-2009. This sections draws strongly from the World Bank's (2005) Mozambique Country Economic Memorandum and aims to shed light on how economic policy has

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[6] Child mortality reflects the probability of dying before the age five (UNDP, 2006:5).
[7] Maternal mortality indicates the number of maternal deaths for each 100,000 live births (UNDP, 2006:5).

been beneficial for 8 percent growth in Mozambique experienced between 1992 and 2005.

As far as the macro environment is concerned, the inflation rate was brought down by monetary authority from 60 percent in 1992 to single figures in the late 1990s and, despite the banking crisis in 2000-2002, inflation was maintained in the single-digit range at least until 2007. Government spending was managed to boost infrastructure and to expand and improve basic services (mainly health and education) and for this purpose government expenditure rose from 24 percent of GDP in 1997 to 30 percent in 2002. The funding of the public budget was strongly secured by concessionary assistance as well as by state revenues but little from banking system.

The government privatised most of the state-owned properties, excluding the land and a few other public utilities and sectors considered vital to the state (WTO, 2001). The state subsidies to the economy and particularly to the agricultural sector were almost eliminated by the mid-1990s, and an environment conducive to private investments was created. Trade liberalisation was introduced and the import duties gradually lowered to an average tariff of 9 percent and a ceiling tariff of 20 percent was reached in 2006. Through liberalisation of its policy Mozambique's export performance experienced a strong growth of 22 percent per annum (in US$ terms) far above the 6 percent of the world export growth (World Bank (2005). Thus Mozambique was cited by the World Bank as one of the few countries in Africa whose share in world exports had risen. Most of the export expansion was driven by mega-projects rather than by traditional exports, which grew by just 2.3 percent. Mozambique adopted a specific package of trade policies under its ESRP and some of these policy measures are summarised below (Table 1).

Table 1: Major Policy Reforms Undergone in the context of ESRP

No.	POLICY REFORM	OBJECTIVES
1	Deregulate the economy, restructure and privatize the state enterprises	Introduce a marked-based economy and mobilize foreign and local private investments
2	Elimination of most of export restrictions and granting export tax rebates and export credit concession	Increase the exportable goods and export revenue
3	Renouncement of foreign exchange control and devaluation of the domestic currency (metical)	Stimulate exports and limit imports
4	Modification of tariff structure and improvement of tax collection in order to accommodate gradual reduction on tariff ceilings	Promote trade and reduce dependence on customs duties revenue
5	Adoption of exports processing zone regime including tax incentives arrangement	Promote local processing of natural resources and development of intensive in labour exports of manufactured goods
6	Liberalisation of trade, abolishment of fixed price system and abolishing subsidies	Stimulate trading activities, increase gains and thus reduce trade and fiscal imbalances

Source: Government of Mozambique, 1987

At the institutional level, and in order to facilitate business activities, two agencies (the Mozambique Institute of Exports Promotion – IPEX, and the Investment Promotion Centre – CPI) were established between the late 1980s and early 1990s in Maputo with some representations/branches opened later in some provinces. Both agencies have been at the forefront of trade and investment promotion as well as in extending support in terms of announcements of the available opportunities, regulator framework information and incentive schemes to foreign and domestic private investors as well as to exporters throughout the country. In addition, Mozambique joined international institutions and signed different trade and investment agreements with the objective to facilitate market access and financial support for domestic business. Relevant institutions and agreements joined and signed by Mozambique include the World Bank, IMF, WTO, Lomé Convention, the SADC and related trade protocols, IOR-ARC Indian Ocean Rim Association for Regional Cooperation, AGOA - African Growth and Opportunity Act, GSP- Generalized Systems of Preferences and Trade Preferential Agreement with South Africa and others (WTO, 2001).

Since then, Mozambican exports have grown rapidly as did the real gross domestic product. The total export earnings rose from US$77 million to US$ 1,745.30 million between 1985 and 2005 in real term. Similarly, the real GDP increased from US$4.5 to US$6.6 billions in the same period (INE database and Abrahamson & Nilsson, 1995:124). Mozambique's traditional exports, comprising mainly shrimps/prawns, cashew nuts, cotton, sugar, tea, copra and others, represented 90% of total exports between 1981 and 1985 (Abrahamson & Nilsson, 1995: 124). The advent of mega-projects after 1997, attracted by fiscal benefits, natural resources and other investment opportunities, the composition of exports changed dramatically and eventually mega-projects triggered economic development in Mozambique. The World Bank (2005) shows that by 2002 mega-projects accounted for 7 percent of GDP and it had estimated that their share of GDP would reach 10-11 percent by 2010, while additional multiple positive effects would be generated as this would encourage new non-,mega-project investments. Taking the year 2004 as example, just four years after the introduction of mega-projects, it is clearly observed from Table 2 below that industrial exports have displaced primary exports. Only three Mega-projects[8] accounted almost for 80% of total export earnings and the main contributor within this category (with about 87%) was aluminium ingots manufactured by MOZAL,[9] which ships its entire output abroad. The share of industrial contribution to the country's output and exports is likely to expand as the new investors are targeting the mining sector (e.g. coal and heavy sands) as compared to Mozambique's traditional sectors (agriculture).

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[8] In recent years a small number of industrial mega-projects account for a large share of Mozambique's exports earnings. These mega-projects include the MOZAL aluminium smelter, the Cahora Bassa hydroelectric dam and the Sasol natural gas pipeline. Mega-project exports derive from Mega-project investments that are, in turn, classified as being business enterprises in excess of US$500 millions (Alfieri, Cirera and Rawlinson, 2006:5-6).

[9] MOZAL is the largest aluminium smelter in Africa. With an investment of US$ 2.4 billions MOZAL was built in the late 1990s in Beleluane industrial park (Maputo City), with an annual production capacity of 512 000 tons of aluminium ingots. MOZAL shareholding structure includes BHP-Billiton (66%), IDC (20%), Mitsubishi (12%) and the Mozambican government (2%) (Castel-Branco, 2004:14).

Table 2: Main Mozambican export commodities (2004)

| Categories	Exports (US$ millions)	% of total	% of category
Mega-project exports	**1048.6**	**79.8**	**100**
Aluminium	915	69.6	87.3
Electric energy	102.3	7.8	9.8
Natural gas	31.3	2.4	3.0
Traditional Exports	**265.9**	**20.2**	**100**
Shrimp	91.8	7.0	34.5
Cotton	35.8	2.7	13.5
Timber	30	2.3	11.3
Cashew kernel	8	0.6	3.0
Cashew nuts	21.2	1.6	8.0
Sugar	38.2	2.9	14.4
Tobacco	40.9	3.1	15.4
Others	**189.4**	**14.4**	**100**
Total	**1314.5**	**100.0**	-

Source: National Institute of Statistics, 2005

Apart from mega-projects, the Mozambican economy took advantages of two other distinctive factors that are believed to have driven economic growth. One is agricultural development, which supports about 80 percent of the Mozambican population. The annual growth over the whole agriculture sector was 6.8% between 1992 and 1997, but because of adverse factors (particularly floods) it fell to 4.6 percent per annum between 1997 and 2003. The World Bank (2005) has estimated that half of agricultural output growth between 1992 and 2003 resulted from area expansion (2.4 percent annually) as most of the war refugees returned to their homes and farms and the government assisted them with supply of inputs from seeds and tools to technical assistance (rural extension). The rest of the growth in agriculture came from labour force growth and yield improvements.

The second factor in Mozambique's development policy was a huge concessional assistance that the country received and continues to receive. It reached 12-15 percent of GDP and this accounted for half of the government spending (World Bank, 2005). The bulk of the funds were channelled into education, health and infrastructure development, mainly roads and bridges, with the aim of improving access to, and quality of, services after 16 years of a destructive civil war. The Work Bank indicates

that aid flow is possibly the source of a substantial part of the economic growth experienced in Mozambique.

It is clear that a set of combined factors – among them the peace agreement signed in 1992, democratic reforms and a new Constitution in 1990 and political elections in 1994, economic liberalisation and prudent monetary and fiscal policies – have laid the foundation for strong and sustainable economic growth in Mozambique – far above the African average and among the highest in the world since 1996 (World Bank, 2001; WTO, 2001). Real GDP grew on average by 8 percent between 1993 and 2005 and during the same period exports kept pace with 16% growth per annum as shown in Figure 1, above. The impressive economic performance was held back in 1995 and 2000 by extreme drought and severe flood events respectively that had a strongly negative impact on agricultural harvest and livestock.

Nevertheless, before the 2008 world financial crisis the Mozambican economy was projected to grow by 7 percent for the period 2005 to 2009, as are the exports of goods and services expected to keep pace with 10.8% growth per year over the same period (GoM, 2006).
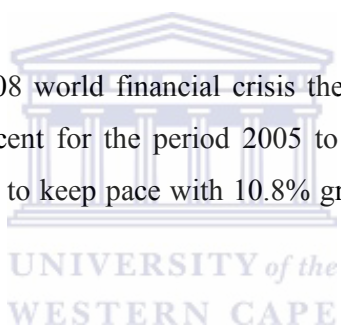
2.4 The Contribution of the key Sectors in the Economy

The main economic sectors and their share in the total output are presented in Table 3 for selected years, which are quite representative of the structure of the economy during the 1980s, 1990s and 2000s. During the 1980s agriculture contributed the highest share to GDP (almost 50 percent). However, in 2004 the share of agriculture to total output had declined to just 23.3% (Table 3). This sector comprises, apart from agricultural activities, forestry and livestock. In 2004 the last two agricultural sub-sectors combined contributed only 20% of total agriculture output. Despite its declining trend over the years, agriculture is, and will continue to be, the backbone of the economy. This is because the majority of Mozambicans live in rural areas and derive their livelihood predominantly from agriculture (INE, 2003).

The services sector has emerged from an intermediate position during the 1980s to become the major contributor to the total output in 2004 (Table 3). The increased role

of this sector has been driven by trade (contributing 45%), transportation and communication (25%), public administration and financial services (7% each) and education (5%), (INE, 2003). Tourism and other services contribute a small share to the services total output.

The industrial sector has also gained some momentum in recent years. From a poorly performing position of the 1980s it was positioned second in 2004 (relatively higher than agriculture), with almost 30% share to GDP and the role of manufacturing has been decisive in the increased role of the industrial sector overall (Table 3). As a mater of fact, almost half of industrial output was produced by the manufacturing sub-sector in 2004 and MOZAL alone contributed 75% of manufacturing exports and 48% of total industrial output (Castel-Branco, 2004:6). Other relevant sub-sectors in this category include the construction industry (31%); electricity and water (16%), and mining industry (only 2%).

The imports share exceeds that of exports and for that reason Mozambique has been experiencing a continued trade deficit over the years. With the emergence of mega-projects exports the trend has been towards reducing the trade deficit, but this has been made difficult by the fact that MOZAL relies largely on imports for all its main inputs (UNCTAD, 2001).

Table 3: The Structure of the Mozambican Economy

	1985	1995	2004
(% of GDP)			
Agriculture	47.5	36.9	23.3
Industry	13.2	15.4	29.2
Manufacturing	--	8.1	14.8
Services	39.5	47.7	47.5
Household final consuption expenditure	92.2	85.2	75.3
General gov´t final consumption expenditure	12.9	9.8	10.4
Imports of goods and services	11.5	41	39.2
(US$ Billions)			
GDP	4.5	2.2	5.9
Export of goods and services/GDP	2.9	15.6	30.9
Total debt/GDP	64.4	332.0	78.7
Total debt service/exports	34.5	34.8	4.4
(Metical/US$)			
Exchange rate (December)	43.2	9,203.40	22,551.30

(average annual growth)	1985-95	1995-05	2004
GDP	3.8	8.4	7.5
GDP per capita	1.9	6.1	5.4
Export of goods and services	9.0	19.0	18.9

Source: World Bank, 2006: Mozambique at a glance

The Mozambican economy is highly dependent on external capital inflows in the form of foreign aid and debt, reaching 70% of GDP in 1987-91 (O'Connor, 1991; Braathen & Palmero, 2002). The share of total debt to GDP, for instance, increased from 64.4% in 1985 to 78.7% in 2004 with a peak in 1995 to the level of 332% because of the combined effects of first democratic elections held in 1994 coupled to the demobilisation programme, on one side, and the slowdown in economic growth, on the other side (Table 3). In addition, Arndt, Jones and Tarpc (2006:3) found that a decade following the country's fist democratic elections, Mozambique received foreign aid in the order of US$65.6 per capita each year. As a matter of fact, during the last 14 years up to 2001 Mozambique received about US$8 billion in foreign aid, about US$600 million annually on average (which represented 17 percent of GDP) plus US$4 billion[10] in debt relief under the Heavily Indebted Poor Countries (HIPC) initiative (UNCTAD, 2001:12).

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[10] Debt relief allowed significant reduction in debt servicing from about $169 million that would be without HIPC to $55 million between 2000 and 2005 (UNCTAD, 2001:13).

Arndt (2005:3) and Arndt, Jones and Tarpc (2006) conjectured that aid assistance in Mozambique might have played a significant role in economic growth as considerable flows of external funds were mainly channelled into financing government programmes mainly in priority areas such as infrastructure, health and education.

2.5 Summary

This chapter provides insights into the overall context of the Mozambican economy on which the study is based on. Despite the small size of the economy, a devastating civil war in the past and widespread poverty, the country has undergone commendable reforms aiming to rehabilitate the economy. These reforms were backed by high levels of aid assistance and loans, notably from the World Bank and IMF. The social and economic transformations have allowed the economy to achieve high rates on both economic growth and exports during the last two decades. Although many factors seem to have contributed to economic performance, notably a condition of peace and the democratisation of the country, particularly between 1992 and 1994, debt relief and sound fiscal and monetary policies, and trade policies seem to have played a role in the growth rate. Therefore this research will focus on an analysis of long-run relationship between exports and GDP growth in Mozambique.

CHAPTER III: LITERATURE REVIEW

3.1 Introduction

Chapter Three focuses on the literature on export-led growth, emphasising the main arguments of export-driven economic growth and it also discusses some export pitfalls. The chapter is organised as follows: Section 3.2 discusses the export promotion strategy and economic growth in Mozambique; section 3.3 discusses the export promotion theory in general; section 3.4 briefly discusses import substitution as one development strategy; and section 3.5 provides an alternative trade policy. The last section 3.6 provides an overview of the chapter.

3.2 Exports Promotion and Economic Growth in Mozambique

According to Sentsho (2000:01), a development strategy based on export promotion is also referred to in the literature on trade as the export-led growth hypothesis. It is defined as a development strategy that places foreign trade and export in particular as the driver of a country's economic development.

Since the launch of a new market-based economy in 1990, the government of Mozambique set up key trade policy devices that are worth noting. It was exactly in 1990 that the Institute for Export Promotion (IPEX) was created with the mandate to promote the country's exports. It become clear that export promotion would become the key building block for the country's development strategy. The IPEX was tasked with the responsibility to leverage the trade policies and actively participate in developing new markets and promoting Mozambique's exports. In addition, it had to facilitate access of Mozambican products and services to foreign markets though making available to business agents relevant trade information and establishing linkages and cooperation with international institutions. Regrettably, IPEX has not yet been able to play its role efficiently and at its full potential.

It's essential to underscore the key trade policy instruments used by the government in the pursuit of the export promotion strategy in Mozambique. The WTO's (2001)

Report give a hint of the key elements of the country's trade policy. A significant fact is that trade liberalisation was adopted as part of a package of economic reforms initiated in 1987 and the whole programme focused on macroeconomic stabilisation.

Mozambique is recognised for its rapidly and drastically liberalised trade regime that was based on tariffs. In fact, the structure of its customs duties was simplified to the extent that the current ceiling tariff is set at 20% and most products are currently exempted from paying import duties, notably with SADC trade partners. The World Bank (2005) found that the average tariff was 9 percent, being one of the lowest in Africa. The simple average applied MFN – Most Favoured Nation tariff is 13.8%, and WTO (2001) also found it to be among the lowest import duties in Southern Africa.

Under the reforms most export restrictions and foreign exchange controls were eliminated. The government and the private sector through CTA – Confederation of Business Associations, engaged in a constructive dialogue aiming to improve the business environment to make it favourable to private investment. Progress in the Mozambique business environment is reported in the World Bank's annual reports on Doing Business which compares several countries on different indicators.

Through IPEX and CPI the government has shown a strong interest in expanding private investment and exports earnings. Concerning exports, the focus has been on traditional products in the agricultural and fisheries sectors despite the limited export capacity that acted as a barrier to export-led growth realisation. The introduction in 1999 of a 17% value-added tax (VAT) was aimed at improving government revenue and at the same time facilitating a further reduction on tariffs (WTO, 2001).

In order to improve customs services delivery and facilitate trade, Crown Agents was contracted to manage Mozambique's customs. Another firm (Intertek Testing Services) was hired to perform pre-shipment inspections and, for goods not subject to pre-shipment inspection, they were required to carry out post-shipment inspections.

Many services to support Mozambican export growth were established. The National Institute of Normalization and Quality (INNOQ), charged with the administration of standards, has developed several standards on the basis of foreign or international

criteria. On the other hand, the Ministry of Agriculture maintains control over sanitary and phytosanitary aspects. The Ministry of Planning and Finance supervises all government procurement activities in Mozambique, and its guidelines govern all public procurement, except large projects involving international funding. The country's first law on industrial property protection came into force in 1999. No law yet exists on copyright matters. Enforcement of the current intellectual property laws is minimal.

The government of Mozambique implemented a privatisation programme over the period 1989-99. The vast majority of previously state-owned companies have been privatised expect important public utilities companies, including telecommunications, ports, railroads, land and certain mining companies, where government policy has not yet been formulated. To facilitate the new entrants, the sovernment has reduced tariffs on industrial inputs (WTO, 2001).

The government has also developed generous investment incentives to attract new domestic and foreign investment and has introduced legislation allowing the establishment of free zones for export-oriented investments. The export processing zone regime adds on incentive schemes already available for investments. Mozambique has signed trade agreements that guarantee preferential access to major markets in the US, EU and at regional level (SADC), acting therefore as a powerful magnet for many labour-intensive industries (WTO, 2001). Nevertheless, many opportunities under this trade and investment agreements are under-exploited.

There are, however, issues under the trade policy implementation that need improvement. Despite some improvements, it can be argued that Mozambique lags far behind its main trade partners, notably South Africa. The World Bank's Doing Business Report of 2007 places Mozambique in position number 141 out of 175 participating countries in "Trading across borders", compared to South Africa ranked at position 67. Mauritius is even better at position 21. The CTA have identified key constraints of trade facilitation in Mozambique as summarised below:

- Customs – there is an inadequate and outdated physical infrastructure and capacity. The customs staff is in need of better training to understand rules and procedures governing foreign trade. It was found that the equipment used is limited and obsolete to process, register and verify operations related to import/export of goods. Given all the weaknesses above, delays are common and corruption is overwhelming at cross-border points across the country.

- Inspections – there is a high and unnecessary level of checks affecting both exports and imports that reaches 70–80 percent. The cross-border checks are undertaken without assessing the risks and costs involved. The unnecessary pre-shipment inspection that still applies for a very limited set of goods increases the costs of imports.

- Documentation – The fact that SADC has not yet a single standardised document for imports/exports has become a hindrance for trade. In addition, the lack of an electronic system to submit any declaration of imports or exports also creates difficulty for cross border trading.

- Payments – it is still costly to make any payment related to import/export operations. There is no electronic system to facilitate payments and any compensation to traders is delayed. For instance, as VAT rebate is concerned the system under use does not work properly and it is overdue;

- Information system - Trade information management system (TIMS) compatibility with SADC has not yet been implemented and hence there is no any electronic linkages between custom and trade agencies;

- Time requirements – Import/export clearance takes many days. CTA is fighting to have the time reduced to one day or even at least four hours. As storage and depot services are not working for 24 hours/day and the Customs working hours are not compatible to business CTA calls also for improvements.

- The duty free limit of $50/person for imported goods is found to be a barrier to expand trade, particularly among small business.

- Finally, there are also identified constraints that limit foreign trade such as the inadequate access to finance, particularly for small and medium enterprises, the lack of market information, and limited access to cutting-age technologies as well as the existing defective skills.

Source: CTA, 2007

The impact of this trade policy can be gauged by analysing the share of exports to GDP since reforms were implemented, particularly after the end of civil war, when the implementation was accelerated. The role of exports to GDP, from 1975 up to 2005, is displayed in Figure 2. It can be shown that before 1992 the export-to-GDP share had never been above 10%. Between 1991 and 1992 the export-to-GDP share averaged about 5% (Figure 2). The low ratio of export to GDP can be traced back to both low levels of economic growth experienced during the war as well as that of exports. Between 1981 and 1992 the average growth rate was even worse at 0.11%, with some years displaying sharp declines in total output. Export growth under-performed as well with an average growth rate of negative 3 percent between 1981 and 1992. In 1987, five years before the end of the war, economic reforms were initiated which allowed for improvement in macroeconomic aggregates but progress was slow until after the ceasefire in 1992 (WTO, 2001; Arndt, Jensen and Tarp, 2000).

The end of the civil war, coupled with the quickened pace in the implementation of economic reforms, translated into gradual increase of the share of exports to GDP to a maximum of 34% in 2005 (Figure 2). In terms of average export-to-GDP ratio, it was at 17.5% between 1993 and 2005. This is an impressive export performance, if one considers the past history of economic development in Mozambique.

Figure 2: The Share of Exports to GDP 1975-2005
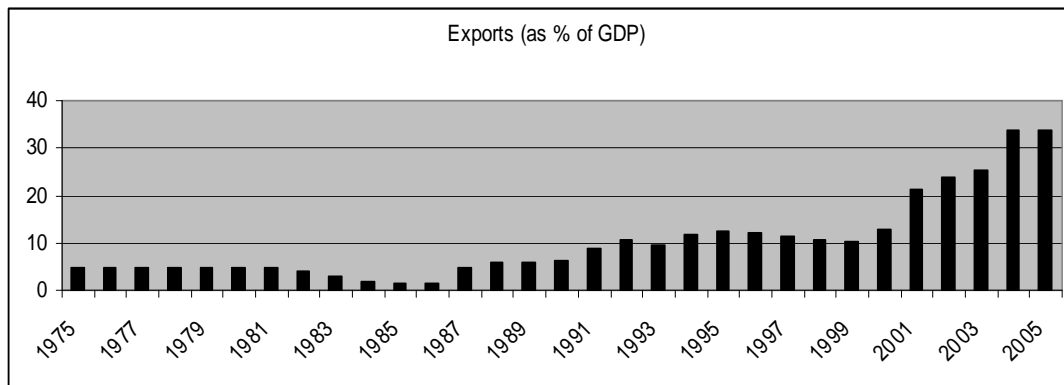
Source: Author's own construction from OWI data base

The figure above displays the role played by exports to GDP, particularly after 1987, when a comprehensive programme of economic reforms was initiated, and after 1992, in an environment of peace and a multiparty democracy. Therefore, my hypothesis is that exports are drivers of economic growth in Mozambique and the central question of the research underlines the relationship between exports and economic growth in the long run. It is, however, critical to discuss the underlying channels through which export promotion leads to economic growth. This is the subject of the next section.

3.3 Export Promotion Strategy

The literature on trade questions whether economic growth, especially in developing countries, could be achieved by pursuing trade policies that emphasise export promotion, a strategy often referred to as outward-oriented strategy, or via an import-substitution strategy, also referred to as inward-oriented strategy (Giles and Williams, 2000; Jordaan and Eita, 2007:540). During the past three decades, most developing countries have shifted their trade policy towards export promotion as a key strategy of promoting economic development (Shirazi and Manap, 2005:472). The following sections look at export-led growth theory in detail.

3.2.1 Export Expansion Increases Domestic Demand, Employment and Consumption and Reduces Costs

Export expansion is associated with increased demand for domestic output, employment and consumption. On top of that, it reduces costs as result of the realisation of economies of scale that together amount to economic growth (Jung and Marshall, 1985; Giles and Williams, 2000; Rangasamy, 2003; Mahadevan, 2007). This argument is based on the fact that domestic markets are by nature limited by geographical boundaries as well as by the population size as compared to a large international market, with a large population and no geographical boundaries. It follows that in order for a single country to reap benefits from a large international market size, it must engage in trade with other countries. In this sense, the expansion of a country's exports therefore leads to a greater demand for the country's output than before and, hence, to a high level of real output (Jung and Marshall, 1985:03). In addition, trade can work as an important factor to enlarge a country's consumption capacities and employment (Giles & Williams, 2000:263; Rangasamy, 2003:17). In order to respond to the increased foreign demand for domestic output, local exporting firms will have to increase their production, which means additional job creation, which will in turn positively affect consumption of domestic goods and expansion of the domestic output (Rangasamy, 2003:18; Jung and Marshall, 1985:3). In some cases, as in Malaysia, not only did employment increased but so did real wages (Mahadevan, 2007:1171). The access to a large market size, through international trade, allows domestic firms to operate in the long run at decreasing costs per unit of output produced, mainly because of the realisation of economies of scale in production (Ram, 1985:418). On top of that, a large market size can also assist domestic firms to achieve greater utilisation of economic capacity and hence improve the country's output (Awokuse, 2006:593).

3. 2.2 Export Expansion Leads to Specialisation, Efficiency Gains, Equalisation of Income and Entrepreneurial Reward

The export sector can work as a catalyst for specialisation in the production of exportable goods that use the country's abundant factors intensively (Mahadevan, 2007:1071; Giles & Williams, 2000:263). This in turn leads to improvement of the country's productivity as well as to growth in the level of skills for the exporting industry (Jin, 2002:64). In addition, trade allows for achievement of efficiency and productivity gains, hence economic growth, which result from the country's economic resources being reallocated towards more dynamic and efficient exporting sectors to the detriment of less productive non-trade industries (Balassa, 1978; Mahadevan, 2007:1071). However, the reallocation of resources within the economy and from less to most productive industries implicitly assumes that the economy is operating at its full capacity and that there are no readily available idle resources. This notion was, however, challenged by Sheehey (1990:13) on the grounds that the high levels of unemployment that characterise most developing countries today would mean that idle resources do exist and can readily be used simultaneously in both sectors without any concern for trade-offs. However, researchers such as Tyler (1981:127) and Richards (2001:131) argued that efficiency gains and hence economic growth can result from the simple fact that exporting industries are likely to exploit the country's available comparative advantages. The exposure to the highly competitive international markets may as well enhance economic efficiency among exporting firms, particularly with respect to product quality and cost effectiveness, and hence to the country's expanded output (Jung and Marshall, 1985:3).

Based on the Heckscher-Ohlin model[11] it can be argued that by equalising factor prices and raising real income, trade promotes international and domestic equality[12] of

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[11] The Heckscher-Ohlin model suggests that a country will produce and export those goods that are produced with intensive use of its abundant factor and will import those goods which are intensive in its scant factor. This notion is, however, based on the assumption that factor supplies determine factor prices, which does not always hold in real world (Rangasamy, 2003:14)

[12] This is achieved though a process of raising relative wages in labour-abundant countries and lowering them in labour-scarce countries.

countries involved in trade, and encourage the efficient use of the country's available resources (Rangasamy, 2003:19). On the other hand, trade makes available greater opportunities and rewards for those engaged in business and willing to take risk (Giles & Williams, 2000:264).

3.2.3 Export Expansion Enhances Technological Changes and Innovation

Exporting firms stand for greater exposure to foreign markets and international competition. The exposure to competition may serve as a big push for domestic firms to rapidly adopt technological changes in their production processes and to produce high-quality products that can simultaneously compete and can meet the demand of high-income earners in developed countries (Mahadevan, 2007:1071; Awokuse, 2006:593). The road for a developing country to derive benefits from technological advancement generated in the developed world is only through trade. Technological spillovers from abroad have a profound impact on productivity and output growth into the domestic economy (Feder, 1983). Outwardly-oriented economies, besides the sophisticated technologies that they receive from international markets, stand to benefit from leaning by doing and from better managerial practices that lead to improvement in the production process and hence to expansion of national output (Subasat, 2002:335; Mahadevan; 2007:1071). In general, exports serve as a channel of capital accumulation and technological diffusion from abroad and generate positive externalities into the rest of the economy (Fu, 2004:01; Mahadevan; 2007:1071).

3. 2.4 Export Expansion Increases the Availability of Foreign Exchange Necessary to Meet Domestic Demand for Imports

Export expansion means increased availability of foreign exchange that can lessen the constraints over the imports of inputs to meet domestic demand and therefore facilitating output expansion (Jung and Marshall, 1985:03; Siliverstovs & Herzer, 2006:320). The availability of foreign exchange is critical for developing countries to acquire goods that are not produced domestically, notably capital goods and machinery needed for the production process (Mahadevan, 2007:1071). Developing countries are also much in need of foreign exchange to service their debt (Ram, 1985:418 and Jin, 2002:64). In fact, the debt crisis experienced during the early 1980s

was not only associated with the breakdown of inwardly oriented trade policies to generate enough resources for debt repayment, but also played an important role in reshaping the trade policy towards an outwardly oriented strategy (Edwards, 1993:1359).

3.4 Import Substitution Strategy

For many decades, some developing countries have pursued import substitution as a development strategy that limits the imports of manufactured goods from developed countries with the aim of establishing a local manufacturing industry to meet their internal demand. Such a trade policy is known as an import substitution strategy and falls under inwardly-oriented strategies as opposed to outwardly-oriented trade policies (Krugman & Obstfeld, 2006:244). An import substitution strategy is based on a set of trade instruments, such as the use of tariffs, import quotas and subsidies, and tax benefits (Kreinin, 2006:150; Giles & Williams, 2000:264). The main justification of an import substitution strategy was based on what became known as the infant industry argument. Such arguments stem from the prevailed perception that developing countries had comparative advantages in the manufacturing sector, but their new industries could not survive to the competition from well-established manufacturing sectors in industrialised countries. It followed that only through protection[13] it would be possible to build competitive manufacturing industries in developing countries (Krueger, 1998:1513).

There are, however, theoretical arguments on import substitution used to counter-argue against an export orientation strategy, pointing out its drawbacks. Even when it is widely accepted among many economists that exports are crucial for economic performance, there is still some scepticism among opponents of foreign trade. Different criticisms of export-related trade policy will be discussed here. Given the volatility and unpredictability of the world markets, Jaffee (1985) casts doubt on relying too much on exports as a strategy to sustain long-run economic growth. It was

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[13] Protectionist measures have been used for years in many parts of the world even by the so-called industrialised countries. For instance, the United States of America and Germany used very high tariff rates in the manufacturing sector in the 19th century, while Japan relied extensively on import restriction during the 1970s (Krugman & Obstfeld, 2006:245).

argued that an export-oriented growth strategy overshadowed domestically-oriented growth (Palley, 2000). Giles and Williams (2000:264) maintain that the import substitution strategy is associated with benefits such as increased employment and domestic output and the strategy could be implemented with a neutral impact from other economies while benefiting a large number of industries. An export promotion strategy, on the other hand, is usually designed to target few but selected industries, which would result in production of goods from sectors where gains have been worn out. Other arguments suggest that as a tariff was associated with trade protection regime, it raised government revenue in a veiled way, making the strategy politically attractive (Corden, 1987; Krugman & Obstfeld, 2006). In addition, some argued that a tariff, by increasing the domestic cost of imported goods, was beneficial for a country that enjoys comparative disadvantages in a key sector (Grosman & Helpman, 1981). Finally, as the Asian success story has been largely associated with an export expansion strategy, some economists like Buffie (1992:214) have argued that it was not clear whether high economic performance in those countries could be attributed solely to outward-oriented trade policies. If the outward-oriented trade policy was the key determinant for Asian success, why then can it not be successfully replicated elsewhere? Buffie concluded that this was an unusual and unique case that is hard to replicate.

While it is true that the Asian case cannot be replicated, it is also true that the case happened under outwardly-orientation trade regime. In addition, it is a fact that an import-substitution strategy has not produced the expected result and generally the strategy has collapsed. The causes that have led to the breakdown of the import substitution strategy have been extensively researched. Krugman & Obstfeld (2006:249) argued that a period of protection alone will not, for instance, solve problems related to the missing entrepreneurial and managerial skills facing many developing countries. Skills enhancement, however, is critical to develop and sustain a competitive manufacturing industry. Many protected industries in developing countries were extremely inefficient and tariff or import restrictions failed to make them more efficient, but just helped them to survive to the competition. In addition, Kreinin (2006:150-51) found that an import substituting strategy drew resources away from the exporting sector into import-competing sector, resulting in reduced agricultural output, low rural income and declining export earnings. In addition,

benefits from specialisation and those related to the economies of scale were not fully exploited because of the limited size of domestic markets, with costs and prices escalating well beyond the international market level. Finally, highly unionised labour markets, with workers' organisations forcing wages to rise, coupled with subsidies awarded to the importing of capital goods shifted the focus away from the use of a country's factor endowment (such as labour) and favoured capital-intensive techniques, resulting in increased industrial output that was rarely accompanied by growth of industrial employment (Kreinin, 2006:151).

3.5 Alternative Trade Policies

The concerns of the previous sections have been to show which of the two development strategies is best for promoting growth in developing countries. However, the relationship between exports and economic growth can also be bi-directional, in the sense that both exports and economic growth are inter-related, influencing each other in a recurring and continuous manner. If this turn to be the case, then the debate is worthless. Jin (2002:64, citing Helpman and Krugman, 1985) stated that the growth of exports stimulates economic growth as a result of better allocation of resources and efficiency in production. In turn, the economic growth improves competitiveness in international markets, leading to additional export growth. This view is supported by Bhagwati (1988, as cited in Giles and Williams 2000:265), who argued that increased trade (regardless of its cause) produces more income which leads to more trade and the process is repeated over and over. Modelling approaches found empirical evidence of b--directional causality and even the very uncommon case of non-causality between exports and economic growth (Giles and Williams, 2000).

Taylor (1988, as cited in Giles and Williams, 2000:264) suggests that a country may follow a selective import protection approach, whereby it promotes exports in one or more sectors while protecting others. In the case of Mozambique it is not clear whether the government deliberately adopted such selective trade policies, but we have some sectors where liberalisation has not yet occurred. These include telecommunications (landline), transport (specific airline routes and marine transport) and others (WTO, 2001).

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3.6 Summary

The overall objective of this chapter was to review the mainstream trade policies and their link to economic growth, with a focus on export promotion strategies in developing countries, notably Mozambique. The chapter discusses export promotion theories to show the link between exports and a country's economic growth. There are a number of theoretical arguments that claim exports are central to economic growth ranging from possibility of exploiting enlarged foreign markets, achieving economies of scale, reducing costs of production up to efficiency gains linked to specialisation, use of comparative advantages, and exposure to international competition that force domestic firms to innovate, adopt advanced technologies and international managerial practices and high standards. All these are believed to create jobs, raise wages and consumption with positive impacts on a country's economic growth. However, the export-led strategy has been strongly criticised. Opponents have shown that too much reliance on exports is problematic, given the limited size of the world market for expanding exports from developing countries and because of the volatility and unpredictability that creates uncertainty. It was also argued that an export-oriented growth strategy was likely to overshadow domestically-oriented growth and that excess competition for international markets could generate excess supply and therefore lead to a world economic recession. Other authors who based their arguments on empirical evidence state that a bi-directional causality between export and economic growth may exist when both variables influence each other and therefore the debate over ELG and alternative trade policies become immaterial.

CHAPTER IV: METHODOLOGICAL APPROACH

4.1 Introduction

Chapter Four briefly discusses the methodology used to answer the central question of this research. Section 4.2 discusses some empirical evidence on export-led growth, covering both the main findings and methodological approaches. Section 4.3 gives a brief definition and explanation of the applications of the Granger causality test. Section 4.4 provides the basic concepts of the Engle-Granger (1987) methods applied in this study to analyse the long- and short-run dynamic relationship between exports and economic growth. Section 4.5 discusses the estimation procedure of the Engle-Granger method. The study uses an econometric OLS method with the application of co-integration analysis developed by Engle and Granger (1987) and the Error Correction Model (ECM) by Sargan (1964). Section 4.6 is concerned with the model specification, where dependent and independent variables are stated and the expected relationship discussed. Section 4.7 describes the data set used in this research and their respective sources. Finally, section 4.8 summarises the discussions in this chapter.

4.2 Export-Led Growth: Some Empirical Evidence[14]

4.2.1 Methodological Approaches

This sub-section briefly discusses different methodological approaches used in the literature to test the export-led growth hypothesis, with a focus on the short-comings of these approaches. This is important as the conclusions reached about export-led growth validity seem to rest on the methods used. Giles and Williams (2000), in their survey of more than 150 export-led growth studies, found many different and unexplained features about information set, lag order and non-stationary characteristics which make it difficult to derive a conclusive finding on the export-led growth debate. It is suggested that this type of investigation should be informed by the

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[14] This section draws strongly on Giles and Williams (2000).

use of less aggregate data, with a focus on careful qualitative analysis prior to any statistical testing.

The literature on export-led growth distinguishes between cross-sectional and time series investigations. Generally, cross-country studies on export-led growth tend to be favourable to the paradigm, with few exceptions. But single-country time series studies tend to provide little support for the hypothesis, along with controversial outcomes of different studies on the same country (Giles and Williams, 2000:265).

Many cross-sectional studies use ordinary least square (OLS) techniques to correlate exports to GDP. This is known as a bivariate test. A positive and statistically significant correlation between the model variables is interpreted as a confirmation of the export-led growth hypothesis and the negative correlation as the refutation of it. This method was criticised for failing to account for the possibility of growth-led exports (i.e. exports explained by economic growth) or the possibility of feedback effect.[15] Some studies did not even manage to avoid spurious correlation that arose from the non-stationary nature of time series variables (Giles and Williams, 2000:266). But a more salient criticism is the reflection of the 'accounting identity' that arises because exports are one component of GDP to the extent that an autocorrelation was an expected outcome and a positive correlation between the variables practically inevitable (Sheehey, 1990:112; Michaely, 1977).

Balassa (1978) and others dismissed the notion of 'accounting identity' since export production and import-substituting production compete with each other in the use of limited resources. For this group of scholars, a positive coefficient of export and economic growth is evidence of efficiency gain as resources are being shifted from alternative uses (inefficient import-substituting sector) to the export sector with a positive impact on GDP (Subasat, 2002:334). Others accept and address the problem of 'accounting identity' by defining a non-export component of GDP, instead of total output (e.g. Siliverstovs and Herzer, 2006), and still others defined alternative export variables such as manufactured exports instead of total exports (e.g. Richards, 2001).

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[15] By feedback effect we mean the possibility that exists for both exports and economic growth to influence each other in a cyclical way (Bhagwati, 1988).

The bivariate model discussed above fails to account for a compete set of determinants of economic growth. Balassa (1978) and Feder (1983) suggested a Cobb-Douglas expanded production function that accounted for the effect of trade on economic growth. Their argument to include the trade sector in a neoclassical production function was based on the notion that the marginal productivities of labour and capital are higher in the export sectors (Subasat, 2002:335). This construction is widely accepted and used in recent studies (e.g. Awokuse, 2005, 2006) to find that a developing country with a growing export sector has also experienced growing output of the economy. Gill and Williams (2000:266) refute Feder's (1983) model of export-growth linkages, particularly in respect of its basic assumptions, according to which there are no diminishing returns to an increasing export share and that the relative efficiency is the same for export and non-export production. That is not the case, as the limited world demand as well as the size of domestic markets would undermine these assumptions.

Sheehey (1990) dismissed completely the debate over export-promotion versus import-substituting strategies and claimed that it cannot be informed by empirical tests. To support his assertion, Sheehey constructed a model that includes other components[16] of GDP along with exports and found all them to be statistically significant. Sheehey (1990:115) claimed that "since it is true … that the linkage between sectoral growth and growth of GDP is common on all sectors, it clearly cannot be due to relative productivity differences and externalities effects". Sheehey (1990:115) believes that if one relaxed Balassa's (1978) assumption of full employment of resources, it is possible to attain faster growth in all major sectors at once, including exports, by using appropriate policies that employ the previously idle resources to work across the economy. It is worth noting that Balassa's (1978) claim that resources for the expansion of one sector must be taken away from inefficient sectors of the economy carries with it the assumption of full employment, which does not hold in many developing countries where underemployment of labour is a common feature (Sheehey, 1990:115).

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[16] The components of GDP used by Sheehey included government and private consumption, agriculture, manufacturing, construction, gas, water services and electricity (Subasat, 2002:335).

Export-led growth studies fail to distinguish between statistical association and statistical causation. Ram (1985:416) puts it clearly: "it is evidently important to be able to make a reasonably satisfactory transition from statements about the correlation patterns to some judgement about the causal structure". Gill and Williams (2000:267) state that "effectively, these studies take positive associations as evidence of causation". However, Subasat (2002:335) believes that "a strong correlation proves neither the existence of causality between the two variables, nor, if there is causality, that it runs from exports to economic growth". This led to some studies (e.g. Yuk, 2005) to consider the Granger causality test that gives the precedence of change between two related economic variables (Studenmund, 2006:431).

4.2.2 Some Empirical Examples

Several studies that have tested for export-led growth (both cross-sectional and time series) provide compelling results in validating the hypothesis. In a cross-country study Jaffe (1985) used pooled data for 80 and 63 least developing countries for the period 1960-1977. The study, using OLS (averaged log real GNP per capita on averaged exports as share of GDP), complemented by other variables such as initial year real GDP per capita, secondary school enrolment, population, domestic capital formation and natural resources index, found statistically significant, positive export-led growth relationship (Giles and Williams, 2000:300). Sheehey (1992) reached the same conclusion, using pooled data for 53 non-oil developing countries for the period 1960-1981. Sheehey's (1992) study applied the OLS method with averaged real GDP growth on averaged exports to GDP ratio and its average annual growth rate and average growth of exports. Other variables included in this study were averaged labour force growth and averaged investment share of GDP (Giles and Williams, 2000:304). In general cross-country studies are favourable to the export-led growth paradigm. However, time series investigations provide inconclusive and, often, conflicting results, despite the limited number of the literature critiquing the export-led growth paradigm. For instance, Mallick (1996), using Indian annual data between 1951-92 on Logs of real GDP and exports, applying VECM and the bivariate Granger test, found evidence of growth-led exports (Giles and Williams, 2000:327). However, for a much shorter period of time (1960-89) and using annual data on growth of real

GDP and exports, complemented by growth of real investment, industrial production, imports and agricultural output, Rashid (1995) found no positive significant export/economic growth effect for India (Giles and Williams, 2000:324).

Suliman *et al.* (1994), using the log of real GDP and exports for South Korea between 1967-89, and import-competing (manufactured) output and the extent of development, with the application of 4-variable Granger causality and second difference VAR model (VARD) with constant, found an export-economic growth bidirectional relationship. For the period 1960-87, using data on change of real GDP and change in real exports, complemented by change in labour force and real investment, Segupta and Espana (1984) found export-led growth for South Korea. Their method was the Engle-Granger co-integration test (Giles and Williams, 2000:320). In another study covering four Korean provinces (Seoul, Kyunggee, Kyungnam and Pusan) and using data on exports, output and terms of trade as well as national output shocks, Jin (2002) did find evidence to support the export-led growth hypothesis for the whole sample. However, in two provinces (Seoul and Kyungnam) a feedback effect, using impulsive response analysis, was detected as well.

Jin (2002:64) argued that most export-led growth studies have focused upon developing countries, but the result is mixed. The study by Jung and Marshall[17] (1985) conducted a study for 37 developing countries, using annual data for the period 1950-81 on real GDP or GNP growth and export growth, but they did not find strong support for an export-led growth link (as ELG was validated only in 5 countries). Ram (1987) provides compelling evidence to support export-led growth for 40 developing countries out of the 88 included in his study. These studies involved the use of both time series and a cross-sectional framework (Giles and Williams, 2000:308-9).

Mozambique feature in two time-series studies. One, discussed above, by Ram (1987) for 88 developing countries uses annual data for the period of 1960-82 on real GDP growth, growth on real exports, or percentage share of changes of exports on GDP. Additional variables included were population growth, real investment as share of

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[17] In their study these authors analysed export-led growth for 37 developing countries, using the Granger causality test.

output and a dummy variable for the 1973 oil crisis. Ram (1987) found no evidence of a statistically significant, positive, export-economic growth relationship for Mozambique (cited in Giles and Williams, 2000:309). The second study that included Mozambique was carried out by Riezman *et al*. (1996) involved 126 developing and industrialised countries using annual data for the period of 1950-90 on GDP and export growth, supplemented by other variables such as real import growth. This study used both bivariate and trivariate Granger causality tests. For the bivariate case, the growth-led exports turned out to be applicable to Mozambique. However, in the trivariate case no evidence of export-led growth for Mozambique was found (cited in Giles and Williams, 2000:330).

The export-led evidence is mixed in least developed countries (LDCs) as it is in some studies covering developed countries. For instance, Yamada (1998) conducted a time series study, using 4-variable Granger (Wald), TYDL VARL with constant, for six developed countries, namely the United State of America (USA), the United Kingdom (UK), Japan, Italy, Canada and France. The study used quarterly data for the period 1978:q1-96:q3 for the first five countries and 1977: q4-97: q2 for France and included logs of real GDP output per employee, real export of goods and services, labour productivity complemented by terms of trade and real GDP of OECD countries. The study examined only for export-led growth and it was found only in three of these countries – Italy, Canada and UK (Giles and Williams, 2000:336). The same mixed results were found by Thornton (1997), who examined a much longer period (1850-1913) for Denmark, Germany, Italy, Norway, Sweden and the UK, using trivariate Granger (VECM for co-integrated countries and VARD for non-co-integrated, with constant). The variables included were logs of real GDP and exports complemented by the ratio of total government revenue from import duties to total imports. It found export-led growth for Italy, Norway and Sweden and a bidirectional relationship for Denmark and Germany. For the UK it found growth-led exports contradicting the Yamada (1998) results as discussed above (Giles and Williams, 2000:334).

Zestos and Tao (2002) found bidirectional Granger causality for Canada (Abual-Foul, 2004:396), whilst Awokuse (2005) found this for Korea and Awokuse (2006) for Japan for the period 1960-1991. In the Japanese study, Awokuse (2006) employed augmented VAR methodology to test for Granger non-causality and directed acyclic

graphs to examine both contemporaneous and causal structure of the export-led growth nexus. For the Korean case Awokuse (2005) performed the Granger-causality tests using the VECM approach outlined in Toda and Philips and augmented levels VAR modelling with integrated and co-integrated process by Toda and Yamamoto (1995).

The discussions throughout this subsection indicate that there is no conclusive answer to whether an export-led growth hypothesis is valid for a specific country or not. The sample selection, variables chosen, model specification and other features are part of the answer in addressing the problem. According to Giles and Williams (2000:266), the above features may even be as relevant for export-led growth not to be detected. In some cases there are even no explanations of such phenomena. In their surveys of more than 150 cases, however, Giles and Williams (2000) reported a few studies that did not support the export-led growth hypothesis, including: Papanek, 1973; Kormendi and Meguire, 1985; Helleiner, 1986; Goncalves and Richtering, 1987; Mbaku, 1989; De Gregorio, 1992; Sprout and Weaver, 1993; Greenaway and Sapsford, 1994; Amirkhalkhali and Dar, 1995; Yaghmaian and Ghorashi, 1995, and Burney, 1996.
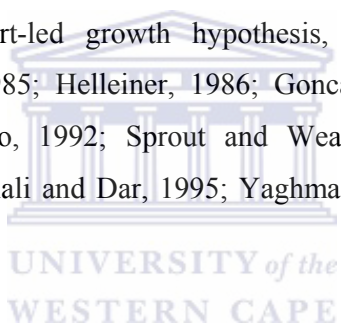
4.3 Granger Causality Test

One problem confronting the modellers in applied econometric studies is to establish the direction of causality between two related economic variables. It is in the interests of this research to investigate the direction of causality, if any, between exports and GDP. The Granger causality test, named after Clive Granger (1969), offers a solution to this problem and will be used in this research.

Granger causality is based on the idea that the past can predict neither the future nor the present. Studenmund (2006:431), citing Granger (1969), defined Granger causality (also known as precedence) as a "circumstance in which one time series variable consistently and predictably changes before another variable". The Granger causality must be used with some caution as precedence does not necessarily mean causality in a rigorous way. A striking construction of this objection is found in Peter

Kennedy (2003, cited in Studenmund, 2006:431), who pointed out that the simple fact that Christmas cards typically arrive before Christmas doesn't mean that Christmas is caused by the cards' arrival. Granger causality is, however, very important in the sense that it allows researchers to know which variables between exports and economic growth precede the other and this knowledge is important for policy decision-making and for forecasting.

Granger (1969) suggested that to verify whether X Granger-caused Y, one should run equation (01) below and test the null hypothesis that the coefficients of the lagged Xs (the φs terms) jointly equal zero (Studenmund, 2006:432).

$$Yt = b0 + b1Yt\text{-}1 + \ldots + bpYt\text{-}p + \varphi1Xt\text{-}1 + \ldots + \varphi pXt\text{-}p + Et \text{ --------- (01)}$$

If one can reject the null hypothesis using the F-test, this provides evidences that X Granger-causes Y. Likewise, to test whether Y Granger-causes X requires running equation (02) below and using the same procedure as before to test the null hypothesis that the coefficients of the lagged Ys (again, the φs) jointly equal zero.

$$Xt = b0 + b1Xt\text{-}1 + \ldots + bpXt\text{-}p + \varphi1Yt\text{-}1 + \ldots + \varphi pYt\text{-}p + Et \text{ --------- (02)}$$

4.4 Co-integration and Error Correction Model: Basic Definitions

Co-integration, one of econometric properties of time series variables, is used to test for the presence of long-run relationships between two or more non-stationary time series. Time series variables are said to be co-integrated if their linear combination is stationary, even though the individual series may contain stochastic trends or simply if they are non-stationary (Harris, 2000:6). As far as the exports and economic growth link is concerned in this study, testing for co-integration among the two variables is, therefore, the same as testing for the hypothesis that there is a statistically significant relationship between the exports and GDP.

The concept of co-integration in applied econometrics was introduced by scholars such as Clive Granger, who was concerned with estimating regressions with non-stationary series. They demonstrated that such an approach was misleading to the

extent that the results obtained were spurious or meaningless. This idea was presented in a formal paper by Granger and Engle (1987:2) and, according to them, "time series are said to be co-integrated of order d, b (donated CI (d, b) if they are integrated of order d, but there exist some linear combination of them that is integrated of order b<d". This means that a time series is said to be 'integrated of order d' if one can obtain a stationary series by 'differencing' the series d times. Economically, co-integration means that "if two (or more) series are linked to form an equilibrium relationship spanning the long run, then even though the series themselves may contain stochastic trends (i.e. be non-stationary), they will move closely together over time and the difference between them will be stable (i.e. stationary)" (Harris, 2000:22).

When variables display a non-stationary trend, they are said to contain a unit root problem and ignoring this problem and proceeding to estimate a regression model has two-side negative effects: "at best, [it] ignores important information about the underlying (statistical and economic) processes generating the data, and at worst leads to nonsensical regression[18] (or spurious) results" (Harris, 2000:01).

To deal with the problem above, applied researchers are required to test for the presence of unit root[19] in the variable (evidence shows that time series variables usual contain unit roots) and if data are found to be non-stationary, then the use of data that at least have been differenced once is recommended (Engle & Granger, 1987:252). However, while the use of differenced variables can help avoid the spurious regression problem, it will also remove long-run information about the co-movement of the variables included in the model (Harris, 2000:01).

In order to deal with the second part of the problem (i.e. the possibility of losing long-run information), the Error Correction Model, suggested by Sargan (1964), is recommended. ECM means that change of one of the series is explained in terms of

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[18] Gujarati (2006:724) defines nonsensical or spurious regressions as a problem that arises by applying a straightforward Ordinary Least Squares (OLS) regression.

[19] There are many methods of testing for the presence of unit root in the time series data. In this research we analysis the time series properties of the data using Augmented Dickey and Fuller (1979) unit-root tests.

the lag of the difference between the series, possibly after scaling, and lags of the differences of each series; it has been particularly important in making the idea of co-integration practically useful (Engle and Granger, 1987). If two variables (say, exports and GDP) are co-integrated, there might exist an error correction model that contains information on both the short- and long-run properties of the model of the dynamic model (Harris, 2000:6).

The technicalities of the Engle-Granger Method are presented in the next section.

4.5 Estimation Procedure

This subsection presents quantitative techniques of co-integration and the error correction model based on the Engle-Granger methodology. Econometric estimation will complement the qualitative research done in Chapters Two and Three.

The Engle-Granger methodology is very simple and follows a two-step procedure. The first step consists of specifying and running, using OLS, the long-run relationship[20] of non-stationary time series given by equation (03) to see whether the variables are co-integrated or not.

$$\text{LR: } Y_t = \varphi_1 + \varphi_2 X_t + e_t \text{ ------------- (03)}$$

In order to perform such a co-integration test, the residual from LR model (i.e. the error term, e_t) is subjected to a unit root test, using MacKinnon critical values against ADF t-statistic. If e_t is stationary,[21] then it can be concluded that the variables included in the model are co-integrated. If that is the case, in the second step, a short-run equation given by equation (07) can be estimated and used to predict the long- and short-run dynamics link between dependent variable (Y_t) and independent variable (X_t).

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[20] For simplicity, we assume only one independent variable and one dependent variable. In specifying the model for this research, more independent variables will be added into the model. And to establish whether the series in the long-run equation contain unit roots (i.e. they are non-stationary), one needs to perform unit root test. In this study the ADF procedure for unit root test was used (see Section 5.2.1 for more details and test results).

[21] Here the MacKinnon critical value is used. That is, if co-integrated (ADF t statistic is more negative than the MacKinnon critical value).

$$SR: \Delta Yt = b0 + b1\Delta Xt - (1- \alpha) [Yt\text{-}1 - \varphi1- \varphi2Xt\text{-}1] + Ut) \text{-----------} (04)$$

Note that for the purpose of specifying a short-run OLS regression, differenced (or stationary) variables are used along with the lagged error correction term, et, from the long-run equation. In this case et enters the equation as the error correction term.

In summary, and following Engle and Granger (1987), if in a long-run equation given by equation (03), above, Yt and Xt are first order, I(1), integrated or non-stationary, but the residual given by equation (05) below is integrated of order zero I(0), stationary, then we can estimate, using an OLS a short-run equation given by equation (04), above, that it can be used to predict the dynamics link between Yt and Xt.

$$et = Yt - \alpha1 - \alpha2Xt \text{ ---------------} (05)$$

The results of the short-run OLS regression model (04) are then tested using normal statistical, econometric and economic reasoning (i.e. F-stat, t-test, DW, adjusted R2 and the consistence of the signs displayed by the variable coefficients).
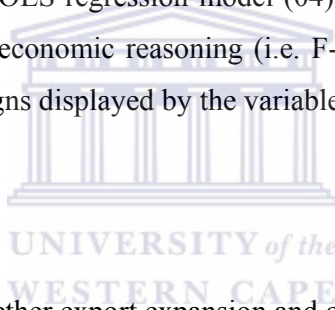
4.6 Model Specification

The model aims to show whether export expansion and other economic variables have been the central determinant to long-run economic growth in Mozambique. The subsequent analysis is based on econometric technique of co-integration and ECM which was previously explained and built from the neoclassical production function. Relevant variables and their expected signs are indicated in the specified production function, given by equation (06).

$$lnGDPt = \alpha0 + \alpha1 \ lnGCFt + \alpha2 \ lnLt + \alpha3 \ lnEXPt - \alpha4lnIMPt - \alpha5TOTt + Ut \text{ ----} (06)$$

where,
- lnGDPt = natural log of GDP
- lnGCFt = natural log of Gross Capital Formation
- lnLt = natural log Labour
- lnEXPt = natural log of Total Exports
- lnIMPt = natural log of Total Imports
- TOTt = Terms of Trade
- Ut = stochastic error term
- $\alpha0$ = is a constant.
- $\alpha0 - \alpha5$ = coefficients of the explanatory variables.

4.6.1 Hypothesis about the specified model

In general, equation (06) implies the following hypotheses about the relationship between dependent and the explanatory variables.

A positive sign is expected for parameter α1. Gross capital formation (GCF) is used as a proxy of stock of capital. Economic theory regards capital as one of the key factors of production and, hence, expected to produce a positive impact on the domestic output. The Null Hypothesis is (H0): α1= 0 and Alternative Hypothesis (HA): α1 – has positive effect on GDP.

Likewise, a positive sign is expected for coefficient α2. Labour is another factor of production that has profound positive impacts on the level of a country output. (H0): α2= 0 and (HA): α2 – has positive effect on GDP.

The parameter coefficient α3 is expected to be positive. Many of positive impacts of exports on economic growth, as well as the channels through which these impacts take place, were extensively discussed on Section 3.3. (H0): α3= 0 and (HA): α3 – has positive effect on GDP.

Imports contribute to the expansion of markets and output for a foreign country. Therefore, we expect the parameter coefficient α4 to be negative. (H0): α4= 0 and (HA): α4 – has negative effect on GDP.

The Terms of Trade (TOT) is a ratio of export prices over import prices. The sign of the parameter α5 attached to the TOT variable can either display a positive or negative sign, depending on whether the country's terms of trade are improving (positive sign) or deteriorating (negative sign). Rising terms of trade imply that more goods can be purchased from export earnings and therefore boost economic growth. In general, developing countries such as Mozambique, which are highly dependent upon exports of primary goods, are affected by a secular deterioration of their commodity export-prices. In addition, developing countries import too much of capital goods and manufactured commodities whose prices is rising in the

international market. If this argument holds, a negative sign for α5 is most likely. (H0): α5= 0 and (HA): α5 – has some (negative/positive) effect on GDP.

4.7 Data Description and Data Sources

The determinants of real economic growth in Mozambique are investigated on the basis of quarterly[22] data covering the period of 1987-2004. Keeping in mind the central question of the research (export-led growth nexus in Mozambique), exports are modelled in conjunction with other determinants of economic growth. Hence the data set used in this research consists of observations on Mozambique's real GDP (defined as a dependent variable) in relation to the following independent variables: real total exports (EXP), real total imports (IMP), terms of trade (TOT), defined as total exports divided by total imports; gross capital formation (GCF) as proxy of capital and active population (L) as a proxy of labour force.

The data set was obtained from UNSTATS-online, except for labour, which was extracted from the World Development Indicators (WDI) database. The data on the variables are expressed in constant 1990 prices in US Dollars, except those of the labour force, which are expressed in millions of people, and TOT, which is just a ratio. Where possible, the data are stated in their logarithm form.

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[22] Original data used were collected on an annual basis. Quarterly data were derived to allow for comfortable degrees of freedom. For derivation of quarterly figures from annual data, this paper applied the method suggest by Lisman and Sandee (1964). One problem, however, with this method is that it fails to account for seasonality in the data that may arise as a result of the normal business cycle. In developing countries, where agricultural output is a significant component of output and exports, this problem may become a serious shortcoming.

Figure 3: Graphical Representation of the Time Series
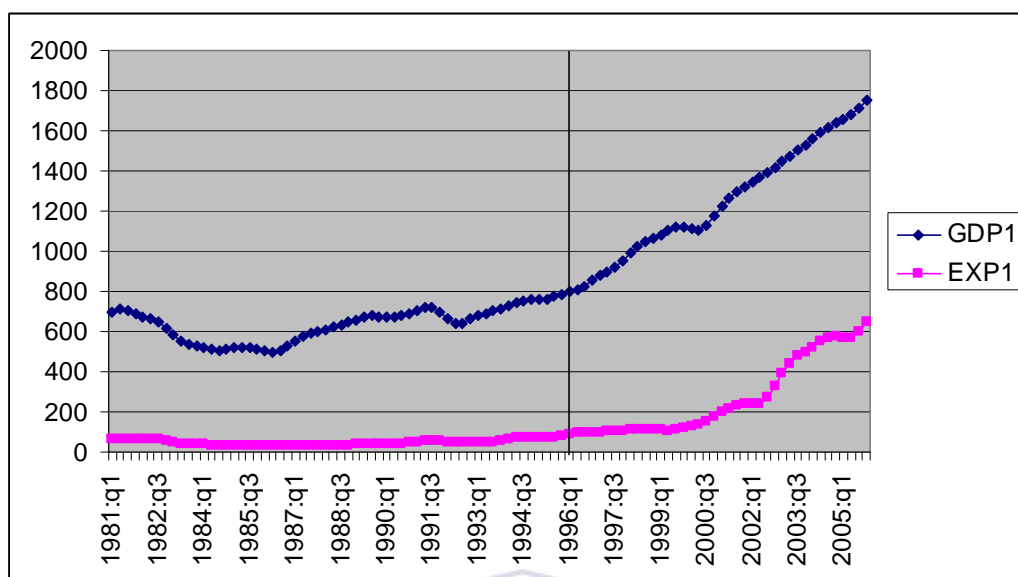
The Figure above shows the pathway displayed by the two main variables under investigation in this study. For a long period of time (1981 to 1996) exports earnings did not improve at all, despite the reforms having been introduced in 1987. It took almost a decade and half for exports to recover their 1981 levels. On the other hand, although the GDP did improve following the reforms in 1987, the pace was slow until 1996, with up- and down-swings over the course of the decade. Since then, as shown from the vertical line onward in the graph, both exports and GDP show a phenomenal increase until recently, particularly after 2000 when mega-projects began their operations. Appendixes A1.1 to A 1.5 present the pathway displayed by other explanatory variables used to explain economic growth.

4.8 Summary

The problem under investigation, whether exports are the driving force of economic growth in long run, is dealt with by combining different methods of analysis. Apart from the qualitative analysis provided in the previous two chapters, the Granger causality test and the Engle-Granger methodology of co-integration analysis (Engle and Granger, 1987) and Error Correction Model are used in the research. The unit root test of the time series variables included in the model will be undertaken to establish

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the order of integration. This will assist in avoiding the spurious regression problem. Relevant variables used in this study are also described, including their expected relationships.

CHAPTER V: EMPIRICAL ANALYSIS AND RESULTS

5.1 Introduction

Cheaper Five presents the empirical analysis and results of the study. Section 5.2 deals with the econometric techniques involved in co-integration and error correction modelling. In this section unit root test, long- and short-run model estimates and Granger causality test are performed. Section 5.3 discusses the results of the study, followed by a policy implications analysis and concluding remarks in Section 5.4.

5.2 Modelling the Impact of Exports on GDP

5.2.1 Performing the unit root test

As discussed in Chapter Four, the co-integration analysis and error correction model are used in this study. Engle and Granger (1987) have conjectured that if two time series variables (say, y and x) are found to be integrated of order one, I(1), i.e. are non-stationary, but their residual (when y is regressed on x) is integrated of order zero, I(0), i.e. stationary, then y and x are said to be co-integrated, meaning that they are related in the long run. Therefore, we need to establish the order of integration of all variables (dependent and independents alike) in the model. This task is called the unit root test. There are different methods used to test whether a time-series variable contains a unit root or not. One of these methods used in this study is the Augmented Dickey-Fuller (ADF) unit root test. The method was developed by David Dickey and Wayne Fuller and consists of establishing a null hypothesis that a time-series variable (say, y) contains a unit root. Then, in e-View, the ADF unit root test can be easily performed, which yields simultaneously the ADF t statistic and the critical values at the levels of significance of 1%, 5% and 10%, which need to be compared and to make a decision. If the computed ADF t statistic is less negative when compared to the critical value at 5%, for instance, the null hypothesis cannot be rejected, and it can be rejected otherwise (if more negative).

Using the above procedure, it was found that all the model's variables, except labour, contain unit root, i.e. they are non-stationary (when tested in their natural log form, except the terms of trade variable, which is tested in original form). The relevant results of the unit root test are summarised in Table 4 below. Apart from the levels, the table shows also that non-stationary variables became stationary when differenced once, with an appropriate lag selection. The Akaike Information Criterion (1973) was used to determine the lag structure of the series. The maximum lag length from automatic selection was 11, and then subsequently it was lowered until the last lag was found to be significant.

Table 4: Order of Integration of the Model Variables

Variables	Included in test equation	Lagged Differences (Level)	Lagged Differences (1st d)	ADF t-statistic (Level)	Critical values (Level)		ADF t-statistic (1st d)	Critical values (1st d)	
lnGDP	Intercept & trend	6	3	-1.161425	1%	-4.083355		1%	-4.083355
					5%	-3.470032	-4.234397	5%	-3.470032
					10%	-3.161982		10%	-3.161982
lnEXP	Intercept & trend	6	1	-0.745592	1%	-4.083355		1%	-4.083355
					5%	-3.470032	-8.040697	5%	-3.470032
					10%	-3.161982		10%	-3.161982
lnIMP	Intercept	10	1	2.757796	1%	-3.51905		1%	-3.51905
					5%	-2.900137	-5.140211	5%	-2.900137
					10%	-2.587409		10%	-2.587409
lnGCF	Intercept & trend	6	5	-1.366181	1%	-4.083355		1%	-4.083355
					5%	-3.470032	-4.416035	5%	-3.470032
					10%	-3.161982		10%	-3.161982
lnLabour	Intercept & trend	11		-3.631078	1%	-4.090602		1%	
					5%	-3.473447		5%	
					10%	-3.163967		10%	
TOT	Intercept	6	5	-0.144809	1%	-3.51905		1%	-3.51905
					5%	-2.900137	-4.234397	5%	-2.900137
					10%	-2.587409		10%	-2.587409

Source: Author's own compilation

In summary, the table above shows that the ADF t-statistics for all non-stationary variables (GDP, exports, imports, gross capital formation, and terms of trade) are more negative compared to their 1%, 5% and 10% respective critical values, meaning that the five time-series variables are I(1) processes. Unlike them, labour is stationary at level only for 5% and 10% critical values. It follows that in order to establish co-integration analysis, we need to follow the Granger-Engle (1987) two-step approach. Using OLS, we establish a Long-run Model (LR) with non-stationary variables to see

whether the residual obtained from such model is I(0) process or not. If the residual is I(0), i.e. stationary, this signals the existence of co-integration between the model variables and, therefore, in the second step, we proceed to estimate a short-run Error Correction Model that combines not only stationary variables – not included in LR model and, when appropriate, the dummy variables – but also the residual with a differenced version of non-stationary variables from the LR model.

5.2.2 Estimates of long-run models

The central question of this study is to assess whether or not the phenomenal economic growth in Mozambique has been driven by a set of variables, mainly the booming export sector. In this section the following strategy is adopted. To test for co-integration relationship between the variables, two long-run equations were established. The first model is concerned with the relationship of our objective variables, GDP and exports only, where the former is estimated to be a function of the latter.

a) Long-run (LR) model one

The model specification is given by equation (07), below, and it will shed light on whether a long-run relationship exists between Mozambican's real GDP growth (economic growth) and the real export earning growth (exports expansion).

$$LnGDP_t = \varphi_0 + \varphi_1 lnEXP_t + U_t \text{ ------------------------------------- (07)}$$

where U_t is the residual (error term and will be represented later as $resid01_t$).
The results of the above specified model are reported in Table 5 below.

Table 5: Estimates of Long-run Model 01

Estimates of long-run model 01		
Dependent variable: lnGDPt		
Regressor & Intercept	Expected sign	OLS
C		13.89296
		(82.41771)
lnEXPt	Positive	0.365779
		(39.87320)
Adjusted R-square	0.957226	
Durbin-Watson stat	0.083899	
ADF t test (resid01t)	-2.522976	
Observations	72	

The results in Table 5 may be spurious, because the included variables (lnGDPt and lnEXPt) are I(1) processes. Nevertheless, the main interest on this model is to derive the residual (Ut or resid01t) that must be tested for unit root in order to establish the co-integration. The result of ADF unit root test is also presented in the Table 5, second row from the bottom. The ADF unit root test was performed at level, with no trend and no intercept, with 5 lag length and has a null hypothesis of no co-integration. The decision procedure is to reject the null hypothesis, if the ADF t-statistic is more negative than the 5% MacKinnon (1991), and not reject otherwise.

For testing unit root on residual, MacKinnon (1991) critical values, instead of the ADFs values, apply. The Mackinnon general formula is $C(p)=\varphi\infty + \varphi1T^{-1} + \varphi2T^{-2}$. Note that C(p) is the p percent critical value and T is the number of observations. Using the formula above,[23] the MacKinnon critical value is computed as:

$$-1.9393 - 0.398*72^{-1} - 0*72^{-2} = -1.9448$$

The ADF t-statistic of –2.522976 (Table 5) is more negative than the MacKinnon critical value –1.9448, calculated at 5% for 72 observations, one regressor, with no constant and no trend. Consequently, the null hypothesis of no co-integration is

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[23] For the value of $\varphi\infty$, $\varphi1$, and $\varphi2$, for the relevant number of independent variables, see Mackinnon's table in Harris (2000:158).

rejected, meaning that exports earnings and GDP are co-integrated, which can be taken to mean that they move together in a long-run path.

b) Long-run model two

The LR-model discussed above needs to be expanded to include other key economic variables that determine economic growth. This formulation is critical, since economic growth is dependent upon a complex interplay of various factors such as capital, labour, imports, international terms of trade, etc. (see Medina-Smith, 1993:01) that might affect the long-run relationship established by the bivariate model above. The interest is to control for other variables the long-run relationship detected between export and growth of output.

The augmented model specification is consistent with equation (08), below.

$$LnGDP_t = \varphi_0 + \varphi_1 lnEXP_t + \varphi_2 X_t + R_t \text{ -------------------------- (08)}$$

where, X_t encompasses all other variables – Imports ($lnIMP_t$), Gross Capital Formation ($lnGCF_t$), and Terms of Trade (TOT_t) – that were added to the initial LR bivariate model. R_t is, therefore, the residual (error term and will later on be designed as resid02t to distinguish it from resid01t).

The results of the model given by equation (08) are reported in Table 6, below.

Table 6: Estimates of Long-run Model 02

Estimates of long-run model 02		
Dependent variable: lnGDPt*		
Regressor & Intercept	Expected sign	OLS
C		13.40174
		(42.76315)
lnEXPt	Positive	0.032510
		(2.217169)
lnIMPt	Negative	-0.057458
		(-1.990029)
lnGCFt	Positive	0.357958
		(15.64918)
TOTt	Negative	0.385099
		(4.982810)
Adjusted R-square	0.990443	
Durbin-Watson stat	0.180346	
ADF t test (resid02t)	-5.101698	
Observations	72	

* Note that lnL is not included as it was found to be stationary at level.

$$C\ (p) = -\ 4.1 - 10.745{*}72 - 1 - 10.745{*}72 - 2 = -\ 4.25339699$$

Using the same procedure as in the first model, the MacKinnon critical value calculated at 5% for 72 observations, four regressors, with constant but no trend is equal to –4.25339699. The ADF t-statistic of –5.101698 is more negative than the MacKinnon critical value (–4.25339699). Consequently, the null hypothesis of no co-integration is rejected, meaning that the variables in the model, including exports earnings, are co-integrated with GDP.

Since the residual of the augmented model is I(0) process, a short-run ECM can be established to reconcile the long- and short-run dynamics of our model. This is done in the section 5.2.4 after investigations over the direction of causality, between exports and GDP have been completed. For that purpose, the Granger causality test is applied.

5.2.3 Granger causality test

The simple correlation between real GDP and exports says nothing about the direction of causality. It is in the interest of this study to answer the question of whether or not the export-led growth hypothesis is valid for Mozambique. Given the LR relationship established between exports and GDP, we would be interested to know the direction of causality between the two variables. Although economists would in general agree that a country's exports and economic growth are related, the direction of causality in such an economic relationship remains debatable. To answer the question of whether exports are the key driver of economic growth, this study applies the Granger causality test.

Table 7 below reports the bivariate Granger-causality analysis for our objective variables (real exports and GDP in their natural logarithm form at first difference). The table shows that there is no evidence of Granger causality between the two variables in the two directions, at least for the period between 1987 and 1994, for lag length 3. The Granger causality test is, however, sensitive to lag selection and to structural breaks in the data (Yuk, 2005:6). In other to address the problem of structural breaks, the Granger causality test is performed in different periods according to changes observed in the data and applying different lags. When the lag length is set at 2, for instance, one observes the Granger causality running from GDP to exports. When a restriction is made to the sample size (from 1994 to 1999), it is observed Granger causality that runs from GDP to exports but not the other way around. After 1999, with the emergence of mega-projects, we observe one-way Granger causality from exports to GDP for the period 2000-2004 (Table 7).

Table 7: Pairwise Granger Causality Tests

Sample	Null Hypothesis:	Lags	F-Statistic	Prob
1987q1-2004q4	lnEXP does not Granger Cause lnGDP	3	0.05498	0.98288a
	lnGDP does not Granger Cause lnEXP	3	0.02602	0.99427a
1987q1-2004q4	lnEXP does not Granger Cause lnGDP	2	0.94523	0.39371
	lnGDP does not Granger Cause lnEXP	2	3.13186	0.05009b
1994q1-1999q4	lnEXP does not Granger Cause lnGDP	3	0.86623	0.47768
	lnGDP does not Granger Cause lnEXP	3	5.00360	0.01145b
2000q1 2004q4	lnEXP does not Granger Cause lnGDP	3	3.73312	0.01137c
	lnGDP does not Granger Cause lnEXP	3	0.49727	0.73812

a – No evidence of Granger causality relationship
b – At 5% level of significance we reject the null hypothesis. Therefore GDP Granger causes Exports but not in the reverse direction.
c – At 5% level of significance we reject the null hypothesis. Therefore Exports Granger causes GDP

5.2.4 Estimates of short-run equation

The point of departure in estimating the short-run model is to specify the functional form of the model that is given by equation (09) below.

$$D(LnGDP_t) = \alpha_0 + \alpha_1 D(lnEXP_t) + \alpha_2 D(X_t) + Resid02_t(-1) + E_t \text{----------} (09)$$

where $D(X_t)$ stands for all other variables in their stationary version; Resid02(-1) is the lagged residual from LR-extended model and works as error correction term, and E_t is the residual of the SR model. The coefficient parameters α_0, α_1 … α_n have the same meaning as discussed in Chapter Four, Section 4.6.1. Note that equation (09) can also encompass any dummy variable and other variables, such as labour, that are already stationary at level. Likewise, lag specification may also be used when appropriate to find a significant SR vector.

The result of the short-run model are summarised in Table 8 below. The variable NATDIS included in the SR-model represents the dummy variable and stands for natural disasters such as draught and floods that are expected to have a negative impact on the economy. The floods and draught events are accounted for the period 1991/1992 and 1999/2000.

Table 8: Estimates of Short-run Model

Estimates of the short-run model		
Dependent variable: D(lnGDPt)		
Regressor & Intercept	Expected sign	OLS
C		0.001109
		(0.240762)
D(lnGDPt-1)	Positive	0.462760
		(7.108801)
D(lnEXPt)	Positive	0.083744
		(4.231665)
D(lnIMP t-4)	Negative	-0.057968
		(-3.362111)
D(lnGCFt)	Positive	0.173625
		(6.069073)
D(TOTt)	Negative/Positive	0.230303
		(4.457250)
NATDIS	Negative	-0.008674
		(-3.173924)
RESID02 t-1		-0.238596
		(-4.518414)
Adjusted R-squared	0.914284	
Durbin's h-starts	- 1.435539	
Observations	72	

5.3 Discussions

5.3.1 The results

The results from the SR model (Table 8) provide a functional vector that can be used to predict the short- and long-run dynamic relationship between different explanatory variables and economic growth. The expected signs, as discussed in section 4.6.1 (Chapter Four), underline the key feature of economic theory with respect to each variable in relation to the dependent variable (GDP). In addition, all parameters are

statistically significant at 5% level. No autocorrelation was detected among the model variables as the computed Durbin's h-stat of -1.435539 falls within the critical interval given by [-1.96 < h< 1.96]. The expected impact of exports on GDP is very small, if compared with that of lnGDPt-1 and lnGCFt. As Table 8 shows, a change (increase or decrease) on exports by 1% causes GDP to move in the same direction (increase or decrease, respectively) by just 0.8374% (or less than 1%). That is, every US$ 1000.00 increase in export earnings leads to an increase in the total output (GDP) of just US$ 83.74. The major changes in current output (GDPt) seem to be explained by its past value of the last quarter – GDPt-1. That is, 1% increase of output in the past quarter causes the output in the current quarter to increase as well by 0.4628% to the extent that each additional increase in output in time t-1 by US$ 1000.00 causes the output in time t to increase as well by US$ 462.80, and vice-verse (Table 8). The use of one-time lagged GDP (GDPt-1) underlines the autoregressive-moving-average model (ARMA) that relies both on inputs and outputs.

The terms of trade are favourable to economic growth (positive sign). This suggests that there are gains in improving Mozambican export prices over the import prices – i.e. rising terms of trade – despite the everlasting negative trade balance. This is consistent with discussions in section 2.3 (Chapter Two). Table 8 shows that improvement in the terms of trade by 1% causes the output to increase by 0.230%. The improvement of the terms of trade implies that more goods can be purchased from export earnings and therefore boost economic growth.

Imports display a negative sign as expected, but this becomes significant only when lagged by four periods. This means that only imports of one year ago (lnIMPt-4) can explain the movements of the economy's output, in the current period, t.

The variable labour was dropped from the SR model because it was statistically insignificant and it displayed a wrong sign (negative), which is somehow economically meaningless. One explanation could be the fact that the active population used as a proxy for the labour force may not reflect the real situation on the ground.

The dummy variable used to account for natural disasters such as draught and floods (NATDIS) has a slight but negative impact on the economy, as expected. This is consistent with slumps verified on economic aggregates, especially output, whenever these events occurred.

Graphically, the SR-model is depicted as Figure 4 below. The discrepancies observed between the actual data and the data generated by the model are considerably smaller. This may suggest that the estimates of the dynamic model are robust to the extent that they can be used for prediction of the path of the economy as well as for policy analysis.

Figure 4: Graphical Representation of the Short-run Model
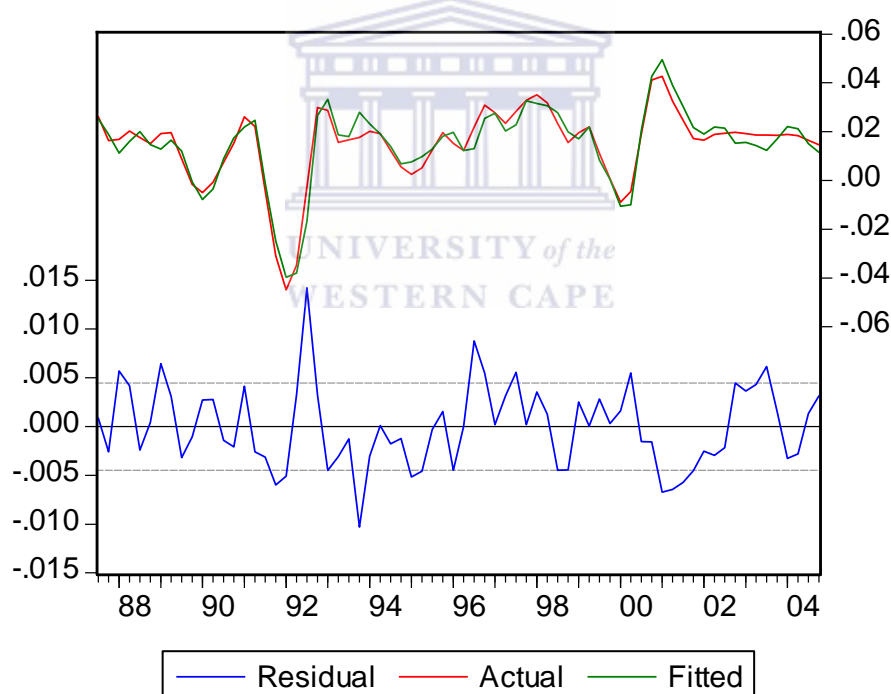
5.3.2 Export-GDP long-run relationship

The focus of investigations of this study has been on the drivers of economic growth in Mozambique between 1987 and 2004, with export expansion in the spotlight. The results from co-integration analysis provide evidence of a long-run relationship

between exports and GDP, the later being the dependent variable (Table 5). Some studies that used a bivariate model to test for export-led growth (e.g. Krueger, 1978; Jung and Marshall, 1985) did prove export-led growth on the basis of a simple correlation. However, bivariate models in recent export-led growth studies have been criticised for leaving out important determinants of economic growth (Balassa, 1978). In other to address this criticism, this study build on an expanded model to account for other determinants of economic growth, such as gross capital formation, imports and the terms of trade (Table 6). The findings of the expanded model with regard to co-integration analysis are consistent with a long-run path that captures the co-movements between the variables (Table 6). This can be interpreted as evidence of the presence of a long-run relationship between exports and GDP and this conclusion is even stronger when controlling for other determinants of economic growth. However, the relationship between the two variables does not come as any surprise, since economic theory, as discusses early in Section 3.2 (Chapter Three), predicts a strong and positive correlation between exports and economic growth.

5.3.3 Export-GDP causal relationship

The export-led growth test requires that further investigations be undertaken towards testing for cause-effect relationship. This is because a simple correlation cannot be taken to mean causality (Giles and Williams, 2000; Studenmund, 2006:431). The Granger causality (Table 7) used to test for a causal relationship requires caution about the necessary procedures to be taken when performing such test. For instance, when the 3-way Granger test was initially performed, no evidence of causal relationship between Export and GDP was detected in either direction. This is consistent with Ram's (1987) conclusions (see Section 4.2.2). However, Giles and Williams (2000: 266) warned that a causality relationship in the ELG debate may not be detected because of different reasons, notably the lag length and time period selection. In line with this argument, changes in lag length and sample size were performed. For instance, when a 2-way instead of the initial 3-way Granger causality test was performed, we found evidence of causality running from GDP to exports for the same time span (1987q1-2004q4). This is the case for growth-led export (GLE) similar to the findings of two studies, one in Portugal and the other in Greece (Abual-

Foul, 2004:396). Such unidirectional relationship suggests that Mozambican exports have grown as result of economic growth that was originally generated by different internal forces. The structural breaks in the data were further taken into consideration as suggested by Yuk (2005:6). In accounting for the structural breaks, we observe that the period from 1994, which was chosen to isolate the effect of slumps verified between 1992/1993, up to 1999, a year before the devastating floods and the emergence of the mega-projects that significantly changed the path of the economy, the GLE paradigm still holds (Table 7). However, with MOZAL, the largest smelter industry in Africa, starting its operation in 2000, the share of manufactured exports increased tremendously to almost 80 percent of the total exports in 2004 (Table 2). Not surprisingly, for the period 2000 to 2004 the case for export-led growth was supported (Table 7, at the bottom). Riezman *et al.* (1996) reached the same conclusion in a trivariate Granger test but for different period (1950-90), although in a cross-country study. The results of the Granger causality test are mixed and sensitive to the lag selection and structural breaks linked to the civil war and emergence of mega-projects. Whatever interpretation to be made about these findings, one must be cautious about the above feature. From 1994 until 1999 the government privatised a large proportion of previously state-owned companies, mainly manufacturing enterprises, including banks and insurance companies (WTO, 2001). This was also the period following the end of civil war in 1992, under which the reconstruction programme, backed by a huge inflow of foreign aid, was implemented (Arndt, Jones and Tarpc, 2006). These factors might have had a positive impact on the growth of domestic output and hence expansion of the exports in Mozambique.

After 1999 a huge influx of new investments was registered, particularly in aluminium, natural gas and electricity, that contributed to a great extent to the expanded industrial output and exports. In fact these mega-projects are export-oriented units to the extent that Mozal ships abroad its entire output (Castel-Branco, 2004). Given the nature of this investment and the distorting impact on total exports (accounting for almost 80%) and the whole economy, the ELG found between 2000 and 2004 does not surprise (Table 7). A question that may arise and need further research is to what extent mega-projects might sustain the economy for years to come. Following the shortcomings of the mega-projects, as pointed by Castel Branco (2004), it seems to be urgent to develop linkages between mega-projects and domestic

manufacturing firms (small and big businesses) to create the foundations for a strong and sustainable basis for the economy and the benefits of ELG associated with a growing manufacture sector. What has been observed in recent years in Mozambique is that mega-projects reshaping the composition of the economy, but with little impact on the rest of the economy because of insufficient and unstructured linkages.

5.4 Summary

This chapter (empirical analysis and results) has focused on econometric techniques to answer the main research questions formulated in Section 1.3. Applied econometric modelling requires that a unit root test be performed before any regression estimation is undertaken. This was done at the outset of this chapter and we found that, unlike labour, which is stationary, all other variables are non-stationary and only become stationary when differenced once. The application of the techniques of co-integration and ECM allow drawing inferences about exports and economic growth co-movement in long-run. This conclusion was found to be compelling, even controlling for other key determinants of economic growth. However, the findings over the direction of the causality, using the Granger causality test, are mixed and depend on time period and lag length selection that arise mainly from the structural breaks problem observed in the data. Further investigations to account for these breaks were undertaken and, as a result, different conclusions about the direction of causality between the objective variables (Exports and GDP) were reached. For instance, while between 1994 and 1999 a GLE paradigm holds, the dynamic created by mega-projects in the exporting of manufactured goods since 2000 have resulted in ELG benefits for Mozambique that need to be enhanced through a focus on the linkages between mega-investments and small and medium domestic enterprises.

CHAPTER VI: CONCLUSIONS AND POLICY IMPLICATIONS

6.1 Introduction

Chapter Six presents policy implications and the general conclusions that can be drawn from this research. Section 6.2 summarises the study findings and discusses some policy implications. Section 6.3 provides the general conclusions of the study.

6.2 Findings and Policy Implications

There are policy implications related to the main findings of this study. First of all, the study found strong and long-run co-movements between exports and GDP, no matter the directional path of the causal relationship. Economic measures designed to promote exports or to boost the economic output need to be reinforced in order to sustain the long-run path of the variables under investigation (exports and economic growth). The long-run relationship detected would imply that any decline in the export earnings would have an negative effect on total output, should the export-led growth hypothesis hold, as would the decline of gross domestic output affect the export sector, if growth-led export turned out to be the case.

Secondly, the study found a case of growth-led exports for the period under investigation (1987-2004). The policy implication of such finding is that, for sustainable economic growth, Mozambique should focus on its domestic market development. The government's efforts to fight poverty and reduce income inequalities need to be strengthened and made the country's mainstream policy towards developing a strong internal market basis.

Third, the study found also that for the period 2000-2004 the export-led growth was beneficial for Mozambique. Policy measures to develop a buoyant manufacturing industry that derives benefits from the linkages with growing mega-projects would increase export-led growth benefits for years to come. Export promotion needs an industrial basis to succeed and such basis will develop from promoting and directing small and medium labour-intensive manufacturing firms toward exploiting existing

international and regional markets. It is this industrial basis that will help develop strong internal markets and raise wages that are able to sustain the growing economy in the fashion suggested by growth-led export.

Fourth, the study suggests that a mixed set of trade policies prevailing over the period under investigation (both inward and outward trade policy orientations) might have given the economy a mix of policy measures that it needed for high and sustained growth. For instance, the government adopted a policy of trade liberalisation as a rule, but maintained protective measures whenever it was found appropriate (some sectors such as telecommunications, railroads, etc. remain controlled by the government). In addition, the tariff structure was only reduced in gradual fashion to the extent that until 2001 a tariff ceiling of 20% prevailed for most import commodities. Similarly, incentive schemes designed to attract foreign investors were implemented in parallel with support awarded to domestic exporting firms (WTO, 2001).

Fifth, the benefits of export-led growth in Mozambique seem to be limited. This fact is partly because the bulk of export output is produced by just three industrial mega-projects with no or little participation of small and medium enterprises (SMEs). The policy implication is that incentive schemes targeting exporting segments of the economy need to be created with a particular focus on the SMEs employing labour-intensive technologies. This would address the problem of high levels of unemployment facing Mozambique and, at the same time, it would be an opportunity for SMEs to enter the growing international markets. It follows that the export-led growth is not naturally generated, but will result from strategic and prudent government interventions in terms of policies needed to guide the private sector. Some issues that would make export-led growth beneficial for Mozambique and sustain a growing path of the economy include:

- Policy measures aiming at addressing existing barriers that have impeded the small businesses to succeed and their ability to internationalise. These barriers may change over time, but critical issues include the lack of market information, competitive technologies, financial resources, skills and so forth.

- Policy measures designed to make the actual export-oriented development agency (e.g. IPEX) more effective. IPEX should play a more promotional role under a programme that focus on enhancing product and market development skills of Mozambican business enterprise. This would assist entrepreneurs to exploit existing regional and international trade development opportunities, such as AGOA and the new opportunities under SADC trade arrangements.

- Policy measures to develop market linkages between large exporting industries with domestically oriented firms. One area where these linkages can beneficially be exploited in Mozambique is in the context of mega-projects. These linkages may enhance skills development and produce quality products that may be used in a wider range of market segments.

Finally, the improvement in the terms of trade found in this study must be interpreted with some caution. As a factual matter, about 80 percent of Mozambicans derive their livelihoods from the agricultural sector. The secular decline of international terms of trade for agricultural commodities, as noted long ago by Prebisch (1950) and Singer (1950) (see Edwards, 1993), would imply that gains from trade do not accrue to the ordinary Mozambican leaving in rural areas and working in agriculture. The improvement of the terms of trade found in this study might be associated with industrial commodities, mainly aluminium, natural gas and electricity. Policy measures need to be developed in line with agriculture-industry linkages through an agro-processing industrial basis that can add value to the primary goods and exports, while creating employment opportunities and income for the majority of Mozambicans. Government should guide through incentive schemes to target market segments where the country enjoys comparative advantages (the CPI can better perform this role). Assessment need to be made with regard to such market segments, but a quick overview suggests the existence of comparative advantages in cashew nut and coconut processing; the development of hydroelectric projects to meet increased demand for electricity in the region, and fisheries processing mainly prawns.

6.3 Final Remarks

This research has investigated the key determinants of economic growth with a particular focus on the role played by export expansion for the Mozambican economy over the period 1987, when economic reforms were first introduced, up to 2004. This analysis has been undertaken with the short-run and long-run perspectives using techniques of co-integration and error correction modelling suggested by Engle and Granger (1987). The method used is relevant when dealing with problems of unit roots that are always present in time series data. In general, applying the long- to short-run approach to the error correction model, our statistical results suggested the existence of stable long-run (co-integration) relationships between exports and economic growth, even when controlling for other key determinates of economic growth. The majority of the variables do induce economic growth in the expected manner. However, the growth of GDP is explained mainly by its past value compared to exports or any other variable analysed. The signs are correct and there is statistical fit (significance at 5 percent). The variable labour was dropped from the model because of the wrong sign it displayed and lack of statistical significance. Although the result are mixed, with respect to the direction of causality, notably when structural breaks and lag length selection are taken into account, the evidence that exports Granger cause GDP is only valid for the period of 2000 to 2004. This period coincides with a buoyant manufacturing export sector associated with the emergence of mega-projects, especially MOZAL, an export-oriented aluminium smelter industry. Based on export-led growth in recent years, this study suggests that the benefits of trade will never come as a "natural gift". Commitments need to be made by both government and private sector to promoting the exporting segment of the economy. The participation of SMEs is critical, through the redesign of export incentive schemes targeting product quality and market development skills of businessmen, linking SMEs to the mega-projects and investment in manufacturing processing industries, particularly in sectors where comparative advantages exist. The study suggest that such strategy should never overlook domestically oriented policies geared towards fighting poverty and the inequality of incomes as this is critical for expanded domestic markets and realising the benefits from growth-led exports.

Nevertheless, future research on export-led growth in Mozambique must look at disaggregated data of exports (for example, manufactures exports, or mega-project exports rather than total exports) as suggested in many studies that could not be addressed in this research because of the lack of such disaggregated data over the period under investigation.

Another new area of future research that arises from the analysis in this paper is examining how a developing country can capture more benefits from promoting an export-oriented industry based on foreign capital inflows that arrive in the form of mega-projects. It seems that this triangular connection between exports, foreign direct investment and expanding local multiplier spill-over remains regrettably under-researched.

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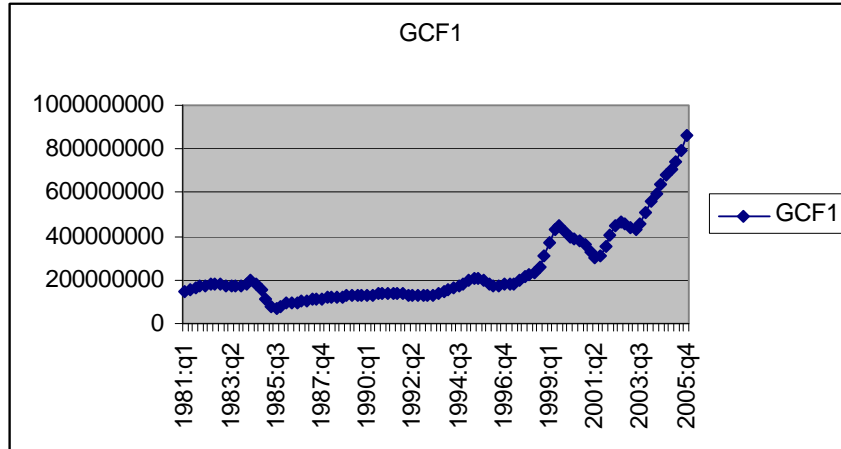
APPENDICES

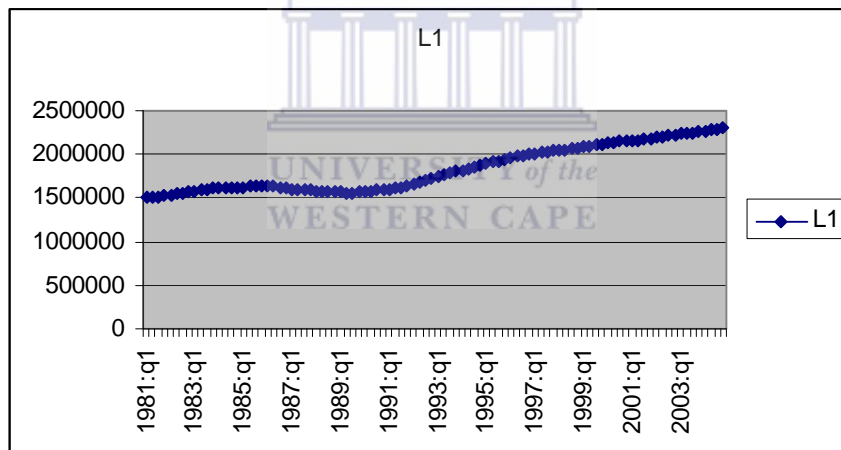Appendix A 1.1 – Quarterly Graphical Figures on Exports (1981-2004)
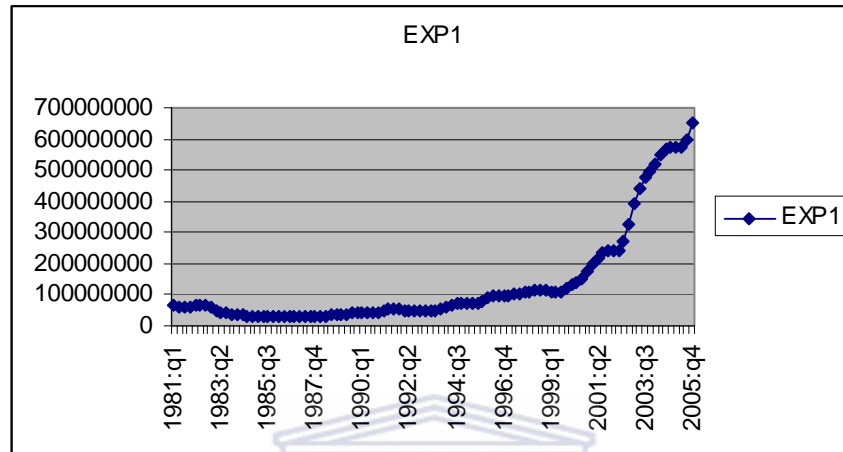
Appendix A 1.2 – Quarterly Graphical Figures on Imports (1981-2004)
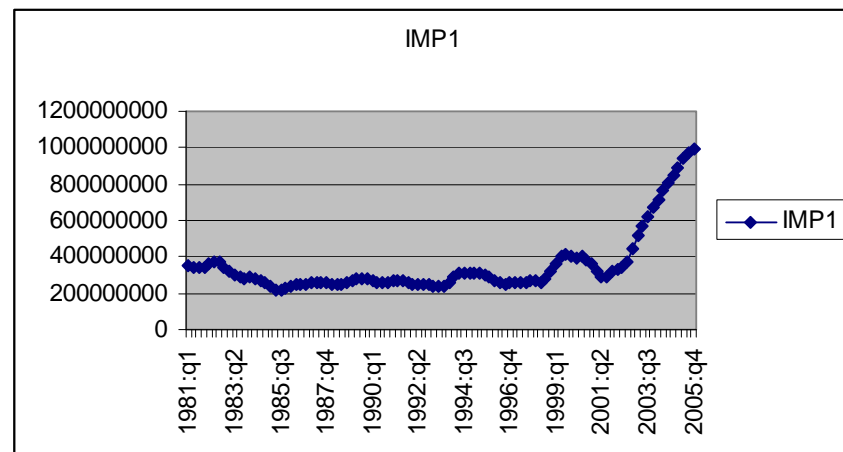
Appendix A 1.3 – Quarterly Graphical Figures on GCF (1981-2004)

GCF1

Appendix A 1.4 – Quarterly Graphical Figures on Labour (1981-2004)

L1

Appendix A 1.5 – Quarterly Graphical Figures on TOT (1981-2004)