

THE IMPACT OF FOREIGN AID ON THE SOUTH AFRICAN ECONOMY (1980-
2008)

BY

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DECLARATION

I, Rasheedat Gbeminiyi Omotola Amusa, hereby declare that this thesis for the Masters in Economics degree at the University of Venda, hereby submitted by me, has not been previously submitted for a degree at this or any other institution; and that this is my work in design and execution. All reference materials contained herein has been duly acknowledged.

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DEDICATION

On the pathway to success, one meets people who leave indelible footprints on his life. However, it's inevitable that one loses touch with some of such admirable people as one goes through life.

This piece of research work is therefore dedicated to all people who through one way or another have left that indelible footprint in my life, which has made me what I am today, and my hope is that this piece of research may serve as a motivation for future researchers.

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ABBREVIATIONS

ARF	African Renaissance Fund
BD	Burnside and Dollar
DAC	Development Assistance Committee
DBSA	Development Bank of Southern Africa
DCIS	Development Cooperation Information System
ENE	Estimates of National Expenditure
EU	European Union
GDP	Gross Domestic Product
GNP	Gross National Product
IDC	International Development Cooperation
IDCU	International Development Cooperation
IBRD	International Bank for Reconstruction and Development
LCD	Least Developed Countries
NEPAD	New Partnership for Africa's Development
NGO	Non Governmental Organization
NT	National Treasury
OA	Official Assistance
OECD	Organization for Economic Cooperation and Development
ODA	Official Development Assistance
RDP	Rural Development Programme
PIU	Project Implementation Unit
USA	United States of America
UK	United Kingdom

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ABSTRACT

The role of foreign aid in promoting economic growth and improving welfare has been the subject of much debate among development specialists, researchers, aid donors as well as recipients in general. Two very strong views have emerged in the literature; proponents of aid posit that foreign aid contributes to higher welfare levels and economic growth while also improving the socio economic conditions of the poor in the receiving countries. Detractors of the idea that foreign aid promotes growth have argued that aid is not the solution to deep rooted economic problems of recipient countries. According to the latter, aid does not breed an environment that allows nations to themselves develop local strategies to improve growth. The country selected for this study, South Africa, poses an interesting case study given the fact that while the country is not aid- dependent, it still receives a significant amount of official development assistance (ODA). In spite of the above fact and the perceived benefits of foreign aid for growth and development, there are few empirical studies that have investigated the nature of the relationship between foreign aid and economic growth in South Africa. The study found that while foreign aid has positively affected growth in South Africa, the impact is insignificant. Although such aids has ensured a good macroeconomic environment which have been growth- enhancing for the country.

CHAPTER ONE

1.0 Background to the Study

“It has become abundantly clear that as long as the conditions for economic growth do not exist in developing countries, no amount of foreign aid will be able to produce economic growth” (Cato handbook for congress, 1998).

Despite periods of seemingly improved growth on the continent, Africa remains a continent with one of the highest poverty levels in the world. For a continent that attracts a significant portion of foreign aid, the question why such aid has not been effective in alleviating poverty and contributing to sustained economic growth for recipients, remains an unanswered one in both the academic and policy spheres. Over the years, the effectiveness of foreign aid in achieving its goal of increased growth and poverty alleviation on the continent has been limited. This limited success has been attributed to a number of factors, including the political environment in most African nations, the weak macroeconomic sector in many nations, the limited institutional capacity of many nations to positively absorb foreign aid and ensure its success and finally the high level of corruption, negatively impacts on the way in which aid is channelled and used in many countries (Knack, 2000).

While it will be remiss not to mention the fact that some countries have attained measured levels of success in terms of the effectiveness of foreign aid, other nations have not been so successful. The question is therefore: What makes some nations more effective at channelling foreign aid and translating it into improved growth and others fail to do so? Authors such as Burnside and Dollar (1997, 2000), Dalgaard *et al* (2003), Durbarry *et al.* (2009) have all suggested that in order to adequately examine this issue, the macroeconomic characteristics of a nation must be properly accounted for. They argue that in countries with relatively stable macroeconomic environment and policies, foreign aid tends to positively impact on economic growth, while for nations with unstable macroeconomic policies, the opposite effect is seen.

The effect of foreign aid on economic growth remains a highly contentious issue. Empirical studies on the relationship between foreign aid and economic growth have yielded ambiguous results. The studies in this field can be categorised into three main result areas. Firstly, a large number of studies including Chenery and Strout, (1996), Hansen and Tarp, (2001), Durbarry *et al.*, (1998), Dalgaard *et al.*, (2003), Morrissey, (2001) find a positive relationship between foreign

aid and growth. Other studies such as Rajan and Subramanian, (2005) and Hepp, (2005) show that there is no effect from foreign aid on economic growth. Lastly, other studies conclude that there can be a positive relationship between foreign aid and economic growth only if certain conditions are in place. Burnside and Dollar, (2000) and Morrissey, (2000) argue that the recipient country's factors have a role to play. They suggest that if the recipient nation has a good fiscal, monetary and trade policies, then aid will positively affect growth.

A search on aid and growth dynamics which unearthed studies informed both by micro and macro variables have shown varying results. The reasons for the different results emanate from the econometric treatment of the relationship between the variables. Issues ranging from data accuracy, lack of data, sample size, bias and model misspecification have all been cited for the ambiguity in the results. According to Durbarry *et al.* (1998), if aid is to be included in the list of reliable growth determinants, it is important that it is included within a robustly specified empirical growth model.

Given the importance of the aid-growth nexus and the policy implications of determining the factors that enhance or deter the effectiveness of aid, it is puzzling that there still remains a paucity in information regarding the specific effect of foreign aid on economic growth, taking a specific country's analysis into account. The main objective of this paper is to provide a more accurate understanding of the nature and impact of foreign aid on the South African economy. South-Africa provides an interesting case study because although it is considered to be the most developed economy in Africa, the country relies, to a certain extent, on external resources. The exact relationship and impact has however not been fully researched.

1.1 Statement of the Problem

It has long been accepted that aid should be more effective in achieving its initial objectives (the main role of foreign aid in stimulating economic growth is to supplement domestic sources of finance such as savings, thus increasing the amount of investment and capital stock). There are a number of mechanisms through which aid can contribute to economic growth, including (a) aid increases investment, in physical and human capital; (b) aid increases a country's capacity to import capital goods or technology; (c) aid does not have indirect effects that reduce investment or savings rates; and aid is associated with technology transfer that increases the productivity of capital and promotes endogenous technical change in environments. This is an action that encourages aid's translation to effective results, such as sound macroeconomic policies, good

government structure and policies, strong international trade policies and low corruption and respect for the rule of law.

Given the extensive literature on the importance of aid to many nations, especially to developing countries; the continued global debate among academics; political issues regarding the effectiveness of foreign aid and its contributions to improving growth; welfare and overall living standards of millions of people, it becomes paramount to be able to determine the impact of aid to developing countries. To do this, one must examine the way in which the aid-receiving nation's institutional capacity, organization and structure impact on the effectiveness of foreign aid.

The literature on foreign aid and economic growth indicates that most studies tend to assess the relationship between foreign aid and economic growth from a regional or panel aspect. Studies that provide country-specific analysis is limited. South Africa has arguably the soundest economy on the African continent and has also been on the receiving end of a significant amount of foreign aid in the form of official development aid over the years (Love, 1999). However there is paucity in the literature regarding the impact of foreign aid on the South African economy. Therefore this study aims to fill that gap by providing a comprehensive study on the impact of foreign aid using a country specific analysis. In this case the South African economy.

1.2 The purpose of the study

The purpose of the study is to determine the relationship between foreign aid and economic growth in South Africa. The specific objectives of the study are :

- (i) To analyze the nature of the relationship between foreign aid and economic growth
- (ii) To evaluate the effect of foreign aid on growth and,
- (iii) To provide recommendations based on the findings.

1.3 Hypothesis of the study

The hypotheses that guide this study are:

Ho: There is no relationship between foreign aid and economic growth.

H₁: There is a relationship between foreign aid and economic growth

1.4 The significance of the study

This study aims to contribute to the foreign aid –growth nexus for Sub Saharan Africa (SSA) countries by examining the relationship between foreign aid and growth in South Africa. It is a significant study because it focuses specifically on a country case and by so doing ensures that the risks involved when analysis is done on country groups or regions is minimized. The study also aims to contribute to literature on developing countries and emerging economy such as South Africa. Lastly, this study intends to determine the importance of foreign aid in economic growth in South Africa and if indeed the different types of aid received have been effective in advancing growth. Furthermore, from the findings, recommendations can be made to policy makers as to how to enhance the nation's growth. .

1.5 Definition of terms

Foreign Aid: Transfer of capital, goods, or services from one country to another. Foreign aid may be given in the form of capital transfers or technical assistance and training for either civilian or military purposes (Britannica Concise Encyclopedia, 2001).

Official Development Assistance (ODA): The Organization for Economic Cooperation and Development (OECD) defines ODA as “*Official resource flows from the international donor community to South Africa in the form of grants, technical co-operation and financial co-operation where the South African Government is held at least partially responsible or accountable for the management of such resources.*” It is required that the ODA must be administered with the promotion of the economic development and welfare of developing countries as its main objective (OECD, 2005). ODA flows must satisfy all three of the following criteria: firstly, primary objective must be developmental, thus they exclude military aid and private investment; secondly, they must be concessional, meaning that the terms and conditions of the financial package must be softer than those available on a commercial basis. The development assistance committee (DAC) defines ODA as official flows with a grant element of greater than 25% at a 10% discount rate. Lastly, the flows should come from governmental agencies and go to developing countries' governments.

Grants: are considered to be the most desirable type of foreign aid since they represent a net addition to the resources available for development purposes (World Bank, 2002). Some loans are given by international lending agencies such as the World Bank at interest rates which are lower than those in the capital markets. Where the loans are granted to the LDC's at a

concessionary rate for very long periods, say for 40-50 years, the inflow of foreign resources take the character of foreign private investment and are therefore not considered to be foreign aid because they are made on commercial terms.

Economic growth is a term used to indicate the increase of per capita gross domestic product (GDP) or other measure of aggregate income. It is measured as the rate of change in GDP. (Britannica Concise Encyclopedia, 2001).

CHAPTER TWO

OVERVIEW OF THE DEVELOPMENT ASSISTANCE IN SOUTH AFRICA

2.0 Introduction

This section provides background information on economic growth in South Africa. In addition, it examines the trend of official development assistance to the country.

2.1. Background information on Economic Growth in South Africa

South Africa's economic growth can be divided into pre and post apartheid era. In the 50s and 60s the policy objectives showed that economic growth was the dominating factor in determining fiscal policy. In recent years, the policy has shifted towards controlling inflation and maintaining a surplus on the current account. In the 1950s and 1960s South Africa enjoyed good economic growth; the economy was dynamic with annual growth rates in excess of 5% (Tarp and Brixen, 1996). The end of the 60s marked the high point of South Africa's economic growth in the second half of this century. However over a 5 year period, economic growth has declined almost consistently since then. In the 1970s despite increased gold prices, the economy only grew at an annual rate of 2.5%. Three factors were seen to be the cause of this. These were (1) the pressures of change (both internally and externally) leading to declining confidence by both foreign and domestic investors, (2) import substitution policy reaching its limits and export promotion not pursued, slow down in industrialization and manufacturing's increased dependence on what happens in the gold market and (3) the poor conduct of monetary and exchange rate policies leading to inflation and further reducing investments (Krugman, and Obsfeld, 2003).

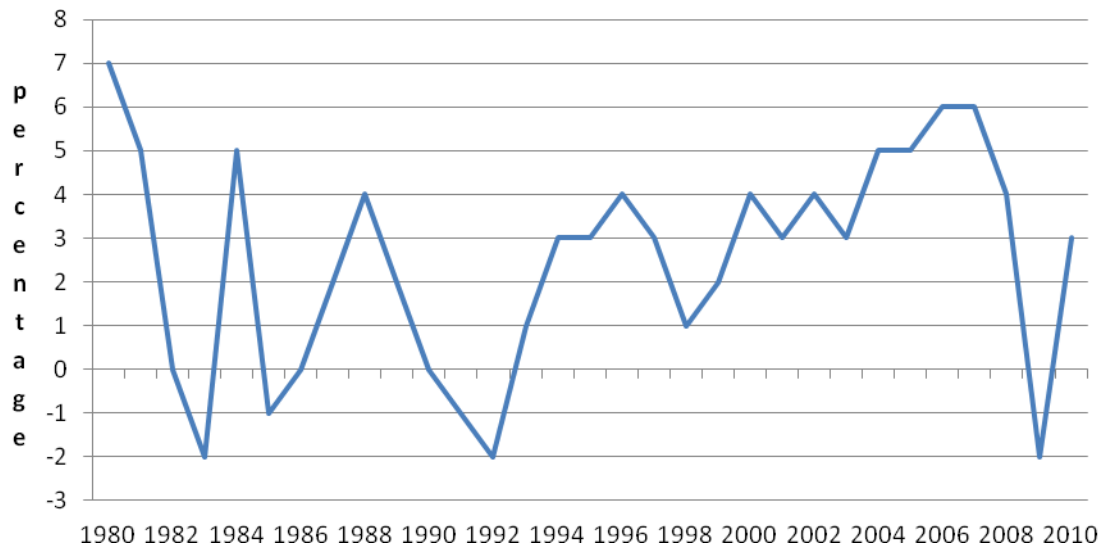
In the 1980s South Africa's average annual growth rate was at 1.1%, although in some years it was actually negative. Numerous factors were attributed to this downturn, including the strikes of 1973 and the Soweto uprisings of 1976. This resulted in raised relative labour prices which then decreased returns on investments, causing investments to decline as well. Part of the economic crises the country experienced during that period was blamed on the unfavourable political developments including the disinvestment campaign, sanctions and boycotts. Foreign capital was compromised and the country experienced a net capital outflow (Abedian and Standish, 1992).

The country's political policy has also played a part in shaping the nation's economic growth. According to Abedian and Standish (1992) the fact that in the 1970's South Africa had the most skewed income distribution in the world was linked to the apartheid policies that existed almost 20 years prior to that time. Tarp and Bixen (1996) argue that while the international sanctions were seen as a cause for the decline in the country's economic growth, the stagnation had set in long before that; the sanctions only contributed to making the situation worse. Apartheid was not only a political system, it was also an economic order which constrained the movement of economic resources, and it disrupted the economic system and led to an inappropriate pattern of development.

South Africa's economy has been completely overhauled since the advent of democracy in the country in 1994. Bold macroeconomic reforms have boosted competitiveness, growing the economy, creating jobs and opening South Africa up to world markets. Since the first decade after 1994, South Africa's economic growth has been impressive, rising from 3% to about 5% in 2006 (National Treasury, 2007). The growth is attributed to high commodity prices, large capital inflows, strong domestic consumer demand and rising asset prices, amongst others¹. Over the years these policies have built up a rock-solid macroeconomic structure. Taxes have been cut, tariffs dropped, the fiscal deficit reined in, inflation curbed and exchange controls relaxed. Economic growth and prudent fiscal management have seen South Africa's budget deficit (the difference between the government's total expenditure and its total receipts, excluding borrowing) drop dramatically, from 5.1% of GDP in 1993/94 to 0.5% in 2005/06 - the second-lowest fiscal deficit in the country's history after the 0.1% reached during the gold boom in 1980. In 2006/07, the country posted its first ever budget surplus, of 0.3%. Consumer inflation came in at under 5% from 2004 through 2006 before global prices pushed it up to 6.5% in 2007. In 1994 it stood at 9.8%. Focusing on the period of this study (1980-2008) economic growth trend shows variability in growth rate from a high of almost 7 percent in 1980 to lows of -2 percent in 2009 during the global financial and economic crisis (Statistics South Africa, 2007).

¹ Table 1 in appendix one shows the historical real GDP growth figures for South Africa.

Figure 1: Growth Rate of Real GDP (%) 1980-2010



Source: World Development Indicator, online database

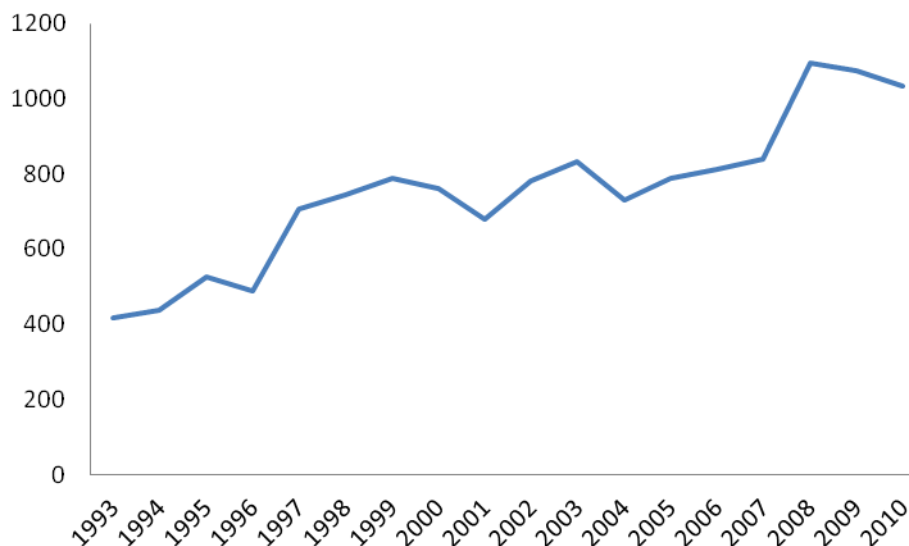
2.2. Background on Official Development Assistance (ODA) in South Africa

South Africa's classification as an upper middle income country and an emerging market economy with a highly developed financial sector and institutional and infrastructural capacity has meant that the country is less reliant on foreign aid than most other aid recipients. In fact, the country is considered amongst the few on the continent that is not aid-dependent. Ramkolowan and Stern (2009) address this distinction in the case of South Africa by indicating that foreign aid in South Africa is mostly in the form of technical and capacity building aid and less for the development of infrastructure. This highlights the country's high level of development institutionally and infrastructure-wise as well as the government's aid management policy which involves a higher degree of ownership and control. Although foreign aid as a proportion of GDP is relatively small, in absolute terms, the country still receives a considerable amount of development assistance, both bilateral and multilateral. Ramkolowan and Stern (2009) indicate that donor funding is still important for South Africa, especially given the country's political history, its status and importance as the economic hub of the continent, high income inequality as well as the HIV/AIDS epidemic prevalence in the country.

In the pre democracy era, foreign aid to the South African government was to a large extent nonexistent; although aid inflows to Non-governmental organizations (NGOs) and pro-democracy organizations occurred. After 1994 however, there was a significant increase in the

amount of ODA received in the country. Specifically, between 1995 and 2007, ODA commitments to South Africa totaled 7.8 billion dollars. Aid increased at a nominal rate of 8.3 percent during this period (Ramkolowan and Stern, 2009). The top donors to South Africa are the United States of America (USA), European Union (EU), Germany, United Kingdom (UK) and France.

Figure 2: ODA disbursement to South Africa (1993-2010)



Source: OECD-DAC Online Database

South Africa's position on development assistance is clear; aid is welcome and since it helps South Africa meet its development challenges. In 1994, the government established a special Reconstruction and Development Fund (RDF) and all foreign donor grants to the state were channeled through this Fund, and were used to finance projects in various sectors. In 1996, the responsibility for managing official development assistance was moved to the National Treasury. The intention was to improve co-ordination and to be able to use development aid in government budgeting processes and financial plans so that aid could be used more strategically in various projects in national departments and provinces (National Treasury, 2007).

In 2000, South Africa's National Treasury carried out a major evaluation of the aid inflow in the 1994-1999 periods. It concluded that aid had played a significant role in many areas. It assisted in transformation of institutions, in developing new policies, in implementation and delivery of

services and in exposing South Africa to lessons and experiences from other countries. This may have been achieved also without development aid, but then probably at a much slower speed. In consolidating new and fragile democracies, speed and swift action are important and sometimes crucial. However, the evaluation also noted that the impact of foreign aid was highly uneven. The aid was not sufficiently focused and the South African management was not optimal. In particular, it was found that the Treasury had limited capacity to facilitate donor co-ordination.

By any measure based on the available data, the three biggest donors in sequence are the EU and the US .For official ODA commitments (as per the Development Assistant Committee definition) France is next, mainly on account of loans to public financial and non-financial enterprises and private sector financial enterprises. However, if ODA to the general government sector only is taken into account and actual disbursements are used, France is one of the smallest donors, replaced in the succession by Germany and the Netherlands, followed by Japan, Denmark and Finland. By both measures the top three donors account for more than 60 per cent of ODA. According to the OECD Aid statistics, 72 per cent of aid to South Africa is bilateral.

In 2005 donors disbursed USD351 million to the government sector in South Africa. This includes disbursements to national, provincial and local government. The Organization for Economic Cooperation and Development (OECD) official ODA commitments to South Africa for 2005 was USD700 million: this included (as per definition by the OECD) loans to public financial and non financial enterprises and commitments to funding of NGOs and concessional loans for development purposes (particularly by the International Bank for Reconstruction and Development (IBRD) and the French Development Agency) to commercial financial institutions.

ODA to the general government sector does not include any financial assistance (concessional loans and credit guarantees) and are mainly grants and technical assistance. This is a matter of policy by the South African government. All loans occur to public financial and non-financial enterprises, such as the Development Bank of Southern Africa (which absorbs 6% of all official ODA to South Africa according to the database kept by the aid coordination unit at the South African National Treasury) and the National Development Agency which supports inter alia SMME development.

All ODA to the general government sector is in the form of cash grants and technical assistance support. The most common modality is project support. General Budget Support is not used at all and programme-based approaches comprise only 26% of total aid disbursed². A preliminary survey commissioned by the International Development Coordination Unit in the National Treasury in preparation for the OECD Paris Declaration survey found that less than one percent of donor funds can be said to be managed through the use of common procedures and arrangements.

It is difficult to determine from available data what percentage of ODA to the general government sector is used at central government level and what is used at provincial and local levels. Database lists the implementing agency, which in some cases may be a national department but the activities are undertaken by provincial departments or provincial offices of the national department. However, if the implementing agency is taken as the defining data point, most ODA flow to national government.

Given South Africa's position as a high middle-income country, many donors are scaling down their aid programmes. Some have already prepared or are preparing exit strategies, while others are looking towards switching the nature of their support from traditional aid programmes to supporting South Africa's role in the region and the continent, or looking at different forms of economic, technical and cultural cooperation (Venter, 2008).

South Africa was pledged approximately \$5 billion in foreign development-related aid from 1994-1999, an enormous sum compared to other more aid-dependent African countries. The grants and loans that were 'pledged'—though not fully committed, disbursed or implemented—to Pretoria between 1994 and 1999 included vast funds from the European Union (EU) (\$1.75 billion), United States (US) (\$800 million), and Japan (\$550 million). The degree to which funding actually reach beneficiaries has been highly variable, with 'delivery' areas like rural water or roads recording very low levels. One report judged that the aid record of the largest donor, the EU, was 'abysmal' in part because its ratio of money actually committed to that pledged was just 51 per cent and the amount disbursed compared to that committed was only 13 percent. Even by mid-1999, fully two-thirds of the previous five years' worth of EU pledges had

² Note that this statistic is from the OECD 2006 survey on the Paris declaration implementation, which defines programme-based approaches as aid support that occur under the leadership of the recipient and uses a single comprehensive programme and budget framework, formalized donor coordination and harmonization process and efforts to increase the use of local systems.

not been spent (Singh, 1985). Yet while government could not disburse its own development-related monies (in housing, infrastructure, land reform and many other fields) due to lack of capacity, foreign donors shifted from funding civil society to funding the state, as described below.

Although it is small in comparison to the wide variety of state spending programmes (at just two per cent of the national budget), aid contributes a substantial share to South African development, particularly capital projects. Given that the state must spend a large amount of its budget (90 per cent) on recurrent costs, foreign aid can be decisive in shifting capital expenditure into areas donors decide - although sometimes without much reference to sustainability, maintenance and infrastructure. It was presumed that many aid missions would end their work after 1999, once democratic development policies were established and implementation got underway, but most have continued to justify a presence on the basis of unfulfilled programme and project implementation.

2.3 Aid Institutions: Government institutions

The International Development Cooperation Unit in the National Treasury coordinates all aid flows into the country, albeit to central, provincial or local government. A core objective for the unit is to ensure that donor assistance is utilized effectively and efficiently in support of the country's core strategic frameworks, through coordination, monitoring and joint reviews of aid flows. The unit's activities include the establishment and monitoring of adherence to guidelines for the management of ODA, the establishment of mechanisms for information sharing, including the establishment and maintenance of a database on ODA flows, the facilitation of intergovernmental linkages (both horizontal and vertical) on aid flows, training on ODA management and the undertaking of joint reviews with donors.

In practice the unit is an important liaison point for donor representatives and plays a key role in directing donor funds towards specific geographical areas and purposes. It undertakes its monitoring duties through maintenance of the database, joint reviews and routine annual meetings with donor agencies.

The unit is part of the budget coordination division of the National Treasury, headed by a Chief Director. There are two directors, each with portfolio managers under them and various

administrative staff. A portfolio manager currently looks after a grouping of development partners. Generally – as reported by Smith *et al.* (2006) – both development partners and government aid coordinators are satisfied with the services provided by the unit. They hold that the unit has contributed to improved aid coordination and transparency around aid flows. The Smith (2006) study was done to establish a baseline for aid coordination in South Africa. Based on the findings and recommendations of the report, the International Development Cooperation Unit (IDCU) has launched a number of initiatives to address the various shortcomings identified. For example, a study on capacity development was undertaken, as well as a review of the ODA Guidelines, capacity building for ODA coordinators at national and provincial level and a study to look at the role of the aid coordinators in departments, to establish why some departments are doing well and others are not and to use this information to draw up a manual for establishing ODA units (Organisation for Economic Cooperation and Development (OECD), (2005)).

The quality of data in the Development Cooperation Information System (DCIS) data base is inconsistent. Data fields include project title and number; start date and end date; donor, recipient (by type of recipient and name), sector and sub-sector; status; main activities, type of aid (loan, credit guarantee, grant, technical assistance, other), budget for donor contributions, counterpart funds, other funds and total budget, fund flows to and from the RDP Fund for the project, development partner and government contacts. The online database also provides standard reports, which inter alia record funds that flow through the RDP Fund, donor disbursements and payments to the recipient department from the fund, interest earned and payment of interest either to donor or to the recipient department. For projects that are disbursed through the RDP Fund, information is more complete. For many other projects the data sheets are incomplete.

At provincial and local central level there are supposed to be donor coordination units in the provincial premiers' offices and municipalities. In practice the capacity and profile of these units are uneven. In some provinces the units play an active role in coordinating aid flows, directing donor funds to areas of need in line with the provincial growth and development strategies, making sure that duplication of support is avoided and monitoring implementation of projects through reporting procedures and regular meetings with departments. It is important to note that not all provinces have an equal share in aid flows: Limpopo, KwaZulu Natal, the Eastern Cape and the Free State provinces – which have higher incidences of poverty and generally have

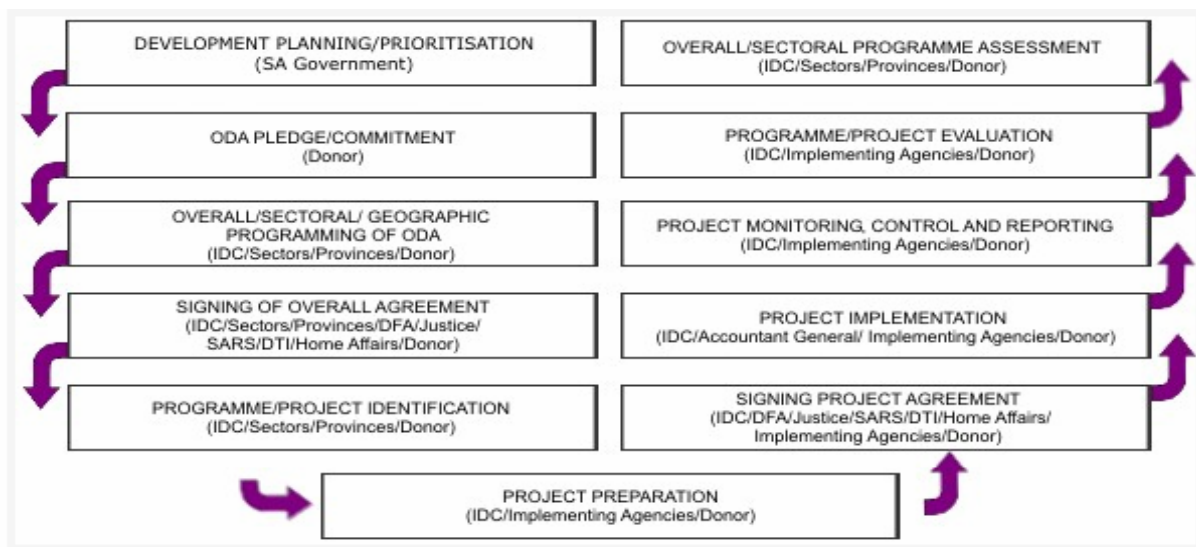
poorer capacity – receive almost all funding. Most departments at the national level and some departments at the provincial level have donor coordination units or officers.

According to Smith, Brown and Nube (2006), donor representatives interviewed identified weak capacity in these structures as an impediment to alignment. Coordination unit staff are also often not senior; donor coordinators find themselves bypassed as donor representatives prefer to deal with programme managers, who have access to programme and project design processes.

2.4 Aid Procedures

In terms of these guidelines for the management of ODA, ODA management follows the cycle summarized in the diagram reproduced below. The diagram sets out the parties that could be involved at each step, although not all of them are necessarily involved. For example, if grants are not disbursed through the RDP Fund, but to project implementation unit (PIU), the Accountant General would not be involved in the project implementation phase. The guidelines also establish a division of responsibilities between the IDC (International Development Cooperation), ODA coordinators at national, provincial and local level, other central national departments and agencies that are party to agreements (such as the Department of Foreign Affairs and the Revenue Service), and donors and their representatives .

Figure 3: Management of ODA



Source: National Treasury, 2003: Policy Framework and Guidelines for Management of ODA

As provincial and local governments are autonomous, in the context of a decentralized model of decision-making and since there is no statutory body that centralizes aid allocation decisions, all spheres and departments are in principle free to approach donors for funding. However, guidelines published by the IDC Unit stresses the importance of coordination and the negative impact of a 'free for all'. The Unit therefore establishes a system where all requests for funding need to pass through the IDC (programme or project proposals). Since provinces and local authorities may not sign international agreements (only national Ministers are authorized to sign on behalf of the President) national sector departments need to be involved and effectively endorse funding requests from or funding to provincial and local authorities. The guidelines also require that both the heads of the relevant departments (Director General) and the political office bearer (minister or member of the provincial executive council) should sign. In practice, although some delegations have been put in place, the President signs all international agreements. The main legal instruments governing aid is the Public Finance Management Act, the treasury regulations and the RDP Fund Amendment Act and the Constitution. The RDP Fund is managed by the Office of the Accountant General.

CHAPTER THREE

LITERATURE REVIEW

3.0 Introduction

This chapter reviews both theoretical and empirical studies on the relationship between foreign aid and economic growth, as well as the determinants of growth pre and post foreign aid.

3.1 Foreign Aid and Economic Growth: The Theoretical Evidence

Foreign aid advocates argue that aid helps promote growth and investment in less developed countries (LDCs). According to Mosley (1987), the main theoretical case for aid rests on the presumption that foreign aid could fill the shortage of international capital. Therefore there is a positive causal relationship between aid and growth. Empirical studies from both aid advocates and aid antagonists have been subject to much criticism over their statistical errors and their simplistic assumptions of the aid-growth relationship. Mosley (1987) indicates that literature on aid and growth in LDCs has passed through three phases. The first phase: Chenery and Strout (1966) argue that all capital inflows represented net additions to an LDC's productive capabilities. The channel of this effect was expressed sometimes through the Harrod-Domar growth model and at other times in terms of the "two-gap" models, which purports that investment and development are restricted by level of either domestic saving or import purchase capacity, where economic growth is obtained by the removal of foreign exchange and/or the savings gap.

The Harrod-Domar model expressed by the formula $g=s/v$ where g is growth rate of output, s is the savings rate and v is the incremental capital output ratio states that the growth rate of output is equal to the savings rate divided by the incremental capital-output ratio. In the 1950s and 1960s this analysis was extensively used, for example, Chenery and Strout (1966) argued that foreign aid is a supplement to domestic savings and hence raised the growth rate of output to $(s+a)/v$ where a is foreign aid as a percentage of recipient GNP. This increase in the growth rate would raise income, and then the saving rate would increase because the marginal saving propensity is greater than average saving propensity in developing countries and hence the higher growth rate would become self sustaining without the need of further inflows of foreign aid. Thus, according to this view, inflows of foreign aid would have the effect of raising the savings rate in subsequent periods.

In the second phase: Griffin (1970), Griffin and Enos (1970) and Weisskopf (1972) challenge the assumption that foreign capital inflows add to capital formation without disturbing domestic

savings and consumption. They criticize the simplistic findings of the former group and emphasize that not all aid was an increment to the capital stock of LDCs since some aid was diverted for consumption purposes. Aid may also raise the capital output ratio (v); consequently, “if giving aid to a poor country depresses that country’s savings rate- or raises its capital output ratio- to a sufficient extent then there is a possibility that aid may suppress the recipient”. They performed empirical tests through cross sectional regression relating aid to savings rates across a sample of LDCs. These studies represented statistically significant negative correlations between foreign aid and domestic savings in most cases.

Griffin and Enos (1970) found that foreign aid has neither accelerated growth nor helped towards faster democratic political regimes. Foreign aid, at least in some countries, might impair rather than promote growth. If anything aid may have retarded development by leading to lower domestic saving by distorting the composition of investment and thereby raising the capital-output ratio; by frustrating the emergence of an indigenous entrepreneurial class and by inhibiting institutional reforms. It was further suggested that foreign aid increases consumption, and thus reduces the savings rate.

In the third phase: Papanek (1972, 1973) severely criticizes the methodology of his predecessors. Firstly authors were found guilty of combining aid with other foreign resource inflows. Secondly, they ignored the data problems that arise from using savings as an independent variable when in most LDCs it is calculated as a residual. “Most important of all, they inferred one way causal relationship from aid to saving levels in LDCs from an undoubted negative correlation between these two variables when what was more probably happening in many countries was that both lower savings ratios and high aid levels stemmed from an extraneous third factor, i.e., political and / or economic rises in the recipient country”.

The fourth phase was pioneered by Mosley (1980, 1987) where Mosley criticizes Papanek’s theoretical basis and attempted to estimate a modified equation relating aid to growth. Mosley’s criticism is based on the fact that although, there is a time lag between commitment, disbursement and the gestation period of foreign aid, the studies do not use any lag structure. Mosley also questioned the validity of Ordinary Least Squares (OLS) estimation of parameters in that if there is a two-way causation between growth and foreign aid then the OLS does not give good estimation. According to Mosley, there is a two-way causation. More specifically, foreign aid is related to and is influenced by the income level of the recipient country. The

hypothesis that foreign aid influences growth of income and in conjunction with the above proposition makes both income and foreign aid interdependent. In such an instance, Two Stage Ordinary Least Squares (TSLS) is the more appropriate estimation technique, as the use of OLS is likely to bring forth biased estimation of parameters; as Papanek (1973) has done.

Burnside and Dollar (1997), in their well-known paper “Aid, Policies, and Growth”, find that aid has a positive impact on growth in developing countries with good fiscal, monetary and trade policies but has little impact on countries where such policies are poor. They used data from 56 countries for six four-year periods from 1970-1973 until 1990-1993 and they constructed a growth convergence model, in which growth depends on the logarithm of real per capita GDP at the beginning of the period, incorporating the ratio of aid over GDP and an index measurement for macroeconomic policies in the right hand side of the equation. They explain that “aid can affect output only through its effect on the stock of capital, that is, to the extent that it is used for investment rather than consumption”. They argue that aid itself has small and insignificant impact but aid interacting with good policy has a significant positive impact on growth. In fact, policy seems very important for aid effectiveness in lower income countries. Moreover, the researchers show that aid follows diminishing returns to scale. Another finding is that there is no tendency for total aid or bilateral aid to favor good policy, while multilateral aid is allocated in favor of good policy.

According to the World Bank (1998) aid works well in a good policy environment and therefore a poor country with good policy should get more aid, which is not always the case in reality. A well-designed aid plan can support effective institutions and governance by providing more knowledge and transferring technology and skills. It is recommended to decentralize aid flows in recipient countries. Money aid is important but ideal aid is even more important. Aid can be the ‘midwife’ of good policy in recipient countries. In poor-policy countries, ideal aid is especially more essential than money aid. This implies that in a good-policy environment, aid increases growth via the investment channel whereas in a poor-policy environment, it nurtures reforms through policymakers training or knowledge and technology transfer. These non-money effects are believed to be even more important and viable than the money value of aid. Aid works much better where reform is initiated or internalized by local government rather than when it is imposed by outsiders. Therefore, aid is normally more effective when it facilitates efficient and timely reforms triggered by the local authority.

Singh (1985) found that foreign aid has a strong positive impact on economic growth in less developed countries (LDCs) for both periods of 1960-1970 and 1970-1980 when state intervention was not taken into account. When the state intervention variable is included in the regression, the effect of foreign aid gets statistically weak over time. Moreover, foreign aid is negatively affected by the domestic savings rate and positively when it is affected by per capita income, a country's size and exports.

Aid antagonists like Bauer (1989) claim there is a negative causal relationship between aid and growth in LDCs. This is because aid retards growth by substituting for savings and investments rather than supplementing them. Streeten (1978) argue that although private foreign investment is beneficial to growth in developing countries, the same cannot be said about foreign aid, even if the presences of this aid inflow remedies market distortions in some cases while, it creates them in others by reducing the supply of government effort and obstructing investment from the private sector .

Ouattara (2003) examined the relationship between foreign aid and economic growth in Cote d'Ivoire from 1975 to 1999 by assessing the impact of the different types of aid on economic growth. He categorizes foreign aid into project aid, program aid, technical assistance and food aid. Using a disaggregation approach with auto regressive techniques, he finds that (i) project aid displaces public savings; impact of program aid is almost neutral while technical assistance and food aid increase public savings; and (ii) that project aid, and to a lesser extent, program aid, worsened the foreign dependence of Cote d'Ivoire while technical assistance and food aid reduced the poverty gap.

Mavrota (2003) examined the impact of project aid and food aid on growth in Uganda and found that, project aid and food aid tended to reduce public investment whereas program aid and technical assistance positively affected public investment in Uganda. Giles (1994), applying a Granger causality test between foreign aid and economic growth finds a causal relationship between foreign aid loans, but not foreign aid grants, with economic growth in Cameroon.

Islam (1992) found that domestic resources have positive and significant impact on economic growth while foreign resources did not show any significant contribution in Bangladesh from 1972 to 1988. However, after foreign resources were separated into different categories, it was

observed that the loans were more effective than grants and food aid was more effective than project aid.

Chenery and Carter (1973), following the previous two-gap derived model of Chenery and Strout (1966) and using data from 50 countries over the period 1960-1970, show that the effects of official development assistance (ODA) on the development performance of countries under study are different among certain groups of countries. In five countries, namely Taiwan, Korea, Iran, Thailand and Kenya, foreign assistance accelerated economic growth whereas in six cases it retarded growth, i.e., India, Colombia, Ghana, Tunisia, Ceylon and Chile.

3.2 Foreign Aid and its Impact on Economic Growth: Empirical Evidence

There are two contrasting sides to this debate - one which argues that aid has a positive effect on economic growth, with even more impact in countries with sound economic and trade policies; and the other which contends that foreign aid causes corruption, encourages rent-seeking behavior, and erodes bureaucratic institutions. A renewed interest in explaining cross-country economic growth emerged in the early 1990s; with numerous studies attempting to answer the foreign aid question of the impact foreign aid has on economic growth. To date, however, there is no consensus among scholars as to the actual effects of foreign aid on economic growth.

The majority of the studies that found a positive relationship existing between foreign aid and economic growth have done so through several mechanisms: (i) aid increases investment (ii) aid increases the capacity to import capital goods or technology (iii) aid does not have an adverse impact on investment and savings (iv) aid increases the capital productivity and promotes endogenous technical change (Morrissey, 2001).

There have been several prominent studies which found a causal link between foreign aid and economic growth. Perhaps the most well-known of these was performed by two researchers for the World Bank, Craig Burnside and David Dollar (1997). They found that foreign aid enhances economic growth, so long as “good” fiscal policies are in place. These policies can include maintaining small budget deficits, controlling inflation, and being open to global trade. Durbarray, et. al. (1998) also found a positive association between foreign aid and economic growth, and confirmed Burnside and Dollar’s finding of positive impact on conditionality of good economic policy.

The study concluded, however, that the degree to which aid impacts growth depends largely on other factors as well, such as the geography of the place. Findings of Burnside and Dollar, in addition to that condition, found that aid is subject to decreasing marginal returns, indicating a threshold beyond which development assistance can become detrimental to economic growth. Papanek (1972) finds a positive relation between aid and growth. Fayissa and El-Kaissy (1999), show that aid positively affects economic growth in developing countries. Singh (1985) also finds evidence that foreign aid has positive and strong effects on growth when state intervention is not a condition. Snyder's study (1993), shows a positive relation between aid and growth when taking country size into account.

Burnside and Dollar (1997) proposes that aid works well in good-policy environment, has important policy implications for donor community, and multilateral aid agencies as well as policymakers in recipient countries. Developing countries with sound policies and high-quality public institutions have grown faster than those without them, with recorded 2.7% per capita GDP and 0.5% per capita GDP respectively. One percent of GDP in assistance normally translates to a sustained increase in growth of 0.5% per capita (World Bank, 2001). Some countries with sound policies which received only small amount of aid yet still achieved 2.2% per capita growth but a good-management, high-aid groups grew much faster, at 3.7% per capita GDP (World Bank, 1998). Morrissey (2001) claims that aid works well but must be conditional on other variables in the growth regression.

Papanek (1973), in a cross-country regression analysis of 34 countries in the 1950s and 51 countries in the 1960s, treating foreign aid, foreign investment, other flows and domestic savings as explanatory variables, finds that foreign aid has a substantially greater effect on growth than the other variables. He explains that "aid, unlike domestic savings, can fill the foreign exchange gap as well as the savings gap. Unlike foreign private investment and other foreign inflows, aid is supposed to be specifically designed to foster growth and, more importantly, is biased toward countries with a balance-of-payment constraint". He also finds a strong negative correlation between foreign aid and domestic savings, which he believes co-contribute to the growth performance.

Fayissa and El-Kaissy (1999), in a study of 77 countries over sub-periods 1971-1980, 1981-1990 and 1971-1990, show that foreign aid positively affects economic growth in developing countries. Modern economic growth theories point out that foreign aid, domestic savings, human

capital and export are positively correlated with economic growth in the studied countries. This is consistent with the economic theory of foreign aid, which asserts that overseas official development assistance accelerates economic growth by supplementing domestic capital formation (Chenery and Strout, 1966).

Snyder (1993), used the Papenek (1972) model, extended by Mosley *et al.* (1987) to analyze the relation between foreign aid inflow and the growth rate of gross domestic product in 69 developing countries over three periods (the 1960s, the 1970s and 1980-1987), incorporating country size (measured by gross domestic product) in the model. He contends that when country size is not included, the effects of aid are small and insignificant but when this factor is taken into account, the coefficient of aid becomes positive and significant. Therefore, by taking country size into account, one finds a positive and significant relationship between aid and economic growth. He emphasizes that “previous econometric analysis has not made allowance for the fact that larger countries grow faster, but receive less aid”. He also suggests that donors favor small countries for a number of reasons.

First, donors who are seeking support from recipient countries find it better to provide aid to many small countries than to focus on just a few large countries. With the same amount of aid, the proportion of aid over GDP will be bigger in small countries compared to that of larger countries and as a result, give donor countries more credits. Second, there is pressure on multilateral donors to deliver aid to all member countries and due to their feasible project size, small countries tend to receive more aid than they expected. Third, small countries tend to have historical colonial relations with donor countries, which are somewhat influential to donors’ aid giving decisions. Lastly, trade normally has a larger fraction of GDP in small countries than in big ones and therefore, these countries may be gaining more weight from aid, in donors’ assessment.

Other groups of scholars have found a negative relationship to existing between foreign aid and economic growth. There is also evidence that the effects of foreign aid can be mitigated by other non-economic factors. Situations of state challenges, such as ethnic conflict, genocide or politicide, and revolution can all potentially influence the extent to which aid impacts growth. Boone (1994) found that aid-intensive African countries experienced zero per capita economic growth in the 1970s and 80s, despite foreign aid actually increasing (as measured by share of GDP).

Gomanee (2002) argues that a high level of aid erodes institutional quality, increases rent-seeking and corruption, therefore, negatively affects growth. Using cross-country analysis, Knack,(2000) indicates that higher aid levels erode the quality of governance indexes, i.e. bureaucracy, corruption and the rule of law. He argues that “aid dependence can potentially undermine institutional quality, encouraging rent seeking and corruption, fermenting conflict over control of aid funds, siphoning off scarce talent from bureaucracy, and alleviating pressures to reform inefficient policies and institutions”.

Easterly, Levine and Roodman (2003), using a larger sample size to reexamine the works of Burnside and Dollar, find that the results are not as robust as thought. With a larger sample size (Easterly Levine and Roodmans’ 1970 to 1997 compared to BD’s 1970-1993), they find that the result is not as robust and they therefore claim that the question of aid effectiveness is still inconclusive.

According to Svensson (1998), large aid inflows do not necessarily result in general welfare gains and high expectation of aid may increase rent-seeking and reduce the expected public goods quality. Moreover, there is no evidence that donors take corruption into account seriously when providing aid.

Mbaku (2001), using the optimal growth model with foreign aid, foreign borrowing and endogenous leisure and consumption choice, finds that foreign aid depresses domestic saving, mostly channels people into consumption and has no relationship with investment and growth in developing countries. A permanent rise in foreign aid reduces long-run labor supply and capital accumulation, increases long-run consumption and has no impact on long-run foreign borrowing.

Pederson (1996) asserts that it is still not possible to conclude that aid affects growth positively. Using game theory, he argues that the problems lie in the built-in incentive of the aid system itself. The aid conditionality is not sufficient and the penalties are not harsh enough when recipient countries deviate from their commitments. In fact, there are incentives for aid donating agencies to disburse as much aid as possible. This hinders the motivation of recipient countries and raises the aid dependency, which in turn distorts their development.

3.3 Determinants of growth rates pre and post aid

In comparison to a no-aid pattern of growth, post-aid growth rates can be higher or lower depending upon three factors (i) initial poverty of country (ii) additional rise of government consumption as percentage of aid received and (iii) the term of aid. *Ceteris paribus*, an increase in the amount of aid given tends to increase post-aid growth. If domestic savings ratio is higher, the percentage of aid fungible into government consumption is lower. The critical assumptions are that government replaces portions of its savings with aid then allocates this freed money to other programs, which cannot be cut back once started (Dacy, 1975).

Collier and Delh (2001) argue that “the adverse effects of negative shocks on growth can be mitigated by offsetting increases in aid”. Therefore, they suggest that targeting aid towards negative-shock-experiencing countries could be more effective than towards good-policy countries. Using a 2.5% cut off in their sample size of 113 countries, they find 179 positive shocks and 99 negative shocks episodes. The interaction of the change in aid with positive shocks is insignificant, while the interaction of negative shock with the change of aid is significant at the 1% level. Additionally, incorporating shocks into Alesina-Dollar’s (1998) regression, Collier and Dehl (2001) show that so far donors have not taken shocks into account in aid allocation. Finally, they claim that aid effectiveness might be increased significantly if both policy and adverse export price shocks are considered in determining aid allocation.

3.3.1 Conclusion

The results of research on the relation between aid and growth vary depending upon the models, data and countries of analysis. Thus the debate over the impact of aid on growth is thus on-going implying there is need for further research.

CHAPTER FOUR

METHODOLOGY

4.0. Introduction

This chapter presents the methodological approach used to analyze the impact of foreign aid on the South African economy. The research covers the period 1980-2008. This chapter is divided into two main parts, the first, is the model specification which includes the theoretical basis for the model and empirical model specification and lastly the data and estimation techniques.

4.1. Model Specification

The model utilised in this study follows the specification of Duc's (2006) endogenous growth model. The standard growth regression expresses the growth rate of per capita real GDP as a function of the initial level of income, the level of aid as a fraction of GDP, and some exogenous variables (control variable). Burnside and Dollar (1997) specify the equation as follows:

$$G_t = f(Y_t, A_t, P_t, X_t) \dots \dots \dots (4.1)$$

where:

G_t represents the growth of per capita real GDP

Y_t is initial level of income

A_t is the foreign aid-GDP ratio

P_t is the policy index

X_t is the set of exogenous variables

4.1.1 Empirical Model Specification

Following the approach of Burnside and Dollar (1997) and Duc (2006), this study examines the role played by foreign aid in South Africa's economic growth. This is in part a test of the Burnside and Dollar (2000) hypothesis that good policy recipient countries tend to experience foreign aid positively. Following Burnside and Dollar (1997) we consider the role of monetary policy and trade policy in the impact of aid on growth by including the inflation and trade openness variable. The foreign aid literature suggests that one of the channels through which foreign aid affects economic growth is via its impact on domestic savings and investments.

Chenery and Strout (1966) and Papanek (1973) posit that foreign aid fills the savings gap. To this end, we include the domestic savings variable in the model. To the extent that a country is open to international trade, foreign aid is seen as enabling imports, especially of capital goods and technology, which in turn help to improve the country's export ability and therefore is growth enhancing. We therefore include the openness variable in the model. After extensive examination of the empirical literature, and specifically borrowing from the works of Duc (2006) and Burnside and Dollar (1997), the model utilised in this study is expressed as follows:

$$GDPC_t = \beta_0 + \beta_1 FDI_t + \beta_2 ODA_t + \beta_3 INFL_t + \beta_4 SAVE_t + \beta_5 TOT_t + \varepsilon_t \quad (4.2)$$

Where:

$GDPC_t$ denotes the growth rate of real per capita GDP

ODA_t denotes the ratio of official development assistance to GDP

FDI_t denotes the ratio of foreign direct investment to GDP

$SAVE_t$ denotes the ratio of gross domestic saving to GDP

$INFL_t$ denotes the inflation rate

TOT_t denotes the terms of trade (imports plus exports as a proportion of GDP)

ε_t represents the error term

As an engine of growth, trade openness is expected to exert a positive impact on growth, hence $B_5 > 0$. Countries benefit from trade thanks to the specialization of production based on their comparative advantages and economies of scale. Furthermore, trade is expected to have a positive impact on growth in the long-run in terms of positive externalities such as imported technology and increased knowledge base. However, developing countries are currently facing the problem of declining terms of trade (TOT), in which the price of their exports, relative to imports, falls. For South Africa, given its relatively high degree of trade liberalization, it is expected that trade will positively enhance growth. We use the 'terms of trade' (TOT) as proxy for this variable.

ODA can go either into physical capital formation if the aid is capital-intensive or into human capital investment if the aid is knowledge or technology intensive. As Burnside and Dollar (1997) indicate, aid is effective only if it is invested, not consumed. The impact of foreign aid though, still remains ambiguous but is likely to be positive in good-policy countries where the

reform is initiated by government and supported timely and efficiently by donors. However, a number of factors such as the fungibility of aid, poor institutions and corruption, may hinder the efficiency of aid. Therefore it is expected a priori that foreign aid can negatively or positively impact on growth in South Africa. In this study, we use official development assistance (ODA) as the proxy for foreign aid.

The savings rate positively affects growth. Savings raises capital stock and helps to improve social and economic infrastructure. This implies that countries with higher savings rates grow faster. South Africa's gross domestic savings rate has over the years declined as the decline in government and private savings have further pulled down the rate. It is therefore expected that in this case, foreign aid will substitute for domestic savings rather than complement it (crowding out of domestic savings) and therefore the expectation is for savings to negatively impact on growth.

Theoretically, foreign direct investment (FDI) is believed to enhance economic growth through improvement in technology, efficiency and productivity. In short, it is a channel through which advanced technology and management practices are transferred from developed to developing countries.

Inflation is added as a measure of overall economic stability of a country, it is expected to have an indirect relation between inflation and economic growth, implying that an unstable macroeconomic environment discourages growth.

4.2. Data and Estimation Techniques

4.2.1 Data Sources, Time Domain and Definition of Variables

4.2.1.1 Data Sources and Time Domain

This study utilises secondary data obtained from the World Bank Development Indicators (WDI) online data base. Data on official development assistance (proxy for foreign aid) is obtained from the OECD foreign aid database (OECD.org). The former political situation in South Africa had excluded the nation from the global economy, foreign aid inflows into the country was limited. Taking data availability into account, the period under consideration in this study is from 1980-2008. This study employs annual data due to the difficulties of obtaining foreign aid data in other frequencies.

4.2.1.2 Variables definition

GDP denotes growth rate of per capita GDP (at constant prices) and is computed as a ratio of total population. GDP per capita is gross domestic product divided by midyear population. GDP at purchaser's prices is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. FDI is the ratio of foreign direct investment to GDP. SAVE is the ratio of domestic savings to real GDP. Gross domestic savings is calculated as real GDP less final consumption expenditure (total consumption). INFL denotes the inflation rate. It is the percentage rate of change in price level over time, usually one year. AID is taken as official development assistance and is computed as the ratio of official development assistance³ to GDP. TOT denotes the percentage of trade to real GDP, and is calculated as the sum of exports and imports of goods and services measured as a share of real GDP. TOT is the sum of exports and imports of goods and services measured as a share of gross domestic product.

4.2.2 Estimation Techniques

The study employs error correction model as an estimation technique. ECM is a vector Autoregressive (VAR) based cointegration method. Before any estimation is undertaken, it is imperative that the time series characteristics of the data are examined. Due to the fact that time series data pose serious challenge to economists by exhibiting certain traits that are undesirable (i.e. spurious regression), it is important to ensure that they are stationary or rid of unit root to avoid spurious or biased results. Thus, the stationarity characteristics of the data is tested. To determine the existence of a long run relationship between the variables, cointegration analysis is also undertaken. If cointegrated, then following Granger's point (1987) there is an error correction representation of the model (ECM).

³ Net official development assistance (ODA) consists of disbursements of loans made on concessional terms (net of repayments of principal) and grants by official agencies of the members of the Development Assistance Committee (DAC), by multilateral institutions, and by non-DAC countries to promote economic development and welfare in countries and territories in the DAC list of ODA recipients. It includes loans with a grant element of at least 25 percent (calculated at a rate of discount of 10 percent).

4.2.3 Stationarity Tests

The popular test used for stationarity in time series models is the unit root tests.

Consider
$$Y_t = Y_{t-1} + U_t \quad (4.3.1)$$

where U_t = stochastic error term or the white noise error time. Equation (4.3.1) is a first order or AR (I) regression in that the value of Y in the previous period (Y_{t-1}) is regressed against the value of Y in the current period (Y_t). If the coefficient of Y_{t-1} is equal to 1, we face what is known as the unit root problem, i.e., a nonstationarity situation.

Assume
$$Y_t = \rho Y_{t-1} + U_t \quad (4.3.2)$$

If we run the regression on equation 4.3.2 and find that $\rho = 1$, then the stochastic variable Y_t has a unit root and thus the time series data will be known as a random walk. A time series that has a unit root is known as a random walk, which is an example of a nonstationary time series.

A time series differenced once before becoming stationary has its original random walk series integrated of order 1, denoted $I(1)$. Similarly if the original time series has to be differenced twice before it becomes stationary, the original series is integrated of order 2, or $I(2)$. Generally, if a time series has to be differenced d times before integrated time series of order I or greater, results in a nonstationary time series, this often results in spurious correlation among economic variables with t and f statistic being invalid.

4.2.3.1. Dickey Fuller and Augmented Dickey Fuller and PP test

This study uses the Dickey Fuller, Augmented Dickey Fuller as well as the Phillip Peron test for stationarity. Of the several ways of detecting non-stationarity in time series data as evident in the economic literature, the Dickey-Fuller (DF) test designed by Dickey and Fuller (1979) is the most popular method used. The test examines the hypothesis that the variable in question has a unit root and as a result is likely to benefit from being expressed in first differenced form because the variable will become stationary on expression in such a form.

In order to run a Dickey-Fuller (DF) test, the following OLS regressions are run:

$$\Delta Y_t = \delta Y_{t-1} + U_t \quad (4.3.3)$$

$$\Delta Y_t = \alpha_0 + \delta Y_{t-1} + U_t \quad (4.3.4)$$

$$Y_t = \alpha_0 + \alpha t + \delta Y_{t-1} + U_t \quad (4.3.5)$$

where Y = explanatory variables, t = time or trend variables, Δ = first difference operator. The null hypothesis, H_0 , in case if $\delta=0$ (i.e, the variable Y , has unit root), and the alternative hypothesis, H_A , in each case is $\delta \neq 0$ (i.e, the variable Y does not have a unit root).

Equation (4.3.3) is the Dickey-Fuller equation without a constant and without a time trend; Equation (4.3.4) is the Dickey-Fuller equation with a constant, but without a time trend; and lastly, Equation (4.3.5) is the Dickey-Fuller equation with a constant and a linear time trend.

If in the regression of the above equations (4.3.3), (4.3.4), (4.3.5) and subsequent testing of the residuals, it is observed that the residuals are not 'white noise' (i.e. they do not follow classical assumptions), then it implies that the Dickey-Fuller test presented above is invalid, and a modification is thus necessary. This modification can be done to any of the above equations, depending on the equation being used for the test. The modification is illustrated as follows using equation (4.3.6):

$$\Delta Y_t = \alpha_0 + \alpha_1 t + \delta Y_{t-1} + \sum \delta \Delta Y_{t-j+1} + U_t \quad (4.3.6)$$

The above equation (4.3.6) is called the Augmented Dickey-Fuller (ADF) equation. This is because the Dickey-Fuller equations have been "augmented" with the lagged difference term to produce the equation. One of the reasons for augmenting the initial Dickey-Fuller equations with extra lagged differenced terms was to examine possible autocorrelation in the disturbances.

The test statistic does not follow the usual t -distribution under the null, since the null is one of non-stationarity, but rather follows a non-standard distribution. The critical values are provided by Fuller (1976). The decision rule for the unit root tests is that the null hypothesis of a unit root is rejected in favor of the stationary alternative in each case if the test statistic is more negative than the critical value.

4.2.3.2 Estimation when a unit root may be present

Often, ordinary least squares (OLS) is used to estimate the slope coefficients of the autoregressive model. Use of OLS relies on the stochastic process being stationary. When the stochastic process is non-stationary, the use of OLS can produce invalid estimates. Granger and Newbold (1973) called such estimates 'spurious regression' results: high R^2 values and high t -ratios yielding results with no economic meaning.

4.2.3.3 Phillips Perron Test

In statistics, the Phillips–Perron test (named after Peter C. B. Phillips and Pierre Perron), 1998, is a unit root test. That is, it is used in time series analysis to test the null hypothesis that a time series is integrated of order 1. It builds on the Dickey–Fuller test of the null hypothesis $\delta = 0$ in $\Delta y_t = \delta y_{t-1} + u_t$, where Δ is the first difference operator. Like the augmented Dickey–Fuller test, the Phillips–Perron test addresses the issue that the process generating data for y_t might have a higher order of autocorrelation than is admitted in the test equation - making y_{t-1} endogenous and thus invalidating the Dickey–Fuller t-test. Whilst the augmented Dickey–Fuller test addresses this issue by introducing lags of Δy_t as regressors in the test equation, the Phillips–Perron test makes a non-parametric correction to the t-test statistic. The test is robust with respect to unspecified autocorrelation and Heteroscedasticity in the disturbance process of the test equation (Dickey and Fuller, 1979).

4.2.3.4 Co-Integration Tests

The theoretical interpretation of co-integration is that if the variables are linked to form an equilibrium relationship spanning the long-run, then even though the variables are non-stationary in their levels, they will nevertheless move closely together over time and the difference between them overtime will be stable or stationary. It can then be interpreted that the concept of co-integration mimics the existence of a long-run equilibrium to which the system converges over time, and that the residual (disturbance term) obtained from the long run equation can be interpreted as the distance or the disequilibrium error, that the system is away from the equilibrium position at time t. For variables to be co-integrated, they must be integrated of the same order, as well as having common stochastic trends (Malik, 2005).

In co-integration literature of time series, the hypothesis test developed for co-integration, tests the null hypothesis for no co-integration. Several tests have been developed to test for co-integration including Johansen (1989) procedure and Engle-Granger (1987). This study employs the Engle-Granger approach to cointegration.

The former method for the testing of cointegration was introduced by Granger (1981) who introduced the linkage between non stationary processes and long run equilibrium. This concept was further developed by Engel and Granger (1987) in what became known as the Engle Granger (EG) two stage approach. The first step in this two stage approach to testing for cointegration requires determination of the order of integration of the variables. Once the order

of integration is known, the long run equilibrium relationship is then estimated in order to obtain the residuals. The test ignores the stationarity of the variables.

The next stage of this procedure requires that one tests for the order of integration of the residuals of the long run relationship. We therefore perform an Augmented Dickey Fuller (ADF) test on the residual series to determine the order of integration. If the deviations from the long run equilibrium are found to be stationary, then the variables are said to be cointegrated. The existence of cointegration among the variables implies that an error correlation model can be estimated and used to analyze the long and short run effects of variables (Asteriou and Hall, 2007).

The importance of lag length determination is demonstrated by Braun and Mitnik (1993) who show that estimates of a VAR whose lag length differs from the true lag length are inconsistent as are the impulse response functions and variance decompositions derived from the estimated VAR. Lütkepohl (1993) indicates that over fitting (selecting a higher order lag length than the true lag length) causes an increase in the mean-square forecast errors of the VAR and that under fitting the lag length often generates autocorrelated errors. Hafer and Sheehan (1989) find that the accuracy of forecasts from VAR models varies substantially for alternative lag lengths.

The most common method of determining the lag length is to estimate a Vector autoregressive (VAR) model, using all the variables in their level forms. Most VAR models are estimated using symmetric lags, i.e. the same lag length is used for all variables in all equations of the model. The lag selection criteria considered include Akaike's information criterion (AIC), Schwarz's information criterion (SIC), Phillips' posterior information criterion (PIC), and Keating's (1995) application of the AIC and SIC criterion (KAIC and KSIC).

Once it is determined that the variables are cointegrated, we can then estimate an error correction model (ECM). Error correction model (ECM) captures both the long run and short run effects. This specification also helps in recovering some information that is lost when differencing non-stationary data. An ECM is advantageous and preferred for numerous reasons. Firstly, it is convenient and enables the determination of the correction of past period disequilibrium. This has good economic implication. Second, since the variables used in the model are stationary (having been differenced) the problem of spurious regression and biased

results is eliminated. Third, ECMs fit into the general to specific approach to econometric modeling and allows for the best fit to be obtained given the data set. Lastly the ECM implies that there is some adjustment process that prevents the errors in the long run relationship becoming larger and larger (Asteriou and Hall, 2007).

CHAPTER FIVE

ESTIMATIONS AND RESULTS

5.0 Introduction

This chapter presents, interprets and analyses the results followed in the econometric estimation of the empirical model utilised in the study. The chapter is divided into four subsections. The first subsection, 5.1, gives a brief discussion on the descriptive statistics of the variables employed in the model estimation. Subsection 5.2 details the findings of the unit root tests applied to the chosen data set in order to determine the time series properties of the individual variables. Subsection 5.3 presents cointegration analysis that is used to determine the existence of a long run relationship between the variables in the model. Subsection 5.4 provides the error correction model (ECM) and includes discussion of the results obtained from the ECM.

5.1. Descriptive statistics of variables

Table 5.1: Descriptive statistics

Variable	Mean	Std Dev	Skewness	Kurtosis	Jarque-Bera
GDPC	0.462	2.637	-0.326	1.984	1.762 (0.414)
FDI	0.775	1.403	2.361	2.267	66.842(0.000)
INFL	10.038	4.863	-0.255	2.267	0.964 (0.617)
ODA	5.9049	4.576	0.668	1.989	3.390 (0.184)
SAVE	22.172	5.224	1.189	3.916	7.859 (0.020)
TOT	110.241	7.386	1.105	4.292	7.921 (0.019)

Jarque-Bera Probability statistics are in parenthesis

The aspects of the descriptive statistics that are emphasized are the skewness, kurtosis as well as the Jarque-Bera (J-B).⁴ The skewness measures the symmetry of the distribution of the series around its mean. Positive skewness implies that the distribution has a long right tail, while a negative skewness means the distribution has a long left tail. Kurtosis measures how flat or how the distribution of the series is peaked. A kurtosis of more than three (3) implies that the distribution is peaked relative to the normal, while a kurtosis value of less than three implies a flat distribution also relative to the normal. Perhaps of most important is the Jarque-Bera statistic. This is a test statistic for testing if the series is normally distributed. It measures the difference between the skewness and kurtosis of the series with those obtained from the normal

⁴ Details of how the skewness, kurtosis and Jarque-Bera values are calculated, refer to the Eviews users guide

distribution. The reported probability is that of the Jarque-Bera and it refers to the probability that the J-B statistic is greater (in absolute terms) than the observed value under the null hypothesis of normal distribution. A small probability value leads to the rejection of the null hypothesis of a normal distribution. From Table 1 above GDPC and INFL are negatively skewed, while ODA, SAV, TOT and FDI are positively skewed. Apart from GDPC, INFL and ODA the distribution of the remaining variables is peaked relative to the normal distribution. With the exception of FDI, SAV and TOT the other series are normally distributed⁵.

5.2. Time Series Properties and Cointegration Results

The essence of regression analysis is in part to estimate long term (and short term) meaningful economic relationships and to use estimated model parameters to evaluate if such relationships conform to pre-specified theoretical hypotheses. However, estimating regression parameters and carrying out various hypotheses testing without the appropriate investigation of the data generating process underlying variables at work, may lead to false conclusions with regard to the existence and significance of meaningful economic relationships (Enders 2006). According to Gujarati (1995), empirical work based on time series data assumes that the underlying time series is stationary. Given this assumption, we start our data analysis process by checking whether the variables employed in the chosen model are stationary or not. A stationary time series is defined as one whose structure (mean, variance, and covariance) does not change with respect to time. A non-stationary time series is one whose structure is variant with time or one where the movements are not time invariant. It follows that fitting regression equation by regressing one non-stationary variable on another is very likely, according to Badawi (2006), to result in impressive-seeming regression results which are highly spurious.

5.2.1 Unit root test

To avoid the problem of basing findings of the study on spurious regression that falsely implies the existence of meaningful economic relationships, it is vital that tests for the presence of unit roots are carried out to determine the univariate properties of the time-series.

Before undertaking the stationarity tests, we carry out a visual observation of the variables to determine if they are stationary or not (Appendix 2). The observations suggest that the variables are non-stationary. We therefore proceed to the formal tests for stationarity. The most popular

⁵ The significance of the probability values of the J-B statistic informs the normality distribution of the variables

test for stationarity is the Dickey Fuller and the Augmented Dickey Fuller test (Dickey and Fuller 1979, 1981) due to its perceived simplicity. To test for stationarity we rely on the unit root tests of Phillips and Peron (1988) as well as the augmented Dickey-Fuller (ADF). The ADF test indicates that all the variables are stationary at levels with the exception of the savings rate (SAVE), foreign aid (AID) and inflation (INFL). These variables become stationary after differencing once. The Phillip Peron (PP) test statistics support the results from the ADF test.

Table 5.2: Result of unit root test

Variables	Level				First difference			
	ADF _{mu}	ADF _{ta}	PP _{mu}	PP _{ta}	ADF _{mu}	ADF _{ta}	PP _{mu}	PP _{ta}
A. Inflation rate (Inf_t)	-1.52	-2.28	-1.47	-1.98	--3.74	-4.22	--4.41	-4.09
B. Gross domestic product per capita ($GDPC_t$)	--3.13	--5.03	--3.14*	--4.52	-5.98	-5.93	--7.10	--7.44
C. Official Development Assistance (ODA_t)	--1.91	--2.82	--1.99	-2.82	--6.49	--4.22	--8.06	--9.39
D. Savings Rate (SAV_t)	-3.88	-4.07	-3.73*	-3.43*	-5.39	-5.33	-5.39	-5.66
E. Foreign Direct Investment (FDI_t)	-4.22	-5.83	-4.26	-6.22	-6.63		-6.63	-5.82
F. Terms of Trade (TOT_t)	-3.44*	-3.43	-3.72	-3.43	-5.54	-5.32	-4.70	-4.32

Notes: (i) Critical values for ADF and PP statistic at level (with intercept) at 5%, is -2.87. (ii) Critical values for ADF and PP statistic at level (with intercept and trend) at 5% is - 2.97. (iii) Critical values at first difference for ADF and PP statistic (with intercept) at 5% is -2.97. (v) Critical values at first difference for ADF and PP statistic (with intercept and trend) at 5% is - 3.58.

* Significant at 10% level.

With the lag order not typically known in empirical applications, econometric literature proposes the use of information criteria to select the optimal lag order of a VAR specification. For this study we consider three selection criteria, namely the Akaike (1974) information criterion (AIC), the Schwarz (1978) information criterion (SC) and Akaike's final prediction error criterion (FPE). In addition, we supplement these selection criteria with a series of diagnostic tests to check whether the lag lengths selected by each information criterion, residuals are free from first order

autocorrelation, homoscedastic and are normally distributed. Before determining whether the variables are cointegrated, the appropriate lag length must be selected. All three tests for the lag length structure indicate that the appropriate lag length is 1 (see Table 5.3 below).

5.2.2. Lag Length Criteria

Table 5.3: Lag length structure

LAG	LogL	LR	FPE	AIC	SC	HQ
0	-349.5	NA	30102.3	27.34	27.63	27.42
1	-270.06	115.97	1163.7	24.00	26.04	24.59
2	-241.9	28.19	3533.0	24.61	28.38	25.69
3	-130.3	60.08*	64.08*	18.79*	24.31*	20.38*

* indicates lag order selected by the criterion

LR: sequential modified LR test statistic (each test at 5% level)

FPE: Final prediction error

AIC: Akaike information criterion

SC: Schwarz information criterion

HQ: Hannan-Quinn information criterion

5.2.3 Cointegration test

Once the appropriate lag length had been detected, cointegration amongst the variables is then tested. Once the order of integration has been determined, it is essential to determine whether the variables are cointegrated. Cointegration analysis can be theoretically interpreted that even though variables are non-stationary in their levels, over time they will trend together and eventually become stationary if the variables are linked to run an equilibrium relationship spanning the long run. If there exists at least one cointegrating vector or equation, it implies that estimating an error correction is possible.

The basic idea is that if there are economic time series that are integrated of the same order, we can then proceed to check if it is indeed possible to combine the series together into a single series that is itself stationary. If this is possible, then such a series can be said to exhibit the characteristics of being cointegrated. The main concept of cointegration allows the detection of long run equilibrium relationships. Most time series are non-stationary and therefore integrated. The issue is to have non-stationary variables in order to detect amongst them stationary cointegrating relationship(s) and avoid the problem of spurious regressions.

The unit root tests on the variables indicate a mix of both I (0) and I (1) variables. It is still possible however to examine if there are any cointegrating relationships amongst the variables. Asteriou (2006) emphasizes that “while the desirable case is when all variables are integrated of the same order and then to proceed with the cointegration test. However, in practice it is important to stress that this is not always the case, and that even in cases where a mix of I (0) and I (1) variables are present in the model, cointegrating relationships might exist” (Asteriou 2006). Given this possibility, we proceed and check if there are indeed any cointegrating relationships amongst our variables. The results are shown below. In order to test for this, the method proposed by Johansen (1988) and applied by Johansen and Juselius (1990) is utilized. The results of the Maximum Eigenvalue (ME) and Trace (TR) tests presented in Table 5.4 support the hypothesis that there is one cointegrating relationship between the variables considered.

Table 5.4: Cointegration Tests

Unrestricted cointegration rank test (Trace)					Unrestricted cointegration rank test (Maximum Eigen value)			
Hypothesized number of CE's	Eigenvalue	Trace statistics	0.05 critical level	probability	Hypothesized number of CE's	Maximum Eigenvalue statistics	0.05 critical level	Probability
None*	0.991	245.43	95.75	0.000	None*	122.32	40.08	0.000
At most 1*	0.886	123.11	69.81	0.000	At most 1*	56.48	33.88	0.000
At most 2*	0.826	66.64	47.86	0.000	At most 2*	45.46	27.58	0.000
At most 3	0.402	21.18	29.79	0.347	At most 3	13.37	21.13	0.419
At most 4	0.249	7.81	15.49	0.486	At most 4	7.46	14.26	0.436
At most 5	0.013	0.35	3.84	0.554	At most 5	0.35	3.84	0.554

*denotes rejection at of the hypothesis at 5%level of significance

The result of the cointegration test shows that there are three cointegrating equations at 5% level of significance amongst the variables. The cointegration test indicates that $r=3$, given that $n=6$, this implies that the three long run relationships will enter into each of the six equations.

The Johansen cointegration test results indicate the presence of three cointegrating equations. To determine the three cointegrating equations, normalization of variables must occur, in this

case, one must be guided by economic theory. According to Sichei, 2005, “there are no econometric rules that can be followed in any mechanical way which is informed by economic theory”. However, the magnitude of this relationship is not spelt out in economic theory, in other words there is no theory guiding the restrictions to be imposed on the variables in the model. In the specific case of our single equation model, the study is specifically interested in determining the kind of relationship that exists between economic growth and foreign aid.

The Johansen method identified that there are three cointegrating relations. Since our main aim is to determine the relationship between foreign aid and growth, we proceed and employ the Engle-Granger single equation approach to confirm whether the equation is part of the cointegrating vector identified. We therefore go further and employ the Engel-Granger 2 step approach to cointegration and examine the stationarity of the residuals. The first step requires running a long run regression on the variables at level and then testing the residuals for stationarity.⁶ If the residuals are indeed stationary, then the variables are said to be cointegrated.

The second step of the Engel- Granger approach is the residual based approach which requires testing the residual for unit roots. If the residuals are indeed stationary then it can be concluded that there is cointegration among the variables.

Table 5.5: Results of the Residual Based Stationarity Test

Variable	ADF-t	Critical t	Lag	R ²	DW	F-Statistic(prob)
Growth model	-5.337	-2.972	0	0.52	1.74	28.480(0.0000)

From Table 5.5 above, it can be observed that the residuals are indeed integrated of order zero since the calculated ADF statistic is larger than the critical ADF statistic. We can therefore conclude that the existence of the cointegrating relationships is accurate. Hence confirming that indeed the growth model forms part of the cointegrating relationships identified by the Johansen technique. Since the hypothesis of no cointegrating equations is therefore rejected and we have ascertained that there is cointegration amongst the variables, an error correction modelling approach can then be utilized in getting the long run relationship evidenced by the cointegration test.

⁶ Results of the OLS regression are provided in appendix 4.

5.3. Error Correction Model (ECM)

From the above, it is determined that there exists a cointegrating relationship amongst the variables in the model. We can then proceed to estimate the error correction model. The error correction model approach explains the speed of adjustment of the model back to equilibrium. The speed of adjustment back to equilibrium is given by the coefficient of the error correction term (ECT), which indicates how fast equilibrium is attained.

The estimation approach takes a general to specific approach. This approach, developed by Hendry and Richard (1983) eliminates the variables which remain insignificant once lagged. Hendry and Richard (1983) suggest that the elimination of the insignificant variables be based on statistical probabilities rather than economic theory. The elimination of the insignificant variables from the overparametized model yields the parsimonious model. The result of the ECM regression is provided in Table 5.6 below.

Table 5.6 Results of Error correction model.

Variable	Coefficient	Std Error	T-statistic	Prob
D(INFL(-1))	-0.59	0.173	-3.409	0.004*
D(INFL(-2))	-0.28	0.153	-1.839	0.084***
D(ODA(-1))	0.23	0.230	0.986	0.339
D(SAVE)	-0.28	0.297	-0.932	0.365
FDI	0.44	0.249	1.752	0.009*
FDI(-1)	1.04	0.297	3.505	0.003*
FDI(-2)	1.19	0.301	3.963	0.001*
TOT	0.31	0.074	4.204	0.000*
ECT(-1)	-0.56	0.302	-1.854	0.082***
C	-36.07	8.31	-4.34	0.000*

The asterix * ** *** indicates 1%, 5% and 10% levels of significance

Econometric and Diagnostic Tests:

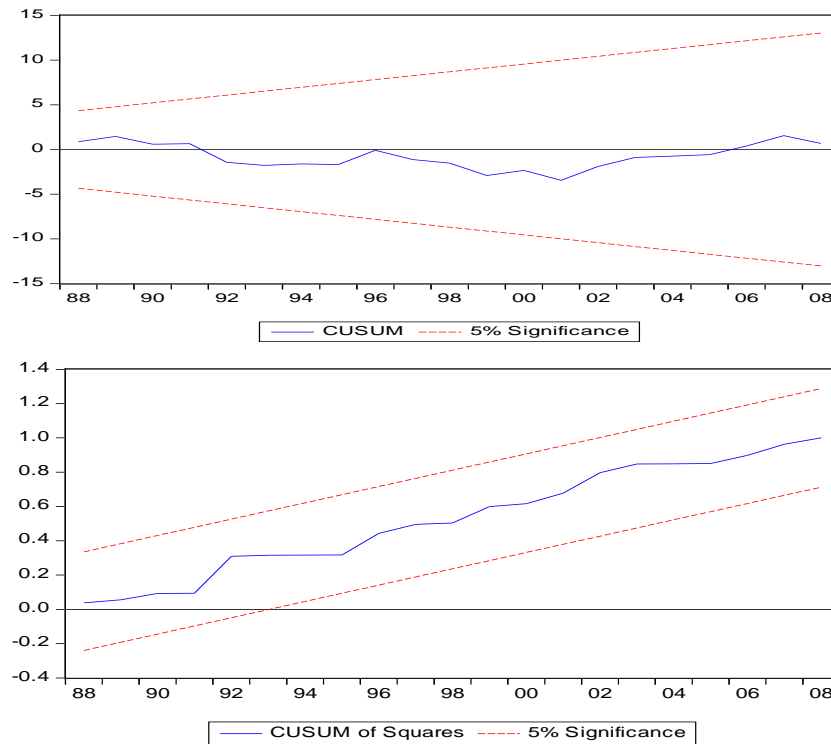
R-squared	0.71	J-B test=2.36(0.31)	
Adjusted R-squared	0.55	LM test=1.85(0.193)	
F-statistic	4.41(0.005)	Heteroskedasticity=0.15(0.99)	
Ramsey Reset test	=0.63(0.45)	Durbin-Watson	1.98
AIC	=4.20	SC	=4.68
HQ	=4.34		

5.3.1 Explanation of regression results

The results indicate that inflation, foreign aid (ODA) and savings have a short run impact on economic growth, while foreign direct investment and terms of trade have a long run impact on economic growth. All the variables with the exception of the savings/GDP ratio (SAVE) and foreign aid (ODA) are significant in explaining growth in per capita GDP (GDPC) in South Africa. All the variables, except the savings rate have the expected signs. The variables in the model explain 71 percent of the variations in growth in GDPC and are all jointly significant as indicated by the F-statistic. The coefficient of the error correction term captures the speed of adjustment to equilibrium. More precisely it captures the proportion of disequilibrium that is corrected in the next period. The coefficient of the error correction term should ideally lie between 0 and -1. From the results above, this coefficient is statistically significant at 10% level of significance. The coefficient of the ECT is negative implying that the model approaches equilibrium and the fact that it is less than one, indicates to us that the adjustment back to equilibrium is not instantaneous. The ECT indicates that approximately 56% of last period's errors are corrected in the present period.

To rule out any model misspecification and possible serial correlation and heteroskedasticity which will bias the results, diagnostics tests are performed. The tests indicate that the model does not suffer from misspecification, serial correlation and heteroskedasticity. However, given that the DW test is limited due to the fact that it does not consider higher order serial correlation, the Breush-Godfrey LM test developed by Breush and Godfrey (1987) is utilized. The test yields an F statistic of 1.85 and the probability of 0.193, indicating that the model does indeed not suffer from serial correlation. The ARCH test for heteroskedasticity gives an F statistic of 0.15 and a probability of 0.63, confirming that the residuals are homoscedastic. The Ramsey Reset test for misspecification gives an F statistic of 0.63 pointing to the acceptance that the model is not mis-specified. The Jarque-Bera statistic confirms that the estimated residuals are normally behaved with the J-B statistic of 2.36 and a probability of 0.31. In addition, tests for parameter stability, i.e the CUSUM and CUSUM of squares tests were carried out and the results indicate that the parameters are stable over the sample period.

Figure 4: CUSUM and CUSUM of Squares



From the model above the coefficient of inflation and its lags have the expected sign and are statistically significant. The results imply that increase in the rate of inflation has a negative impact on growth in the South African economy. According to economic theory, inflation affects growth negatively. In this analysis, the effect of inflation is no different. An increase in the level of inflation causes a decline in the growth rate of per capita GDP as shown by the coefficient. This result is supported by previous works by Fischer (1993); Barro (1995); De Gregorio (1995); Sarel (1996). The existence and nature of the relationship between inflation and output are empirical issues. Two different approaches have been used in the empirical literature. The growth regression approach with the general feature that inflation is harmful to long run growth in higher inflation countries (Ahmed & Roger, 2000). An alternative approach based on time series data report mixed results depending on the method of estimation. The finding of recent studies (Fischer and Modigliani, 1978; Barro, 1995) is that countries that maintain low levels of inflation generally experience higher rates of economic growth in comparison to countries that endure high levels of inflation, over a medium to long-run horizon. This is based on the idea that lower levels of inflation result in increased economic efficiency leading to a better allocation of

resources within the economy. The common thread in the findings of these studies is that inflation is estimated to negatively affect growth.

The *a priori* expectation on the effect of FDI on growth was ambiguous. The coefficient of FDI and its lag have a positive sign and are highly significant⁷. The results indicate that FDI positively affects economic growth in South Africa. Theoretically, political turmoil is a disincentive for investors because of the inhospitable economic environment and also because political instability makes it difficult for them to forecast their profits and creates an environment of uncertainty in that regard. Historically, the pattern of FDI inflows into South Africa has been a negative one. The country experienced a high level of disinvestment up to late 1994 due to investors pulling out in support of democracy. As a proportion of gross domestic product, the FDI/GDP ratio for South Africa has been small. During the apartheid era, governments of the foreign investor countries ordered them to withdraw from the country. There was also heavy boycott of the economy by the outside world as a way to show politically that they did not agree with the regime. The withdrawal of foreign firms and their affiliates had devastating effects on FDI in South Africa. Post 1994 has seen significant inflows of FDI into South Africa, buoyed by concerted effort by the government to create an environment that attracts foreign direct investment through its investment policy that gives concessions such as tax breaks to investors.

Savings has a short run impact on growth in South Africa. The coefficient of the savings ratio is negative but statistically insignificant. Implying that domestic savings does not contribute significantly to growth in South Africa. Similar results were also observed by Duc (2006) for thirty nine developing countries; a result that contradicts assertions of growth models such as Harrod-Domar. If one looks at the data on national savings in South Africa, the results are not surprising, especially when assessed within the context of the country's savings trend.

By 1960, South Africa had become the world's leading producer of gold. Owing to a boom in gold prices, South Africa's economy grew at an annual average of 5% - 7%. The windfall profits earned from gold exports provided sufficient resources for investments in an industrial policy that created a new generation of highly capitalized public parastatals that engaged in significant

⁷ The lags of FDI and inflation are included in the model as it is assumed that FDI does not impact on growth immediately, the effect is only visible after the investment has been made. Similarly, the effect of inflation on growth is not observed immediately. It affects the economy with a lag. The same assumption is made for ODA.

investment expenditures in energy (most notably expansions to the Sasol oil-from coal project and the national power grid), telecommunications, rail network, steel industry and import-substituting industries (Iliffe, 1999). The increase in the country's earnings also had a strong influence on domestic savings, and by 1980, the country's investment and savings rates averaged over 23% per annum. In the mid-1970s, South Africa began to experience profound changes in its economic fortunes. The effect of the 1973 oil crises and negative investor sentiment following the Soweto uprising of 1976 contributed to a decrease in South Africa's economic growth. Although record gold prices contributed to a cyclical economic upswing between 1978 and 1981, growing global rejection of apartheid policies led to the imposition of economic sanctions and massive disinvestment by foreign companies. For much of the 1980s and the years leading up to the democratic transition, domestic fixed capital formation and gross savings slowed down to an average growth rate of less than 1% per annum⁸.

Following the country's historic and first non-racial elections in 1994, South Africa's economy has faced a number of challenges regarding the levels of savings and investment. Severe slumps in savings rates largely triggered by taxation, inflation and high levels of households consumption expenditure has resulted in the share of gross savings in GDP declining from a high of 34% in 1980 to little more than 15% by 2008. The opening up of the South African economy to the rest of the world, i.e., post apartheid, saw a steady decline in the national savings rate. There was an increase in foreign investment into the domestic economy; the economy no longer had to finance its own investment exclusively from its own national savings. There were also large scale borrowings to finance much of the country's investment.

The decline in overall private savings from the 80s to the early 90s was attributed to the decrease in corporate savings and the continued low level of household savings. Household saving has been dismal, with the ratio of household saving to GDP declining from an average of 9.1% between 1960 and 1972 to 4.2% from 1990-1999. Household saving declined due to households' high propensity to consume and picked up slightly due to more reticent consumption behavior of households (Prinsloo 2000). While each of these different savings components have experienced short periods of increases, from the early 1990's the general trend has been downwards, thus painting a negative savings picture for the South African economy, post apartheid.

⁸ See appendix 4 for the savings and investment rates, 1994 to 2008.

Taking the terms of trade variable as a measure of the degree of openness of a country to international trade, it is assumed that the more open a country is to trade, there will be a positive impact on growth. High terms of trade value implies that exports exceed imports, therefore as exports is one of the components of GDP, this will positively impact on growth. From the empirical results, terms of trade has a long run impact on growth and the coefficient is positive and highly statistically significant. This indicates that for the South African economy, the degree of openness is important in enhancing growth.

The main thrust of this study was to determine if there exists any relationship between foreign aid (ODA) and economic growth in South Africa. The expectation from the beginning was that foreign aid would be positively related to economic growth. According to the literature on foreign aid and growth, the relationship is ambiguous depending on a number of factors including economic conditions and policy environment prevailing within the economy. Therefore foreign aid could possibly have a positive, negative or no effect on growth. In this study the result indicates that foreign aid is positively related to growth in South Africa in the short term, however, this relationship is not statistically significant. This finding is not entirely surprising as observation of the foreign aid figures shows that South Africa is not an aid-dependent nation. While the country does receive foreign aid, the motive for the aid is mostly project aid based and not to directly influence economic variables such as complementing domestic savings.

In analyzing the impact of foreign aid on growth it is extremely important to understand that the focus or the intention of the aid plays a vital role in its effectiveness. Assessing the effectiveness of aid can only be precisely measured against the initial motive of the aid. For South Africa, a large proportion of the aid received has been focused primarily on the health sector. The productive sector and economic sector which could potentially directly impact on growth have not received a considerable proportion of the aid. Similarly programme aid commitments and disbursements to South Africa in the last decade have been significantly lower than other forms of aid. Aid flows are quite significant to health sector especially in terms of capacity building & training of health professional, and research that goes into ensuring that certain diseases do not afflict the population. Similarly, foreign aid is provided for training and development in the education sector.

Such flows contribute to human capital development which is seen as a catalyst for economic growth. Similarly, training of healthcare professional ensures a well developed health system

able to meet the health needs of a population, and healthier populations ensure a more productive workforce. Hence, in South Africa's case, the effect of aid on growth might not be direct but could more plausibly be indirect via the channels described above. It can therefore be argued that the success of the aid can be better measured by its direct impact on the sectors that have received substantial aid flows.

The result contradicts aid studies on Sub-Saharan African countries which predominantly find that foreign aid is negatively related to growth (Collier and Gunning, 1999; Graham and O'Hanlon 2001; Duc 2006). A number of reasons are attributed to these negative results including poor economic endowment and vulnerability to terms of trade shocks (Morrissey 2001). The negative relationship between foreign aid and growth has also been credited to savings displacement that follows aid inflows, reduction in long run capital accumulation and labour supply (Gong and Zou, 2001). None of these reasons however, are attributes of the South African economy.

CHAPTER SIX

Summary, Conclusions and Policy Recommendations

6.0 Introduction

This study aimed to determine the relationship between foreign aid (ODA) and economic growth in South Africa. It is observed from the foreign aid data that a significant amount of foreign aid in terms of its ratio to GDP has been limited, though in absolute levels the amount of foreign aid has been significant. Also observed is the fact that most of the foreign aid received has been earmarked for the health sector while aid to productive sectors and the economic sectors have in comparison been neglected. Programme aid, indicated to be more effective in enhancing sustainable growth has taken a back seat to other forms of aid such as project aid.

6.1. Summary and Conclusions

In the empirical analysis foreign aid (ODA) is included as one of the variables that determine growth. Other explanatory variables included are the savings/GDP ratio (SAVE), foreign direct investments (FDI), the terms of trade (TOT) and the inflation rate (INFL). From the results, foreign aid and savings ratio are insignificant in explaining growth in South Africa while inflation rate, foreign direct investment and the terms of trade are significant in explaining growth in South Africa. The coefficient of foreign aid is positive and insignificant indicating that while foreign aid is growth enhancing, its impact on growth in South Africa is not significant. A possible reason for the insignificant impact of foreign aid on economic growth can be found in the argument that the effectiveness of foreign aid depends on the motive for the aid as well as the type of aid. For South Africa the motive of foreign aid thus far has been project-based especially in the health sector. Therefore it cannot be expected that such aid will have a direct and immediate impact on growth. The motive for foreign aid as mentioned above will impact on its effectiveness. For a lot of African nations, South Africa is no exception, foreign aid is not provided to be directly growth enhancing but rather through its impact on the health sector, will have an indirect impact on growth.

6.2. Recommendations and Areas for further research

The results further highlight the importance of having a good macroeconomic environment for growth. Maintaining inflation within the target is crucial for growth as evidenced from the negative growth impact of inflation. Furthermore the results give credence to foreign aid detractors who suggest that stimulating and ensuring sustained growth cannot be achieved by reliance on foreign aid but by rather other means, such as attracting foreign direct investment

through good foreign direct investment policies and tax incentives and ensuring trade and financial liberalization. From the results foreign aid positively impacts on growth in South Africa. The positive impact of trade liberalization on growth in South Africa is also reflected by the results.

It is argued that the type of aid is critical for aid to be effective. Mavrotas (2003) argues that programme aid and technical aid is appreciably rather more effective in enhancing growth than project aid. Financial programme aid has a number of advantages over project aid which makes it preferable for both donors and recipient nations.

Firstly, programme aid has conditionality attached to it. Recipient nations have to undertake some form of policy reform such as exchange rate control deregulation in return for the financial aid. Secondly, the fact that programme financial aid is characterized by quick disbursement makes it attractive for recipient countries. Thirdly, programme financial aid not being directed towards any specific project gives it an advantage over project aid. This gives recipient countries the opportunity to channel aid to projects they deem necessary.

Killick (2004), Ouattara (2005) highlight the superiority of programme aid over project aid. Programme aid has more of an effect or impact when it comes to generating sustained reductions in poverty levels compared to project aid. The lack of uncertainty attached to programme aid makes it more attractive for recipient nations when compared to project aid. Disparities in transaction costs also make programme aid more appealing than project aid. Killick (2004) hypothesizes that based on comparative costs of aid modalities between the two categories of aid, the transaction costs associated with programme aid are relatively lower than those associated with project aid. The high costs associated with project aid drastically reduce the value of the aid by the time it is received by the recipient nation.

Examining the motives and types of foreign aid received in South Africa will further enhance our understanding of the role of foreign aid in the South African economy. This is an area that future studies on aid-growth analysis in South Africa can examine. Aid flows to South Africa is relative to other countries in Africa, is minimal but does not mean it does not exist. Aid flows are quite significant to health sector especially in terms of capacity building & training of health professional, and research that goes into ensuring that certain diseases do not afflict the population. Similarly, foreign aid is provided for training and development in the education

sector. Such flows contribute to human capital development which is seen as a catalyst for economic growth. Similarly, training of healthcare professional ensures a well developed health system able to meet the health needs of a population, and healthier populations ensure a more productive workforce. Hence, in South Africa's case, the effect of aid on growth might not be direct but could, more plausibly, be indirect via the channels described above.

REFERENCES

- Ahmed, S. & Roger, J. H. (2000). Inflation and the great ratios: long term evidence from the US. *Journal of Monetary Economics*, 45(1), 3-36.
- Abedian, I. & Standish, B. (1992). The South African economy: A historical overview, in Abedian and Standish: Economic growth in South Africa. Selected policy issues. Cape Town. Oxford University Press.
- Akaike, H. (1974). A new look at the statistical model identification. *IEEE Transactions on Automatic Control*, 19, 716-722.
- Alesina, A. & Dollar, D. (2000). Who gives foreign aid to whom and why? *Journal of Economic Growth*, 5, 33–63.
- Alesina, A. & Perotti, R. (1994). The Political Economic of Growth: A Critical Survey of Recent Literature. *World Bank Economic Review*, 8, 352-71.
- Areskoug, F. (2003). Aid Effectiveness: A survey of the recent empirical literature. *IMF Paper on Policy Analysis*, PPAA/98/1.
- Asteriou, D. & Hall, S.G. (2007). *Applied Econometrics*. (2nd ed.). London : Palgrave Macmillan.
- Barro, R. J. (1995). Inflation and Economic Growth. *NBER Working Paper*
- Barro, R. J. (1997). *Determinants of Economic Growth – A Cross-Country. Empirical Study*. Massachusetts Institute of Technology. The MIT Press.
- Bauer, P. (1989). *Against Foreign Aid*. Liberation Alliance, London.
- Badawi, A. (2006). *Speech on the Official launch of IMP3*. 18 August 2006, Kuala Lumpur.
- Boone, P. (1994). Politics and the effectiveness of foreign aid. *European Economic Review*, 40, 289-329.
- Braun, P.A. & Mittnik, S. (1993). Misspecifications in Vector Autoregressions and Their Effects on Impulse Responses and Variance Decomposition. *Journal of Econometrics*, 59, 319-41.

- Breush, T.S. & Godfrey, L.G. (1987). Testing against General Autoregressive and Moving Average Error Models when the Regression includes Lagged Dependent Variables. *Econometrica*, 46, 1293-1302.
- Brixten, P. & Tarp, F. (1996). South Africa: macroeconomic perspectives for medium term. *World Development*, 24 (6), 989-1001.
- Burnside, C. & Dollar, D. (2000). Aid, Policies, and Growth. *American Economic Review*, 90, 847–868.
- Burnside, C. & Dollar, D. (1997). Aid, Policies and Growth. *World Bank Policy Research Paper* # 1777.
- Chenery, H.B. & Strout, A.M. (1966). Foreign Assistance and Economic Development. *American Economic Review* 56, 679-733.
- Chenery, H.B. & Carter, N.G. (1973). Foreign Assistance and Development Performance 1960-1970. *American Economic Association*, 63, No.2, 317-25
- Collier, P. & Gunning, J. (1999). Explaining African Economic Performance. *Journal of Economic Literature*, 37(1), 64-111.
- Collier, P. & Delh, J. (2001) Aid, Shocks, and Growth. *World Bank Policy Research Working Paper* 2688. Washington, DC, 12,231-254.
- Dacy, D. (1975). Foreign Assistance and Economic Development. *American Economic Review*, 50, 28-65.
- De Gregorio, J. (1995). The effects of inflation on economic growth: lessons from Latin America. *IMF Working Paper* 1991-91. Developed Countries. *Journal of Political Economy*, 81,120-130.
- Dickey, D.A & Fuller, W.A. (1979). Distribution of the Estimators for Autoregressive Time Series with a Unit root. *Journal of the American Statistical Association*, 74, 427-431.
- Dickey, D.A & Fuller, W.A. (1981). Likelihood ratio statistics for Autoregressive time series with a unit root. *Econometrica*, 49, 1057-1072.

- Duc, V.M., (2006). Foreign aid and economic growth in developing countries-a cross country empirical analysis. *Journal of Economics*, 98 (3), 423-438.
- Durbarry, R.N., Gemmell, N. & Greenaway, D. (1998). New evidence on the impact of foreign aid on economic growth. *Journal of International Economics*, 45,115-135.
- Easterly, W., Levine, R & Roodman, D. (2003) Aid, Policies, and Growth: Comment. *American Economic Review*,94, 774–780.
- Enders, W. (1995). *Applied Econometrics Time Series*, Wiley: New York.
- Engle, R.F & Granger, C.W.J. (1987). Co-Integration and Error Correction: Presentation, Estimation and Testing. *Econometrica*, 55, (2), 251-76.
- Fayissa, B. & El-Kaissy, M.I. (1999). Foreign Aid and Economic Growth of Developing Countries (LDCs): Further Evidence. *Studies in Comparative International Development*, 27 (2), 119-132.
- Fischer, S. & Modigliani, F. (1978). Towards an understanding of the real effects and costs of inflation. *Weltwirtschaftliches Archive*, 114,810-33.
- Fisher, M. (1993). Long-run neutrality and superneutrality in an ARIMA framework. *American Economic Review*, 83, 402-15.
- Ghulam. M, (2005). Impact of foreign aid on economic development in Pakistan (1960- 2002). Unpublished Paper. Munich University Library.
- Giles, J.A. (1994), Another Look at the Evidence on Foreign Aid Led Economic Growth. *Applied Economics Letters*, 1, pp, 194-99
- Gomanee, K. (2002), Aid and growth in Sub-Saharan Africa: accounting for transmission mechanisms. *Journal of International Development*, 17, (8) , 1055–1075.
- Gomanee, K. & Morrissey, O. (2002). Evaluating aid effectiveness against a poverty reduction criterion, *DESG Conference Paper*, Nottingham, April 2002.
- Gong, L & Zou, H.F. (2001). Foreign aid reduces labour supply and capital accumulation. *Review of Development Economics*, 5(1),105-118.

- Graham, C. & O'Hanlon, M (2001). Making Foreign Aid Work. *Foreign affairs Journal*, 76, (4), 369-76.
- Granger, C.W.J and Newbold, P. (1973). Spurious regressions in Econometrics. *Journal of Econometrics* 2, 111-120.
- Granger, C.W.J. (1987). Investigating causal relations by econometric models and cross-spectral methods. *Econometrica* , 37 (3), 424-438.
- Griffin, K. & Enos, J.L. (1970), Foreign Assistance: Objectives and Consequences, *Economic Development and Cultural Change*, 18, 313-27.
- Griffin, K. (1970). Foreign Capital, Domestic Savings and Economic Development. *Oxford Bulletin of Economics and Statistics*, 32, 99-112.
- Gujarati, D. (1975). *Basic Econometrics*, McGraw-Hill Book Company, New York.
- Hafer, R.W. & Sheehan, R.G. (1989). The sensitivity of VAR Forecasts to alternative lag structures. *International Journal of Forecasting* 5 (3 1989), 399-408.
- Hattori, T. (2001). Reconceptualising Foreign Aid. *Review of international political Economy*. 8, (4), 103-20.
- Hendry, D.F & Richard, J.F. (1983). Exogeneity. *Econometrica*, 51 (2), 277-304. ISSN 0012-9682.
- Islam, A. (1992). Foreign aid and economic growth: An econometric study of Bangladesh. *Applied Economics*, 24(5), 541–544.
- Islam, M.N. (2003), Political Regimes and the Effects of Foreign Aid on Economic Growth. *The Journal of Development Areas*, 37, 35-53
- Johansen, S. (1989). Statistical analysis of cointegration vectors. *Journal of Economic Dynamics and control*. 12, 231-254.
- Juselius, K. (1990). *The Cointegration VAR Model: methodology and Applications*. Oxford University Press.

Knack, S. (2000). "Aid Dependence and the Quality of Governance: A Cross-Country Empirical Analysis." World Bank Policy Research Paper

Killick, T. (2004). Monitoring Partnership-based Aid Relationships. *Journal of Finance*. 22, (2), 229-234.

Krugman, P.R. & Obsfeld, M. (2003). International Economics: Theory and Policy. Pearson Education, Boston, USA.

Leff, N.H. & Sato, K. (1969). A simultaneous-equations model of savings in developing countries. *Journal of Political Economy*, 83(6), 1217–1228.

Love, R. (1999). Changing Aid Patterns in Southern Africa. *Development in Practice* 9, (3),22-28.

Lütkepohl, H. (1993). *Introduction to Multiple Time Series Analysis*. (2nd ed). Berlin: Springer_Verlag,

Malik, K. (2005). Inflation and economic growth evidence from four South Asian Countries." *Asia-Pacific Development Journal*, 8, (1), June 2001.

Mavrotas, G. (2003). Which type of aid has the most impact? *United Nations world institute for development economics research*. Discussion paper No 2003/85.

Mbaku, J. (2001). Foreign Aid and Economic Growth in Sub-Saharan Africa. *Applied Econometrics*, 25, 1309-14.

Morrissey, O. (2001), Does aid increase growth? *Progress in Development Studies*,1, (1), 37-50.

Mosley, P., Hudson, J. & S. Horrell (1987). Aid, the public sector and the market in less developed countries. *Economic Journal*, 97,(387), 616–641.

Mosley, Paul (1980). Aid, Savings and Growth Revisited. *Bulletin of the Oxford University Institute of Economics and Statistics* 42, 79-95.

National Treasury (NT), 2007. Draft Framework. Co-operation in Africa. Between South Africa and Development Partners. Unpublished. National Treasury: Pretoria

Organization for Economic Corporation and Development (OECD) (2009a), *Development Aid at a Glance 2008: Statistics by Region*, January 2009.

Organization for Economic Corporation and Development (OECD) (2009b), *DAC News: Development Aid 2008*, OECD: Paris.

Organisation for Economic Cooperation and Development (OECD), (2005). DAC Members Net Official Development Assistance in 2005.

Quattara, B. (2005), Foreign aid and government fiscal behavior in developing countries: Panel data evidence. *Economic Modeling*, 23, 506-514.

Papanek, G. (1973). Aid, Foreign Private Investment, Savings and Growth in Less Developed Countries. *Journal of Political Economy* 81, 120-130.

Pedersen, K. R. (1996). Aid, Investment and Incentives. *Scandinavian Journal of Economics* 98(3), 423-438.

Phillips, P.C.B & Perron, P. (1988). Testing for a Unit Root in Time Series regressions. *Biometrika*, 75,335-346.

Prinsloo, C.H. (2000). Measuring Aid Flows: A New Approach. *World Bank, Development Research Group*, Washington D.C.

Quattara, B. (2007). Foreign Aid, Public Savings Displacement and Aid dependency in Côte d'Ivoire: An Aid Disaggregation Approach. *Oxford Development Studies*, 35, 65-73.

Radelet, S. (2006). Counting Chickens When They Hatch: the Short-Term Effect of Aid on Growth. *Center for Global Development Working Paper 44* Washington: Center for Global Development.

Ramkolowan, Y. & Stern, M. (2009). The developmental effectiveness of untied aid: evaluation of the implementation of the Paris Declaration and the 2001 DAC recommendation on untying ODA to the LDC's. South Africa country study.

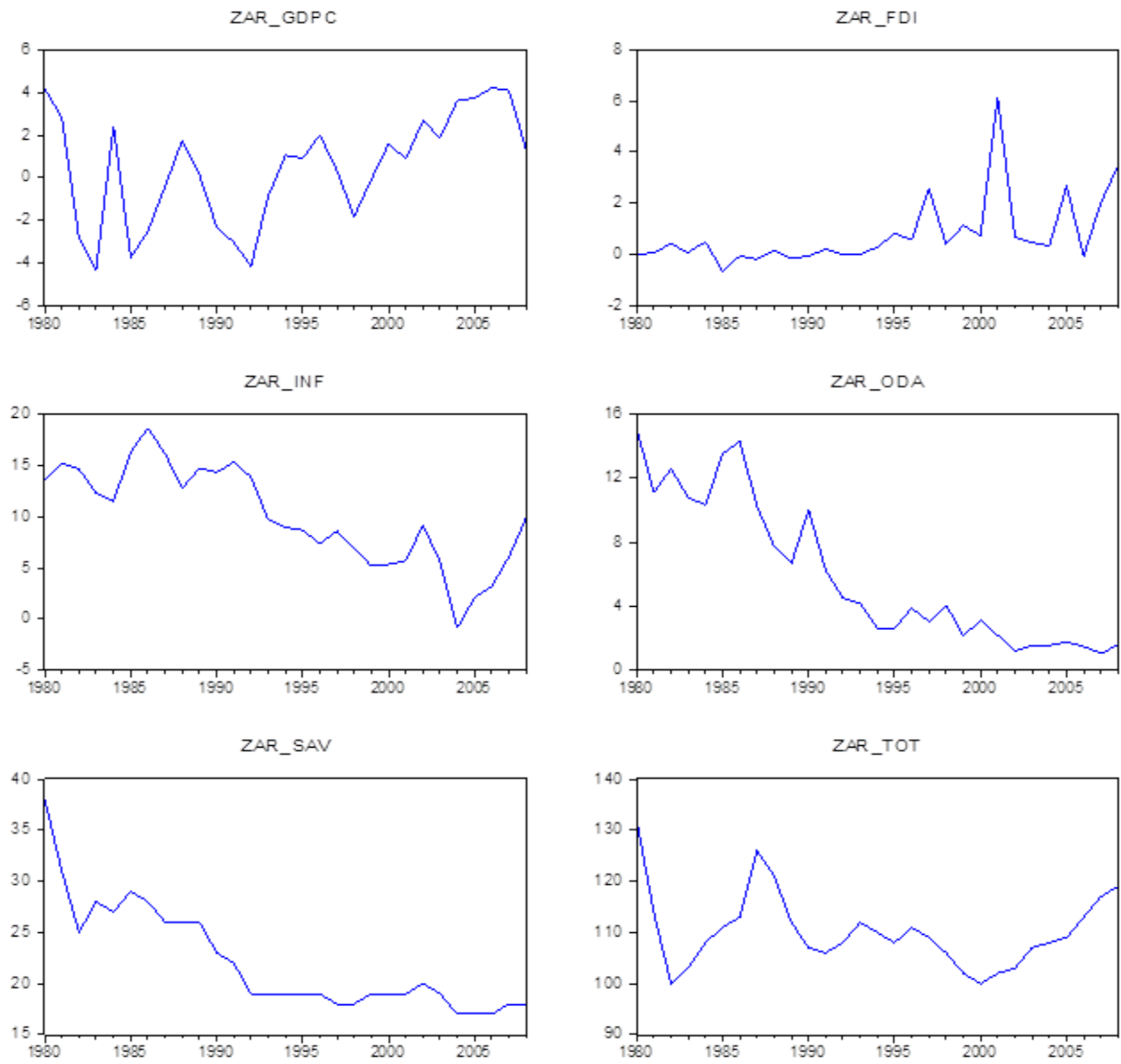
SARB Annual Reports, Various editions

- Sarel, M. (1996). Nonlinear effects of inflation on economic growth. *IMF staff papers*, 43(1), 199-215.
- Schwarz, G. (1978). Estimating the Dimensions of a model. *Annals of Statistics*, 6, (2), 461-464.
- Sichei, M.M. (2005). Bank lending channel in South Africa: Bank lending Dynamic Panel Data Analysis. Working Paper 2005-10, Department of Economics, University of Pretoria.
- Singh, R.D. (1985). State Intervention, Foreign Economic Aid, Savings and Growth in LDCs: Some Recent Evidence. *KYKLOS*, 38, 216-232.
- Smith, A., Brown, E., & Nube, G. (2006) A Study for the Collaborative Africa Budget Reform Initiative (CABRI) and the Strategic Partnership with Africa (SPA).
- Snyder, D.W. (1993). Donor Bias Toward Small Countries: An Overlooked Factor In the Analysis of Foreign Aid and Economic Growth. *Applied Economics*, 25, 481-488.
- Streeten, P. & S.J. Burki, (1978). Basic needs: some issues, *World Development*, 6, (3), 16-23.
- Svensson, J (1998). Foreign Aid and Rent-Seeking. *World Bank Policy Research Paper* 1880.
- Venter, E. (2008), 5th National Annual Local Government Conference, 11-12 August, Durban, South Africa.
- Weisskopf, T. (1972). The Impact of Foreign Capital Inflows on Domestic savings in Underdeveloped Countries. *Journal of International Economics*, 2, 25-38.
- World Bank (2001). World Development Indicators. World Bank, Washington, D.C.
- World Bank (1998). World Development Report 1998/1999: Knowledge for development. Washington D.C. The World Bank and New York: Oxford University Press.
- World Bank (2001). Trade and Foreign Exchange Policies, Economic Implications and Impact on the poor. Washington, D.C: The World Bank.
- World Bank (2002). World Development Report, Oxford University Press, New York.

Appendix 1: Historical GDP growth rate (%) 1950-2010.

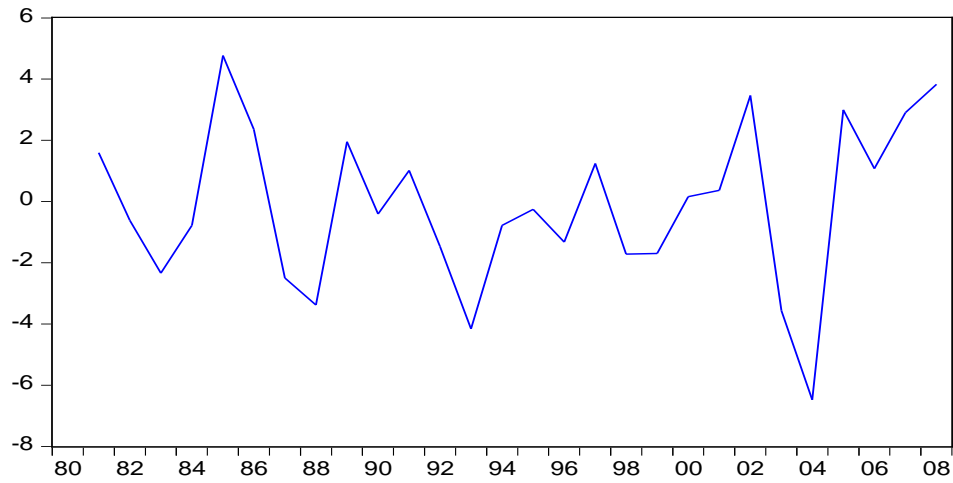
Year	Growth rate (%)	Year	Growth rate (%)	Year	Growth rate (%)
1950	5.0	1971	4.3	1992	-2.1
1951	4.8	1972	1.7	1993	1.2
1952	3.0	1973	4.6	1994	3.2
1953	4.5	1974	6.1	1995	3.1
1954	6.5	1975	1.7	1996	4.2
1955	5.7	1976	2.2	1997	2.5
1956	5.6	1977	-0.1	1998	0.7
1957	4.5	1978	3.0	1999	1.9
1958	2.8	1979	3.8	2000	3.1
1959	4.6	1980	6.6	2001	3
1960	3.0	1981	5.4	2002	4
1961	3.8	1982	-0.4	2003	3
1962	6.2	1983	-1.8	2004	5
1963	7.4	1984	5.1	2005	5
1964	7.9	1985	-1.2	2006	6
1965	6.1	1986	0.0	2007	6
1966	4.4	1987	2.1	2008	4
1967	7.2	1988	4.2	2009	-2
1968	4.2	1989	2.4	2010	3
1969	4.7	1990	-0.3		
1970	5.2	1991	-1.0		

Appendix 2: Graphical observation of Variables

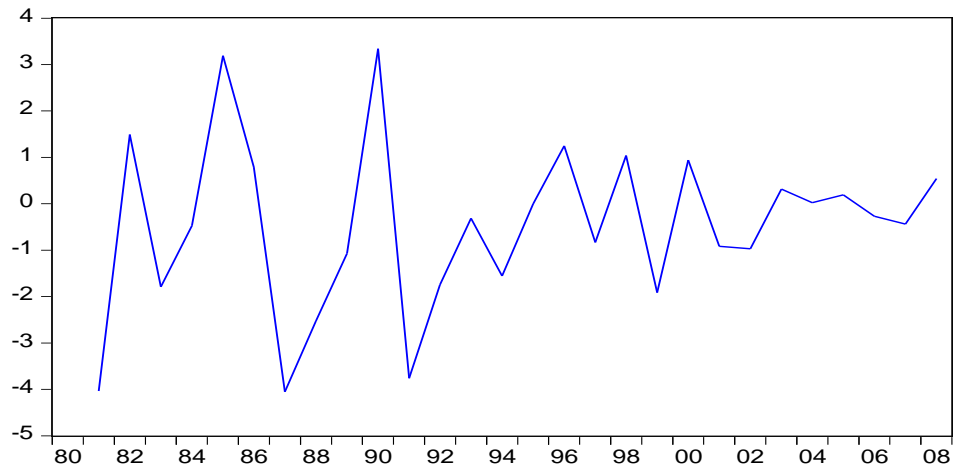


Appendix 3: Graphical Observation of variables in first differences

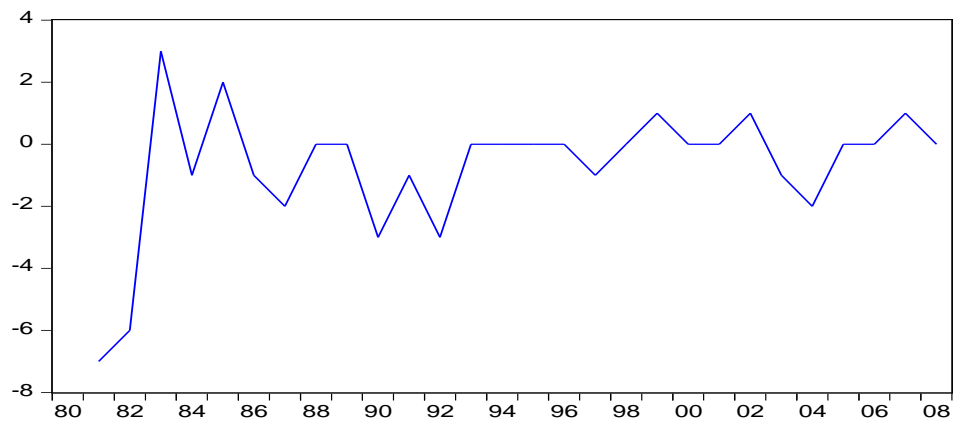
DINF



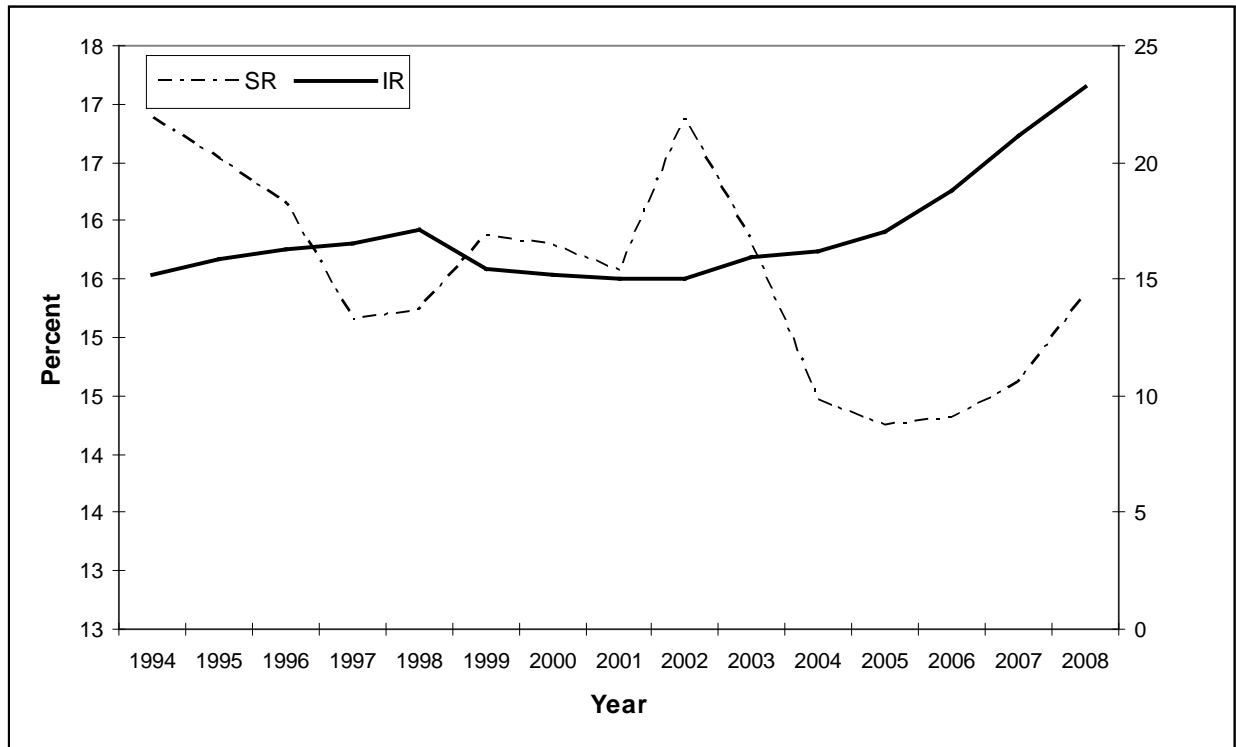
DODA



DSAV



Appendix 5: Gross saving and gross investment as a percentage of GDP. 1994-2008



Note: SR and IR are the shares of gross saving and gross fixed capital formation to GDP, respectively.

Source: Quarterly Bulletin, South African Reserve Bank

Appendix 6: Raw Data presentation

Year	GDPCAP	Save-gdp	FDI-GDP	ODA-GDP	TOT	INFL
1980	4.164668	38	-0.01276	15.13846	132	13.6
1981	2.8301439	31	0.074859	11.10323	114	15.3
1982	-2.849323	25	0.41168	12.59301	100	14.6
1983	-4.330313	28	0.082429	10.8037	103	12.3
1984	2.407026	27	0.492537	10.33156	108	11.5
1985	-3.743798	29	-0.67492	13.52375	111	16.3
1986	-2.514856	28	-0.0635	14.3147	113	18.6
1987	-0.415982	26	-0.18426	10.26336	126	16.1
1988	1.7426991	26	0.138215	7.735316	121	12.8
1989	0.1324874	26	-0.16108	6.665275	112	14.7
1990	-2.326929	23	-0.0676	10.00475	107	14.3
1991	-3.037559	22	0.211381	6.243744	106	15.3
1992	-4.157908	19	0.002573	4.498481	108	13.9
1993	-0.881833	19	0.008658	4.185132	112	9.7
1994	1.0514338	19	0.275752	2.630661	110	8.9
1995	0.9099661	19	0.826153	2.625871	108	8.6
1996	2.0113849	19	0.567994	3.872714	111	7.4
1997	0.3247742	18	2.560606	3.039775	109	8.6
1998	-1.818351	18	0.409797	4.077305	106	6.9
1999	-0.083298	19	1.128767	2.160104	102	5.2
2000	1.6062848	19	0.729115	3.103322	100	5.3
2001	0.8729325	19	6.136401	2.187404	102	5.7
2002	2.6753661	20	0.663106	1.215233	103	9.2
2003	1.8687763	19	0.469919	1.531588	107	5.6
2004	3.6285808	17	0.324715	1.555295	108	3.8
2005	3.7452863	17	2.686183	1.746013	109	2.1
2006	4.2132574	17	-0.07125	1.47596	113	3.2
2007	4.0881715	18	2.021863	1.037781	117	6.1
2008	1.2920205	18	3.488875	1.579032	119	9.9