

TRADE PATTERNS AND FOREIGN DIRECT  
INVESTMENT IN THE SOUTHERN AFRICAN  
DEVELOPMENT COMMUNITY

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When one sets out on a study like this one, two English sayings always hold true. The first is John Donne's "No man is an island." The second is the well-known saying by Sir Isaac Newton: "If I saw further it was because I was standing on the shoulders of giants." Using Newton's famous quote is appropriate as this study also uses Newton's gravity model.

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## **Abstract**

This thesis focuses on the relationship between trade and FDI in the SADC. While FDI is seen as a stimulus for growth and development, Africa is lagging behind other regions in attracting FDI. Whilst a number of reasons have been explored in the literature, the potential link between trade and FDI has not been explored in the African context. This may be potentially important, since African governments have been engaging in trade liberalisation and trade promotion over the past two decades. In this thesis, gravity modelling is used to investigate the trade-FDI relationship. Two single equation regression models are used in a preliminary investigation to evaluate aggregate trade and FDI. The third model consists of six panel regressions that evaluate the different relationships between the individual SADC countries and their individual major trading partners. A causality test is also carried out to confirm the relevance of trade as a determinant of FDI in the SADC. Overall results indicate that, in the specific case of the SADC, SADC exports significantly cause FDI. Distance from home countries and political instability are the most significant negative forces that affect FDI inflows. Home country exports deliver mixed results and these results suggest that the United States and the United Kingdom have a different FDI-trade relationship with the SADC than continental Europe, whereas Japan's exports prove insignificant. The policy implications are that the SADC will need to focus on attracting investment from countries that provide for complementary FDI and trade as this is optimal for poverty alleviation and job creation. Further research should focus on these policy areas and take into account the relevance of trade as a determinant of FDI.

### **Key words:**

Foreign direct investment, trade, panel regression, gravity, Southern African Development Community, SADC

## Opsomming

Hierdie tesis fokus op die verhouding tussen handel en direkte buitelandse investering (DBI) in die SAOG, Terwyl DBI gesien word as 'n stimulus vir groei en ontwikkeling, is Afrika besig om al hoe verder agter te raak wat betref DBI invloed in vergelyking met ander streke. Alhoewel 'n verskeidenheid redes al in die literatuur ondersoek is, is die potensiële verband tussen handel en DBI nog nie ondersoek in die Afrika-konteks nie. So 'n ondersoek is egter potensieël baie belangrik, omdat Afrika-regerings oor die afgelope dekades handelsliberalisasie en handelspromosie nagestreef het. In hierdie tesis word die graviteitspesifikasie-metode in drie modelle gebruik om die verhouding tussen DBI en handel te ondersoek. Twee enkel-vergelyking regressiemodelle word gebruik in 'n voorlopige ondersoek om die verhouding tussen totale DBI en handelsyfers te evalueer. Die derde model bestaan uit ses paneel-regressies wat die onderskeie verwantskappe tussen die individuele SAOG-lande en hulle individuele belangrike handelsvenote evalueer. 'n Kousaliteitstoets word ook gedoen om die toepaslikheid van handel as 'n determinant van DBI in die SAOG te bevestig. Algehele resultate wys dat die SAOG lande se uitvoere 'n betekenisvolle faktor van DBI is. Afstand vanaf tuislande en politieke onstabielheid is die belangrikste negatiewe faktore wat DBI in die SAOG beïnvloed. Tuisland-uitvoere lewer gemengde resultate en suggereer dat die VSA en die VK 'n ander DBI-handel verhouding met die SAOG het as kontinentale Europa, terwyl Japan se uitvoere nie betekenisvol is nie. Die beleidsimplikasies is dat die SAOG sal moet fokus op die stimulasie van-DBI invloed vanaf lande wat komplementêre DBI en handel voorsien, omdat dit optimaal is vir die verligting van armoede en werkskepping. Verdere studies sal op hierdie beleidsrigtings moet fokus en ook die toepaslikheid van handel as 'n determinant van DBI in ag moet neem.

### **Sleutelwoorde:**

Direkte buitelandse investering, handel, paneel-regressie, graviteit, Suider-Afrikaanse Ontwikkelings-Gemeenskap, SAOG

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## List of Acronyms

AFTA	- Andean Free Trade Agreement
AGOA	- African Growth and Opportunity Act
ACP	- African Caribbean and Pacific states
APEC	- Asia-Pacific Economic Cooperation
ASEAN	- Association of Southeast Asian Nations
AU	- African Union
BPM5	- Balance of Payments Manual: Fifth Edition
BD3	- Detailed Benchmark Definition of FDI: Third Edition
CIA	- Central Intelligence Agency of the United States of America
CIS	- Commonwealth of Independent States
CEEC	- Central and Eastern European Countries
COMESA	- Common Market for East and Southern Africa
CPI	- Corruption Perception Index
DBI	- Direkte Buitelandse Investerings
DRC	- Democratic Republic of the Congo
EAC	- East African Community
ECCAS – CEEAC	- Economic Customs Union of Central Africa / Communauté Economique des Etats de l’Afrique Centrale
ECOWAS	- Economic Community of West African States
EPA	- Economic Partnership Agreement
EU	- European Union
FDI	- Foreign Direct Investment
FONDAD	- Forum on Debt and Development
GDP	- Gross Domestic Product
GMM	- General Method of Moments
GPN	- Global Production Network
GSP	- Generalised System of Preferences
HTS	- Harmonize Tariff System
IGAD	- Intergovernmental Authority on Development
IMF	- International Monetary Fund
M&A	- Mergers and Acquisitions
MDGs	- Millennium Development Goals
MNE	- Multi National Enterprise
NAFTA	- North American Free Trade Association
NEPAD	- New Partnership for African Development

OAU	- Organisation of African Unity
ODA	- Official Development Assistance
OECD	- Organization for Economic Cooperation and Development
OLS	- Ordinary Least Squares
RISDP	- Regional Indicative Strategic Plan
SACU	- South African Customs Union
SADC	- Southern African Development Community
SADCC	- Southern African Development Co-ordination Conference
SAOG	- Suider-Afrikaanse Ontwikkelings-Gemeenskap
SITC	- Standard International Trade Classification
SSA	- Sub-Saharan Africa
TNC	- Transnational Corporation
UK	- United Kingdom
UN	- United Nations
UNCTAD	- United Nations Conference on Trade and Development
US	- United States
USA	- United States of America
VK	- Verenigde Koninkryk
VSA	- Verenigde State van Amerika
WTO	- World Trade Organization
ZAR	- South African Rand



# Chapter 1: Introduction

## 1.1. Introduction

The growing trend towards the globalisation and regionalisation of economies has led to the increased importance of international capital flows. In this arena foreign direct investment<sup>1</sup> (FDI) has become a major source of capital flows in many developing nations and the study of the impacts, causes and economic relationships of FDI has gained in popularity in the last decade (Naudé and Krugell, 2007). Generally, the literature finds that FDI can contribute to economic growth and can result in technology diffusion from advanced nations to less advanced nations (Asiedu, 2001; Naudé and Krugell, 2007; Lim, 2001).

From recent literature, the main determinants of FDI are wide ranging. Generally, two motivations for FDI stand out: the market-seeking motive and the resource-seeking motive (Asiedu, 2001; Naudé and Krugell, 2007). Both of these are influenced by policies and institutions in the host country such as human capital stocks, infrastructure, factor costs, capital costs, regional integration, economic and social stability, and economic openness (Alfaro, 2003; Asiedu, 2001 and 2004; Naudé and Krugell, 2007; Lim 2001; Te Velde and Bezemmer, 2004).

In Africa, the potential contribution that FDI can make is potentially significant. The NEPAD initiative determined that Africa needs about US\$64 billion annually in capital to be able to generate the growth of 7% per annum that is needed to

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1. “FDI refers to an investment made to acquire lasting interest in enterprises operating outside of the economy of the investor. Further, in cases of FDI, the investor’s purpose is to gain an effective voice in the management of the enterprise.” (UNCTAD, 2005).

achieve the Millennium Development Goals (MDGs). Currently, Africa is the region in the world most marginalised in terms of attracting FDI. Sub-Saharan Africa only attracted an average of US\$7 billion annually from 1995 to 2001 (US\$2.9 billion if Angola, Nigeria and South Africa are excluded), in other words an average of only 1.5% of total world FDI (Asiedu, 2004; UNCTAD, 2005).

A number of studies have recently focused on FDI in Africa. These are summarised in the table below

**Table 1: Recent FDI Studies on Africa**

Authors	Title and Journal	Description of main findings / focus of paper
Asiedu, E	On the determinants of foreign direct investment to developing countries: Is Africa different?, <i>World Development</i> Vol. 30, No. 1, pp. 107-119, 2002	The marginal benefit from increased openness to trade is less successful for Sub-Saharan Africa. Africa is therefore different and policies that proved successful elsewhere may not be equally successful in Africa.
Asiedu, E	Policy reform and foreign direct investment in Africa: Absolute progress but relative decline, <i>Development Policy Review</i> , 2004, 22 (1): pp. 41-48	Sub-Saharan Africa has attracted more FDI due to policy reforms, but has a declining share of global FDI.
Asiedu, E	The determinants of employment of affiliates of US multinational enterprises in Africa, <i>Development Policy Review</i> , 2004, 22 (4): pp. 371-379	In order to realise the employment benefits of FDI, Sub-Saharan Africa needs to attract FDI in non-natural resource industries and host countries need to improve their infrastructure and human capital stocks.
Jenkins, C and Thomas, L	Foreign direct investment in Southern Africa: Determinants, characteristics and implications for economic growth and poverty	Africa's negative international image of political and economic instability has a severe impact to the whole continent and that a concerted

	alleviation, <i>Mimeo: CSAE/Oxford and CREFSA 2002, London School of Economics.</i>	effort to improve stability will also improve FDI inflows.
Morisset, J	Foreign Direct Investment in Africa: Policies also matter, <i>Transnational Corporations, 2000, 9(2): 107-125</i>	Countries with attractive investment environments were able to attract a significant share of FDI. Therefore aggressive liberalisation and strong economic growth will lead to an increased level of FDI.
Naudé, W.A. and Krugell, W.F.	Investigating geography and institutions as determinants of foreign direct investment in Africa using panel data, <i>Applied Economics 2007</i>	Geography does not have a direct influence on FDI flows to Africa and neither market-seeking nor resource-seeking FDI seems to dominate. Different policy instruments are significant with different specifications. Political stability proved to be a significant determinant of FDI which indicates that good institutions are important.

As can be seen from Table 1, traditional approaches to FDI in the African context not only produce mixed results but, in general, confirm that a different approach is needed. Though good policies and institutions seem to be the backbone of attracting FDI to Africa in the traditional sense, the above studies also confirm that this will not close the gap that exists between Africa and other regions. In fact, as proved by Asiedu (2004), the gap in FDI levels, though shrinking in absolute terms, is growing in relative terms.

The literature of FDI in Africa as surveyed above may be argued to have two shortcomings. Firstly, relatively few studies have been done on the role of the sectoral composition of African economies and FDI, and the impact of FDI into particular sectors (Alfaro, 2003; Naudé and Krugell 2007). Secondly, the

relationship between trade and FDI is not well understood in Africa. Elsewhere in the world it has been found that the direction of trade leads flows in FDI. For Africa such a relationship could be important in view of (a) African economies' greater openness to trade following more and more countries' adoption of trade liberalisation programmes and regional integration schemes and (b) the greater desire amongst African countries to further regional trade (as seen for instance in objectives of the African Union, NEPAD and regional trade agreements such as the SADC).

In light of the shortcomings mentioned in the previous section, the current study will attempt to contribute to the literature on FDI in Africa by investigating the relationships between FDI inflows and trade flows of the SADC using a gravity approach. Where data allows, the analysis will be carried out at a sectoral level. This is because UNCTAD, which is the main publisher of FDI figures on a sectoral level, does not publish these figures frequently and also publishes them with different frequencies for different countries (Alfaro, 2003).

## **1.2. Background**

Globalisation has led to an increased focus on economic regions and trading blocs. Though Africa consists of many regions and regional bodies, the main regional body of which South Africa is a part, is The Southern African Development Community (SADC). The SADC represents the most developed region of Sub-Saharan Africa and is economically the largest contributor to the African economy (SADC, 2006).

Table 2 shows that, except for Angola, the Democratic Republic of Congo (DRC) and South Africa, the rest of the SADC shows marginal growth in FDI over time. A boom in FDI in 2000 was not sustainable with most countries now having more FDI than before 2000 but no significant increases from 2000 levels. South Africa also shows this pattern, but has shown significant growth in FDI. Angola and, to a lesser extent, the DRC are showing huge gains in FDI even from 2000 levels. It should be noted that both these countries are resource-rich countries and that both are slowly recovering from years of unrest and civil war.

The following table lists FDI figures for the SADC countries.

**Table 2: SADC FDI Indicators**

UNIT		Millions of dollars			
YEAR		1980	1990	2000	2004
ECONOMY	CATEGORY				
Angola	FDI inflows	37	-335	879	2048
	FDI inward stock	61	1025	7977	17347
Botswana	FDI inflows	112	96	57	47
	FDI inward stock	698	1309	1821	1382
Burundi	FDI inflows	5	1	12	3
	FDI inward stock	7	30	48	51
Comoros	FDI inflows	..	0	0	2
	FDI inward stock	2	17	21	25
Dem. Rep. of the Congo	FDI inflows	110	-14	23	900
	FDI inward stock	709	546	617	1874
Kenya	FDI inflows	79	57	164	46
	FDI inward stock	386	668	984	1223
Lesotho	FDI inflows	4	16	31	52
	FDI inward stock	5	83	330	479
Madagascar	FDI inflows	-1	22	83	45
	FDI inward stock	40	107	354	513
Malawi	FDI inflows	9	23	26	16
	FDI inward stock	113	198	328	379
Mauritius	FDI inflows	1	41	277	65
	FDI inward stock	26	169	687	887

Mozambique	FDI inflows	4	9	139	132
	FDI inward stock	15	42	1094	2166
Namibia	FDI inflows	..	30	186	286
	FDI inward stock	1935	2047	1230	1527
Rwanda	FDI inflows	16	8	8	11
	FDI inward stock	54	213	252	279
Seychelles	FDI inflows	10	20	56	60
	FDI inward stock	54	204	577	808
South Africa	FDI inflows	-10	-78	888	585
	FDI inward stock	16465	9221	43462	46283
Swaziland	FDI inflows	26	28	91	69
	FDI inward stock	243	336	537	926
Uganda	FDI inflows	4	-6	181	237
	FDI inward stock	11	6	807	1613
United Rep. of Tanzania	FDI inflows	5	0	282	470
	FDI inward stock	342	388	3038	5203
Zambia	FDI inflows	62	203	122	334
	FDI inward stock	364	1022	2360	3019
Zimbabwe	FDI inflows	2	-12	23	60
	FDI inward stock	186	124	1085	1204
Missing Values					
..	Not available or not separately reported				
***	Negative accumulation of flows; value included in regional and global totals				

Source: UNCTAD World Investment Report 2005

The Southern African Development Co-ordination Conference (SADCC) evolved into the Southern African Development Community (SADC) in 1992. Where the SADCC had only a mandate to oversee development projects, the newly formed SADC had a much broader mandate. The main goals of the SADC are to achieve economic growth, alleviate poverty, and to enhance the standard and quality of life of the people of Southern Africa through regional integration and cooperation (SADC, 2006).

The SADC has 14 member states: Angola, Botswana, Democratic Republic of Congo, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, South Africa, Swaziland, Tanzania, Zambia and Zimbabwe (SADC, 2006).

Six more countries could be included in the SADC in the long term. They are Burundi, Comoros, Kenya, Rwanda, Seychelles and Uganda. For the purposes of this study, they should be included as their trade and geographic locations are completely intertwined with the SADC.

The facts explained in this section clearly show that it is imperative that research be done on sectoral foreign direct investment in the SADC and its relationship to trade flows. This is not only relevant for policy formulation regarding the attraction of FDI, but also for understanding the unique nature of FDI in the SADC region.

Currently, the SADC is attracting very little FDI although, as a region, there are mixed results in FDI inflows. Does increasing intra- and inter-regional trade also lead to increasing levels of FDI, and what policy implications will this have for the SADC? Is the sector that attracts FDI also the sector in which there is external trade?

The answers to these questions are important because, as suggested by Asiedu (2001), Africa is different from the rest of the world and adopting the same policies and incentives as other regions of the world will not have the desired effect.

### **1.3. Objectives of the study**

The objectives of this study are to determine whether FDI to the SADC is influenced by the sectoral composition of these economies, whether FDI has a

sector-specific focus in the SADC, and whether this effect is more important as a determinant of FDI than trade flows to and from the SADC.

#### **1.4. Hypothesis**

The working hypothesis of this study is that increased trade between SADC members and increased trade with the SADC's main trading partners will lead to increased levels of FDI in the region and that this is a more significant determinant of FDI to the SADC than sectoral (resource) considerations.

#### **1.5. Methodology**

To achieve the objectives, a literature review and an empirical study are required.

The literature review presents the current developments in the field of FDI, based on the modern adaptations of the growth theory that explain the causes and effects of FDI. This is then used to adapt a gravity model for the purposes of the empirical study.

The empirical study will involve the analysis of data by using an adapted gravity model, which will expand upon the central hypothesis, showing the relationships between FDI, trade and various other factors. The gravity approach will be based on Bos and Van de Laar (2004).



Chapter 5 contains a discussion of the gravity model. The general gravity formula states that the attractive force between objects *i* and *j* can be defined as:

$$F_{ij} = G \frac{M_i M_j}{D_{ij}^2} \quad (1)$$

Where:

- $F_{ij}$  is the attractive force
- $M_i$  and  $M_j$  are the masses (weight) of the two objects
- $D_{ij}$  is the distance between the two objects
- $G$  is a gravitational constant

In the field of economics, gravity is used as follows:

- $F_{ij}$  is the flow between two economic entities *i* and *j*
- $M_i$  and  $M_j$  are the economic sizes of the two entities
- $D_{ij}$  is the distance between the two entities
- $G$  becomes an economic constant.

Bos and Van de Laar (2004) use this as their basis to state that FDI is a function of the economic sizes of the countries' GDP and GDP per capita.

$$FDI_{ij} = A_{ij} \frac{GDP_i GDP_j}{Dist_{ij}} \quad (2)$$

Where:

- $FDI_{ij}$  is the flow in FDI from home country *i* to host country *j*
- $GDP_i$  and  $GDP_j$  are the respective gross domestic products.
- $Dist_{ij}$  is the distance between home country *i* to host country *j*
- $A_{ij}$  is a constant

From this basis, they also include the population size to work with GDP per capita. In the specific case mentioned here, it also holds true that the home country size and population remains the same for all host countries and therefore cannot be considered a determinant of FDI.

Bos and Van de Laar (2004) use various terms and variables to explain distance and suggest that “distance” does not necessarily imply only geographical distance. Distance can be in terms of language, culture, historical ties, rule of law, levels of education, transport costs, available technological advancements, and institutional integrity.

If these principles are applied to explain FDI in terms of trade, it can be written as:

$$FDI_{ij} = A_{ij} \frac{X_i X_j}{Dist_{ij}} \quad (4)$$

Where:

- $FDI_{ij}$  is the flow in FDI from home country  $i$  to host country  $j$
- $X_i$  and  $X_j$  are the respective export totals of  $i$  and  $j$
- $Dist_{ij}$  is the distance between home country  $i$  to host country  $j$
- $A_{ij}$  is a constant

When the equation is written in linear form, the estimating equation is:

$$\ln FDI_{ij} = \beta_0 + \beta_1 \ln X_i + \beta_2 \ln X_j - \beta_3 \ln Dist_{ij} + \varepsilon_{ij} \quad (5)$$

(With  $\beta_0$  a simple constant,  $\varepsilon_{ij}$  the error term,  $\beta_1$  and  $\beta_2$  are positive)

Theory will also dictate that, in the case of resource-seeking FDI, the imports of the home country, rather than exports, could determine FDI. Therefore  $Z_i$  should also be investigated when FDI is tested as resource-seeking.

This will also hold if the equation is estimated for FDI at a sectoral level. In such a case the export figures will be for the respective sector.

The data required for the study are FDI inflow figures for host countries, export figures for host countries, and export and import figures for home countries. Various data series will need to be investigated as being representative of distance as it has been shown by Bos and Van de Laar (2004) and Naudé and Krugell (2007) that geographical distance does not prove to be significant in the case of Africa. It can also be reasoned that the SADC as a region has a constant geographical distance from home countries and that other measures of distance will need to be investigated.

Various international databases were investigated for data. See Table 3 in Chapter 5 for a list of variables used and their sources.

## **1.6. Outline**

The thesis is set out as follows: Chapter 1, the introduction, sets out the broad outlines of the thesis. It includes the background, the problem statement, objectives, the methodology and structure of the thesis. Chapter 2 provides an overview of the literature on FDI, in particular as it relates to Africa. This forms a

foundation from which the rest of the study can be conducted and the results thereof be interpreted. Chapter 3 relates FDI to a country or region's trade patterns. Chapter 4 provides a brief overview of the SADC. Recent developments in FDI and trade patterns in the SADC are discussed. The focus of this part of the thesis includes a discussion of the main products traded by the SADC and the main trade partners of the SADC. In Chapter 5, an overview of the empirical methodology is provided. The gravity model is explained as a means to specify the FDI-trade relationship. Chapter 5 then evaluates the data and data sources of trade and FDI in the SADC. Chapter 6 presents the results of the empirical study and discusses and interprets them in the context of the previous chapters. The summary and final recommendations are contained in Chapter 7.

## **Chapter 2: The theory of foreign direct investment**

### **2.1. Introduction**

This chapter provides a theoretical overview of the literature on FDI. The importance and the relevance of FDI from the theoretical point of view are established. This forms a foundation from which the rest of the study can be conducted and the results thereof can be interpreted.

The chapter consists of a brief discussion on international capital flows (section 2.2), the definition of FDI (section 2.3.), types of FDI (section 2.4.), the global context of FDI (section 2.5.), the effects of FDI (section 2.6.), the determinants of FDI (section 2.7.) as well as the policy implications for host and home countries (section 2.8.).

### **2.2. International fund flows**

The main sources of international flows of funds to developing countries are aid, loans, foreign portfolio investment and foreign direct investment (Bates, 1999; Asiedu, 2001; Albuquerque, 2004).

Portfolio investments are viewed as unstable and even unpredictable. They tend to increase the susceptibility of emerging markets to financial crises due to their reliance on market sentiment and political influences (Asiedu, 2001; Slaughter, 2002; Albuquerque, 2004).

Foreign aid (or official development assistance – ODA) peaked in the early 1990s and subsequently declined. During the 1990s, the decline was 10% in real terms for ODA overall, and there was a 40% decline in ODA to Sub-Saharan Africa (Burnell, 2004).

FDI has become a major source capital flows in many developing nations and the study of the impacts, causes and economic relationships of FDI has gained in popularity in the last decade (Slaughter, 2002). FDI is less volatile than other types of fund flows and tends to return to previous levels much more quickly after an economic shock situation (Albuquerque, 2004).

### **2.3. Key definitions surrounding foreign direct investment**

Definitions of FDI are contained in the Balance of Payments Manual: Fifth Edition (BPM5) (Washington, D.C., International Monetary Fund, 1993) and the Detailed Benchmark Definition of Foreign Direct Investment: Third Edition (BD3) (Paris, Organisation for Economic Co-operation and Development, 1996) (UNCTAD, 2005).

#### **2.3.1. Foreign direct investment**

*“FDI refers to an investment made to acquire a lasting interest in enterprises operating outside of the economy of the investor. Further, in cases of FDI, the investor’s purpose is to gain an effective voice in the management of the enterprise. The foreign entity or group of associated entities that makes the investment is termed the ‘direct investor’. The unincorporated or incorporated enterprise - a branch or subsidiary, respectively, in which direct investment is made - is referred to as a ‘direct investment enterprise’. Some degree*

*of equity ownership is almost always considered to be associated with an effective voice in the management of an enterprise (or the equivalent thereof); the BPM5 suggests a threshold of 10 percent of equity ownership to qualify an investor as a foreign direct investor.” (UNCTAD, 2005)*

It is also necessary to define which capital flows between the direct investment enterprise and entities in foreign economies should be considered as FDI. The lasting interest of the direct investor in an enterprise is considered to be FDI. Thus, only capital that originates directly from, or indirectly through, other sources from the direct investor is considered to be FDI (UNCTAD, 2005).

FDI consists of the following three components (Dahl, 2002; UNCTAD, 2005):

- Equity capital: The acquisition of shares by the foreign direct investor in an enterprise in a foreign economy.
- Reinvested earnings: The investor’s share of earnings that is not paid to the investor. These profits are reinvested.
- Intra-company loans or debt transactions: Long-term and short-term borrowing and lending between the parent company (direct investor) and its foreign subsidiary enterprises.

A direct investment enterprise is an incorporated or unincorporated enterprise in which a single foreign investor either owns at least threshold equity of 10% (could differ between countries) or more of the ordinary shares or voting power of an enterprise. The basic criterion is that the direct investor must have an effective voice in management. The investor must have the ability to influence management of the direct investment enterprise. Absolute control of the direct investment enterprise is not a prerequisite (UNCTAD, 2005).

Means other than an equity stake also exist through which an investor can obtain an effective voice in a direct investment enterprise. These include subcontracting, management contracts, turnkey arrangements, franchising, leasing, licensing and production-sharing. The FDI components mentioned above are also distinguished as either equity FDI or non-equity FDI. Most countries, however, do not include these figures in reported FDI. The OECD has begun to include some of these figures for member countries, but it is not standard procedure in other organisations (UNCTAD, 2005).

FDI is distinguished from foreign portfolio investment through the characteristic that it seeks to obtain an effective voice of control in the management of an enterprise (UNCTAD, 2005).

### **2.3.2. Additional definitions**

*"Transnational corporations or Multinational Enterprises (TNCs or MNEs) are incorporated or unincorporated enterprises comprising parent enterprises and their foreign affiliates. A parent enterprise is defined as an enterprise that controls assets of other entities in countries other than its home country, usually by owning a certain equity capital stake." (UNCTAD, 2005)*

*"A foreign affiliate is an incorporated or unincorporated enterprise in which an investor, who is resident in another economy, owns a stake that permits a lasting interest in the management of that enterprise (an equity stake of 10 percent for an incorporated enterprise or its equivalent for an unincorporated enterprise)." (UNCTAD, 2005)*

The host country is the country in which the direct investment enterprise is located. This country will host the investment (OECD, 2002).



*The home country* is the country in which the direct investor (parent company) is located. This is the country from which the investment originates (OECD, 2002).

## **2.4. Types of foreign direct investment**

Various criteria exist according to which FDI is classified. These are mainly concerned with the direction of fund flows, whether a current enterprise is taken over or a new enterprise is established, whether the parent company seeks resources or market share, and whether the FDI is accumulated over time or as a current flow of funds.

### **2.4.1. Foreign direct investment flows and stocks**

When FDI is accumulated over time, the net worth of the accumulated total is referred to as FDI stock. When funds flow from one country to another in an FDI transaction they are classified as FDI flows (Dahl, 2002; Alfaro, 2003).

### **2.4.2. Inward and outward foreign direct investment**

Inward FDI is the FDI that a host country receives during an investment as an inward FDI flow or the accumulated net inward flows as inward FDI stock. Outward FDI is the FDI that flows from the home country as outward FDI flows or in accumulation as an outward FDI stock (Sachwald, 2005).

### **2.4.3. Greenfields foreign direct investment and merges and acquisitions**

FDI can be the result of the parent company acquiring existing enterprises as either a merger or an acquisition (M&A) where the existing enterprises join or become part of the parent company. The investing company can also start a new enterprise in the host country from scratch. This is called a greenfields investment (OECD, 2002 and 2005; UNCTAD, 2005).

### **2.4.4. Resources-seeking and market-seeking foreign direct investment**

The direct investor is driven by the determination to either maximise its profit through lowering costs by obtaining cheaper inputs or through increasing its returns through gaining global market share.

When the parent company invests abroad to obtain cheaper inputs or extra resources the form of FDI is classified as resource-seeking FDI or vertical FDI. In this case the investor's aim is to use these resources in its existing manufacturing and service processes to increase their output. In other words, the investor is exploiting factor endowment differences across international borders. This is also referred to as vertical FDI (Sachwald, 2005; Slaughter, 2002).

Market-seeking FDI is what occurs when the parent company invests abroad to acquire a share of the host country's market and the host country's regional market. The process includes duplication of the company's production processes

in the host country. This is also referred to as horizontal FDI (Sachwald, 2005; Slaughter, 2002).

## **2.5. Foreign direct investment in context**

FDI, as shown later in this chapter, has the potential to provide various effects in an economy that will enhance growth, diffuse technology, and lead to increases in human capital stocks. This has led to an increase in the interest shown by, and competition for, FDI by developing nations.

### **2.5.1. Foreign direct investment in the global context**

UNCTAD is one of leading gatherers of information on FDI and the analysis thereof. The following facts are taken from the UNCTAD World Investment Report 2005.

- Foreign affiliates of some 64,000 transnational corporations (TNCs) generate 53 million jobs.
- FDI is the largest source of external finance for developing countries.
- Developing countries' inward stock of FDI amounted to about one third of their GDP, compared to just 10% in 1980.
- One-third of global trade is intra-firm trade.

In 2004, total FDI inflows reached a total of US\$648 billion of which US\$233 billion went to developing nations. The total FDI to developed nations dropped 14% from 2003 and for developing nations rose 40%. Developing nations now receive 36% of global flows.

The main recipients of FDI were, in order, the United States, the United Kingdom and China. The United States and the United Kingdom are two of the main providers of FDI along with Luxembourg. Luxembourg represents the main clearing house for Europe and therefore its appearance as one of the top providers of FDI could be misleading. Overall FDI outflows from the European Union declined by 25% from 2003 to 2004.

Total world stock of FDI is estimated at US\$9 trillion from 70 000 TNCs with at least 690 000 affiliates. The total sales of the affiliates are estimated at US\$19 trillion. General Electric (US), Vodafone (UK) and Ford (US) are the largest foreign investors from the developed world. Hutchinson Whampoa (HK – China) is the largest investor from the developing world.

Services, and particularly financial services, accounted for 63% of cross border M&As. M&As reach a level of US\$381 billion with developing countries receiving a significant share. India and China registered the largest share of greenfields FDI in the world.

#### **2.5.1.1. Asia and Oceania**

In the period 2003 to 2004, Asia and Oceania received US\$148 billion of which US\$105 billion went to East Asia. South Asia (including India) received US\$26 billion and West Asia (including Saudi Arabia and Turkey) received US\$9.8 billion. One reason that is considered to be one of the most important factors for the Asian FDI growth is that the Association of Southeast Asian Nations (ASEAN) and China have agreed to become a free trade area by 2010 and many Asian countries have also signed free trade agreements with the USA.

In this context, China alone received US\$61 billion. China is also becoming the main exporter of FDI in the region with a broad range of investments in developed nations and developing nations.

#### **2.5.1.2. Latin America**

In 2004, Latin America (including the Caribbean) received US\$68 billion with Brazil and Mexico receiving US\$18 billion and US\$17 billion respectively. Mexico, Brazil, Argentina and Chile receive two thirds of all Latin American FDI inflows. Overall investment in the services sectors dropped, and manufacturing and then resources make up the main share of FDI inflows in the region. It must, however, be noted that in Central America and the Caribbean, services remain the largest sectoral recipient of FDI.

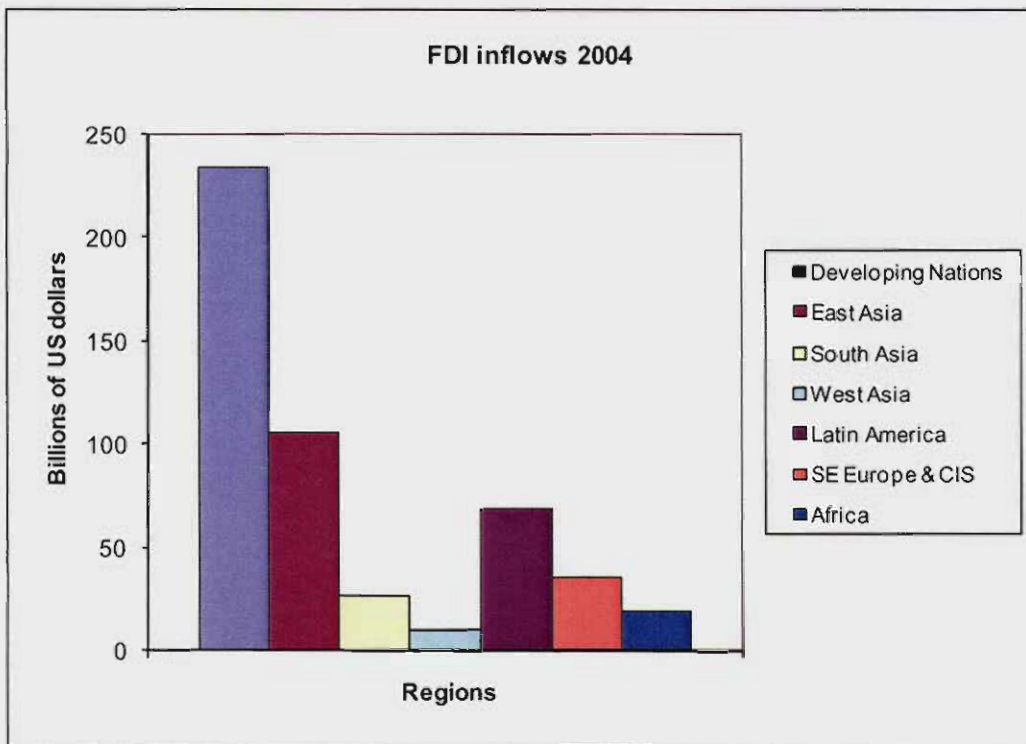
#### **2.5.1.3. South-East Europe and the CIS**

South-East Europe and the Commonwealth of Independent States constitute a new group of countries under the United Nations reclassification. This region received US\$35 billion in 2004. This is the fourth consecutive year of growth in FDI figures for this region and this represents a 40% increase from 2003. South-East Europe received US\$11 billion and the CIS US\$24 billion. Russia remains the largest recipient of FDI in the region. South-East Europe is expected to see significant growth as its member countries are systematically integrated into the EU over the next decade or so.

#### **2.5.1.4. Africa** (Also see the next section)

Figure 2.1. is a summary of the figures discussed in this section and shows the relatively low percentage of FDI inflows that Africa receives.

Figure 2.1: FDI inflows to developing regions 2004



Source: Data from UNCTAD World Investment Report 2005

### 2.5.1.5. The developed world

The overall trend for FDI inflows in the developed world is a declining one with the developed world only receiving US\$380 billion. Inflows into the EU continued to drop and the EU only received US\$216 billion in 2004. The only exceptions to this trend are the **US**, the **UK** and **Japan**, where substantial cross border M&A activity led to increases.

According to the World Investment Report, the outlook for 2005/2006 indicates substantial growth in FDI levels in almost all developing regions. This is attributed to continuing globalisation and the opening of traditionally closed

markets for FDI. FDI into the developed world is, however, expected to drop due to continuing pressure on TNCs for increased production and lower costs.

### **2.5.2. Foreign direct investment in Africa in a global context**

This section gives a brief overview of the current FDI situation in Africa. An in-depth look at FDI and trade in the SADC region of Africa is given in Chapter 4.

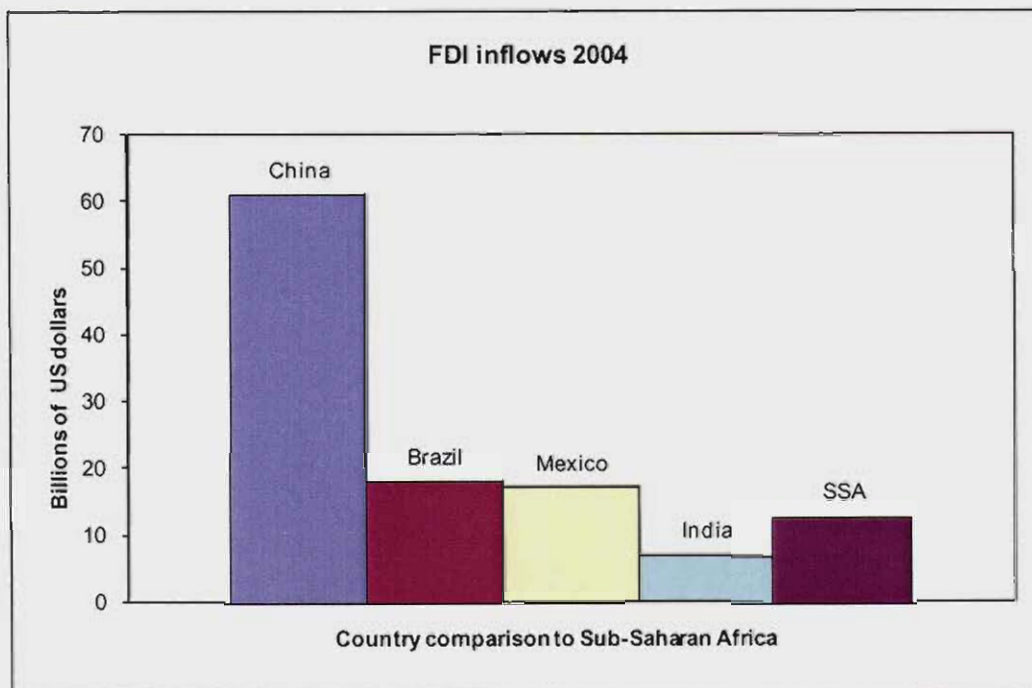
The level of FDI inflows to Africa remained the same as 2003 in 2004 at US\$18 billion. This figure is about 3% of world figures. The leading recipients in Africa are the resource-rich countries like Angola, Nigeria, Sudan and Equatorial Guinea. All these countries showed slight increases in FDI from 2003. South Africa, on the other hand, showed a slight decline. Most FDI investors in Africa are European, followed by the United States and South Africa (UNCTAD, 2005).

Though Africa has implemented many policies to attract FDI, it has failed to significantly attract higher levels of FDI. UNCTAD (2005) attributes this to slow implementation of social and economics policies of reform and the slow lowering of trade barriers.

South-South investment rose significantly from the 1980s through the 1990s. The leading investors from developing nations are China, India, Taiwan and South Africa (Teunissen *et al.*, 2005).

Figure 2.2. is a further look at the state of affairs of the levels of FDI inflows to Africa and especially Sub-Saharan Africa (SSA). This graph furthers the proof from Figure 2.1. that Africa receives a significantly low percentage of global FDI inflows.

Figure 2.2: Comparison of FDI inflows to selected developing countries



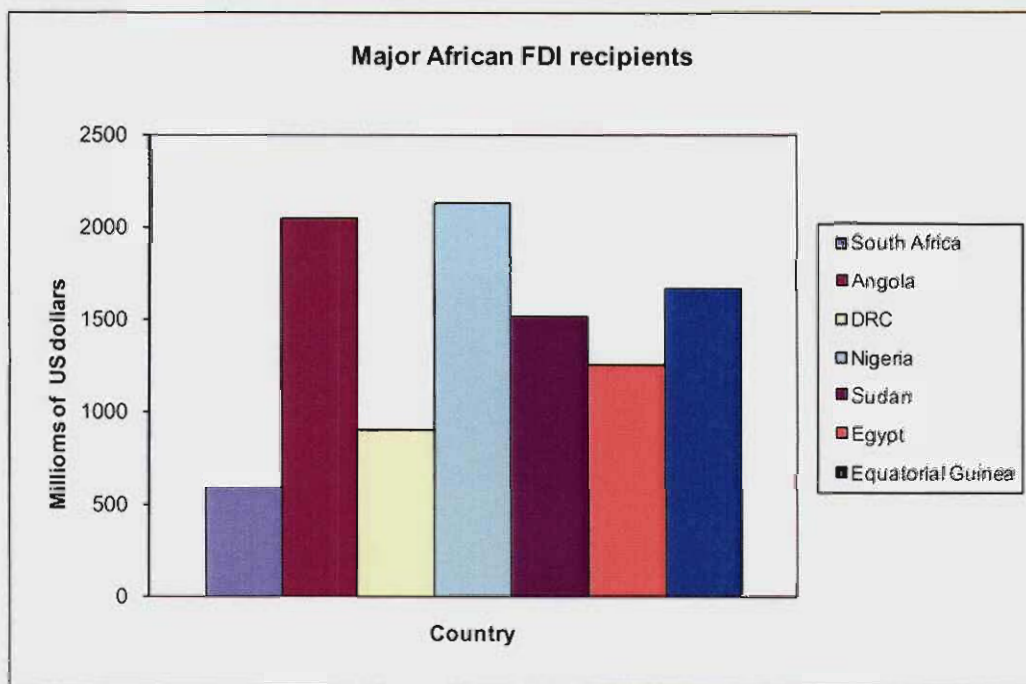
Source: Data from UNCTAD World Investment Report 2005

Further miscellaneous FDI statistics reveal that landlocked countries share almost equally with coastal countries and that South Africa is responsible for more than 50% of the total African M&As (UNCTAD, 2005).

Figure 2.3. shows the leading recipients of FDI in Africa in 2004. The countries shown in the graph are all resource-rich countries and that suggests that most FDI to Africa is resource-seeking FDI. This sectoral bias is confirmed by the UNCTAD (2005) report on economic development in Africa and FDI.



Figure 2.3: Leading African recipients of FDI 2004



Source: Data from UNCTAD World Investment Report 2005

Asiedu (2002) concludes that the marginal benefit from increased openness to trade is less for Sub-Saharan Africa. Africa is therefore different and policies that proved successful elsewhere may not be equally successful in Africa.

Asiedu (2004) furthermore concludes that Sub-Saharan Africa has attracted more FDI due to policy reforms, but has a declining share of global FDI. In order to **realise the employment benefits of FDI**, Sub-Saharan Africa **needs to attract FDI** in **non-natural resource** industries and host countries need to improve their infrastructure and human **capital** stocks. This is supported by **Morisset (2000)** who **concludes** that countries with attractive investment environments **were** able to attract a significant share of FDI. **Therefore aggressive liberalisation** and strong economic growth will lead to an increased level of FDI.

Jenkins and Thomas (2002) state that Africa's negative international image of political and economic instability has a severe impact on the whole continent and that a concerted effort to improve stability will also improve FDI inflows.

Naudé and Krugell (2007) also find that geography does not have a direct influence on FDI flows to Africa and neither market-seeking nor resource-seeking FDI seems to dominate. Different policy instruments are significant with different specifications of their empirical model. Political stability proved to be a significant determinant of FDI which indicates that good institutions are important.

The Fondad (Teunissen *et al.*, 2005) publication, on Africa in the world economy, attributes the inability of Africa to attract FDI to Africa being in a "poverty trap". This is the result of the lack of infrastructure, human capital, small nation states and a lack of depth in financial services and systems. African exports also remain commodity based with mostly raw materials being exported (Teunissen *et al.*, 2005).

As can be seen from these studies, traditional approaches to FDI in the African context not only produce mixed results but, in general, confirm that a different approach is needed. Though good policies and institutions seem to be the backbone of what attracts FDI to Africa in the traditional sense, the above studies also confirm that this will not close the gap that exists between Africa and other regions. In fact as Asiedu (2004) proves, the gap in FDI levels, though shrinking in absolute terms, is growing in relative terms.

## **2.6. The effects of foreign direct investment**

FDI has different effects on different countries amid different circumstances. Theoretically most studies have focused on the three most important effects namely economic growth, technology diffusion and increasing human capital.

### **2.6.1. Foreign direct investment and growth**

In general, it is accepted that FDI has a direct effect on growth through increasing capital stocks and subsequent increases in capital flows. FDI is also viewed as an indirect contributor to economic growth through technology transfers and change in technology through technology spillovers (Lensink and Morrissey, 2001).

The traditional neo-classical growth theory regarded technological progress as an exogenous variable. The theory states that technologies are equally available in all countries and that this will eventually lead to global convergence. Therefore all countries will converge in per capita income terms, steady states, savings and population growth (Naudé and Krugell, 2003).

In the traditional theory, the impact of FDI on growth was constrained by diminishing returns of physical capital. FDI could only exert a level effect on output per capita, but not a rate effect. It was unable to change the growth rate of output. The role of FDI in growth was therefore not taken seriously in mainstream economics (Calvo and Sanchez-Robles, 2002).

The traditional theory could, however, not explain empirically some of the growth processes accompanied by FDI and an augmented version was introduced. In the new interpretation, the accumulation of human capital was included. This seemed to address the shortcomings of the original theory empirically (Naudé and Krugell, 2003).

The new growth theory has human capital as a key factor. It differs from the extended traditional theory in that human capital is not just accumulated but that it also introduces positive externalities, scale economies and innovations. The positive externalities generate increasing returns to scale at the aggregate level, through their effect on the production process. With additional assumptions on the production of human capital, or the creation of new technological knowledge, endogenous growth processes are generated and technological progress is now also generated endogenously (Naudé and Krugell, 2003).

The growth theory shows that human capital is not only a complement of real capital, but a key driver of endogenous growth (Naudé and Krugell, 2003). Borensztein (1998) shows that the effectiveness of FDI on growth depends on the levels of human capital. FDI leads to growth via technology spillovers that increase factor productivity. It thus requires the host country to have the capacity to absorb the new technology. Alfaro (2003) expands upon this by showing that FDI in different sectors requires different thresholds of human capital. Human capital as a determinant for FDI is discussed in section 2.7.

MNEs are concentrated in industries with a very high ratio of research and development to sales. They also employ large numbers of highly skilled people. The import of foreign technology through the various spillover channels leads to

an increase in productivity and subsequently growth (Lensink and Morrissey, 2001).

Spillovers are achieved through four channels. They are imitation, competition, linkages and training. Imitation occurs when local firms become more productive by imitating the technologies and managerial styles of the affiliate firm. Competition leads to local firms upgrading their technology to be more competitive and efficient. Linkages happen when the foreign firms trade with local firms and technology transfer happens as a result. Training is discussed in the next section. It concerns the upgrading of human capital to handle the new technology (Lensink and Morrissey, 2001).

Technological change plays an important role in economic growth and therefore FDI is a major channel for developing countries to gain new technologies. Empirically these spillover effects have had mixed results leading authors to conclude that their effects are strongly dependent on local circumstances in the host country. The effect of FDI is stronger in countries with export promotion policies than in economies that are more import substitution orientated (Lensink and Morrissey, 2001).

Empirical evidence for the spillover effects of FDI is mixed. Kumar and Pradhan (2002) attribute this not only to country-specific circumstances, but to poor or non-existent linkages, a crowding-out effect, poor absorptive capacity, and causality between growth and FDI. They also state that most studies use static processes to define the role of FDI whereas the effect should be seen as dynamic, with several rounds of effects occurring after initial and subsequent investments.

Theoretically, two endogenous growth models exist that explain how technology spillovers affect growth.

The first model is called the model of an expanding variety of good. It assumes that technological progress is brought about by an increase in the number of the types of intermediate goods or capital goods (also called capital deepening). In this mode, the quality and productivity of each type of good is assumed to be constant (Barro and Sala-I-Martin, 1995).

The second model is called the model of improvement in the quality of products. In these models, the number of goods remains constant and technological progress comes from increasing quality improvement in the different types of goods (also referred to as quality ladders) (Barro and Sala-I-Martin, 1995).

Lensink and Morrissey (2001) conclude that volatility in FDI flows has a negative impact on growth. Countries with more vulnerable economies have lower growth rates and this is also severely affected by government policies and reaction to severe fluctuations.

A further way in which FDI can have an indirect impact on growth stems from the exploitation and distribution of raw materials and goods that are produced in the host country. Increased production will have a spillover effect on transport, communication systems and networks. Extra investments in these areas will, in turn, affect growth (Calvo and Sanchez-Robles, 2002).

## **2.6.2. The effects of foreign direct investment on human capital and skill upgrading**

Slaughter (2002) contends that FDI affects skill and skill upgrading on both the supply and demand side of the labour market. Though he achieves various levels of success empirically, the theoretical foundation is a very important aspect of FDI. The importance of the effects of FDI on human capital stems from the impact that it has on productivity and quality of life in the host country. This affects policy formulation regarding FDI, especially in developing countries.

### **2.6.2.1. The demand side**

On the demand side, the labour market is affected through technology transfer, technology spillovers and the physical capital investment in new technologies. MNEs are proved to be knowledge-intensive firms that make decisions to gain advantages through ownership, location and internalisation. This happens in both horizontal and vertical investments (Dunning, 1981).

Technology transfer occurs when the parent firm transfers knowledge assets to its affiliate on an intra-firm platform. This will often result in new production techniques in the host country. The affiliate will upgrade the skill of its workers to implement these new technologies (Slaughter, 2002).

Technology spillovers occur when processes are outsourced through mediation and licensing. It usually happens vertically in the production process in the host country but can also happen horizontally. Local firms will usually also gain

access to these outsourced inputs which will confront them with the requirement of how to use them in their processes. In turn, this will lead to further skill upgrading. Spillovers also occur when skilled labour moves between firms and takes their acquired knowledge with them (Slaughter, 2002).

Physical capital investment in new technologies also leads to the affiliate firm having to invest in upgrading the skills of its workforce to implement the new technology (Blomström and Kokko, 1995).

### **2.6.2.2. The supply side**

On the supply side, there are short-term and long-term effects on the labour market.

Slaughter (2002) states that in the short term, FDI affects the labour market through on the job training that occurs as new technologies, management styles and new processes are implemented within the affiliate. Through spillovers, this also affects other firms and can also affect the curriculum of the host countries' educational systems.

The long-term effects include the following (Slaughter, 2002):

- An increase in human capital will tend to affect the macro economic environment through increased productivity.
- FDI will lead to skills acquisition economy wide as the demand for skilled labourers rises and wages increase. Labourers will acquire skills to make use of the labour demand situation to gain higher wages.



- Increased productivity and production will lead to a rise in taxes that will enable host country governments to increase their spending on education that will, once again, lead to an increase in skills.
- FDI has also been proved to have a stabilisation effect on developing economies, making them less volatile. More stable economies tend to gain higher growth rates and more investment.
- The so called “brain drain” phenomenon is inhibited because high-skilled workers now have local opportunities and more internationally compatible wages. They do not need to leave the host country in order to gain the full advantage of their skills.

### **2.6.3. The effects of FDI on employment**

Asiedu (2004) describes four ways in which FDI affects employment that, in turn, affects growth.

- FDI leads to direct and indirect job creation. Greenfields investments lead to the highest number of jobs being created. Indirectly, jobs are created through forward and backward linkages. FDI also has a multiplier effect on domestic employment in developing countries.
- FDI-related employment leads to increased wages in host countries. Wage spillovers also occur in the related industry, with affected industries having higher wages.
- Technology transfers occur through labour turnovers when employees of foreign affiliates move to domestic firms.

- Employment in MNEs enhances the productivity of the labour force in the host country.

FDI is cited to have created 26 million direct jobs and 41.7 million indirect jobs in developing countries in 1997 (Aaron, 1999). Foreign firms pay between 10% and 130% more in wages than domestic firms in developing countries in Africa (Asiedu, 2004). Harrison (1996) finds that the productivity of MNEs is a minimum of 50% higher than that of domestic firms in Morocco and Ivory Coast. Asiedu (2004) indicates that these findings have since been confirmed by a host of other studies. It is therefore clear that FDI can play a major role in poverty alleviation.

## **2.7. The determinants of foreign direct investment**

When studying the determinants of FDI, it is important to keep in mind that FDI is an investment made by an MNE into a foreign market. It is well established that these companies are driven by their need to maximise shareholder value and equity. The MNE will thus always have in mind maximising profits through increasing sales and market share, as well as minimising costs.

Understanding the factors that enable MNEs to make the decision to expand into a host country is of paramount importance for policy formulation. A host of general determinants have been empirically tested in recent literature with mixed results. This has led researchers to conclude that, although there are general determinants, the set of circumstances in a specific market determines

the specific factors that cause FDI for that market as well as the magnitude of the various determinants.

Naudé and Krugell (2003), Lim (2001) and Blonigen (2005) surveyed literature on the determinants of FDI. Generally, two motivations for FDI stand out: the market-seeking motive and the resource-seeking motive (Asiedu, 2001; Naudé and Krugell, 2007).

The determinants are also classified into micro- and macro-determinants that are relevant in both market-seeking as well as resource-seeking FDI (Naudé and Krugell, 2003). Their impact and magnitude will differ between the two types of FDI. Alfaro (2003) also shows that the sector requirements for FDI in specific sectors in the economy tend to differ significantly.

### **2.7.1. Micro-determinants of foreign direct investment**

The micro-determinants are the factors that have a direct impact on the profitability of the MNE. These factors are location-specific and affect the firm at firm level or industry level. It should also be noted that the influence of these factors on FDI will be very sensitive to the specific type of investment and the specific host country micro circumstances (Naudé and Krugell, 2003).

#### **2.7.1.1. Market size and growth**

Market size and growth of the host economy are empirically proved to be two of the most important determinants of FDI. A larger market with high growth

assures MNEs of market share for their product and large scale economies. Larger markets also tend to have lower associated transaction costs (Lim, 2001; Naudé and Krugell, 2003).

### **2.7.1.2 Labour costs**

The cost of labour in a foreign market is also a very important factor as it has a direct significant effect on overall costs and return to scale. The overall tendency will be to have the most productive labour for the lowest cost (Lim, 2001; Naudé and Krugell, 2003).

Traditionally, firms that exploit low wages for cheap production are singled out for their exploitation of low cost labour in less developed countries. It should, however, be noted that firms will try to employ more skilled labourers to increase their efficiency. They will also be drawn to markets where they can obtain more skilled labourers at lower costs than their domestic market (Lim, 2001; Naudé and Krugell, 2003).

Naudé and Krugell (2003) also note that labour market instability can be viewed as an indirect cost of labour and that the frequency and severity of labour disputes may act as a deterrent to FDI.

### **2.7.1.3. Host government policies**

Host government policies are policies that the host government use that affect the MNE at a firm or industry level. These include incentives for investment and

performance requirements (Naudé and Krugell, 2003, OECD, 2005; UNCTAD, 2005). Incentives include policies such as tax breaks and trade incentives. The aim of incentives is to attract FDI and usually to focus it into a specific location that the host government wishes to develop. Incentives have become a very important policy tool that is used in the struggle between different countries to attract more FDI (Naudé and Krugell, 2003).

Performance requirements are used by the host government to ensure that the benefits of FDI will be realised in the host country. Such measures usually include requirements to train staff and to build specific production facilities. Performance requirements are considered to be restrictive and act as a deterrent. Other policy measures such as tax and tariff incentives are usually used to offset this (Lim, 2001; Naudé and Krugell, 2003).

#### **2.7.1.4. Tariff and trade barriers**

Avoiding tariffs and trade barriers is called "tariff hopping". In some cases it has been proved empirically that FDI will result from high tariffs on imports and certain trade barriers. In such circumstances, it is cheaper for the MNE to produce and sell in the host market than to export from the home country. In the specific case of tariff hopping, FDI and trade act as substitutes (Lim, 2001; Naudé and Krugell, 2003; Blonigen, 2005).

### **2.7.1.5. Taxes**

Direct taxes can act as a micro- and a macro-determinant. It does affect other determinants, but has a direct impact on the MNE's investment decision. Higher corporate taxes will act as a deterrent and lower taxes will act as an incentive. Empirical studies of this have produced mixed results. MNEs sometimes invest in a high-tax host because of economies of scale (Lim, 2001; Blonigen, 2005).

MNEs face taxes at different levels in both home and host countries. From a policy point of view, the question of double taxation in the home and host country could severely affect the incentive for FDI (Blonigen, 2005).

### **2.7.1.6. Transport costs**

Lim (2001) singles out the possible effects that transport costs might have on FDI. In a market-seeking MNE, high transport costs will act as an incentive to move production to the foreign market. In a resource-seeking MNE, high transport costs will be considered as restrictive.

### **2.7.1.7. Agglomeration effects**

Another more difficult to quantify determinant of FDI is what Lim (2001) calls the agglomeration effect. This implies that an MNE will choose to invest in an area and market where its needs can be serviced. This means that the place of investment will have the relevant infrastructure availability, market access and suppliers of inputs.

### **2.7.1.8. Ownership, location and internalisation**

From an MNE perspective, Dunning (1981) formulates a framework where MNEs possess three sets of advantages that influence their decision to invest. These advantages are known together as “OLI” and relate to ownership, location and internalisation. The firm has ownership of firm-specific assets that will determine whether or not it will be advantageous for them to invest. The firm has a location advantage and will only invest if it is more cost efficient for the firm to exploit firm-specific assets abroad rather than only in the home country. The firm will also have an internalisation advantage and it must be more advantageous for the firm to use its assets internally rather than contracting with other firms in the host country.

### **2.7.2. Macro-determinants of foreign direct investment**

The macro-determinants are factors that will influence the firm and its profitability at an economy-wide level. Although there is overlapping that occurs with micro-determinants, the macro-determinants are generally considered as macro-economic factors that influence FDI flows (Naudé and Krugell, 2003).

#### **2.7.2.1. Openness and Exports**

Various theories exist around openness, trade, exports and FDI. FDI act as a trade substitute in a closed economy. The opposing view has also been proved empirically, especially in the south-east Asian markets. Outward orientated economies tend to attract more FDI and an export platform for world markets.

The MNE is not restricted to the host's domestic market. Due to international competition, productivity is also increased. These two opposing views give rise to a causality question between trade and FDI. This can only be answered at a specific market level (Lim, 2001; Naudé and Krugell, 2003; Blonigen, 2005; Asiedu, 2001; Jenkins and Thomas, 2002).

### **2.7.2.2. Exchange rates**

Exchange rates as a determinant of FDI are related to openness. Two schools of thought exist in this area: the currency-area hypothesis and the considerations of exchange rate risk (Naudé and Krugell, 2003). Empirically, exchange rates as determinants of FDI have produced mixed results.

The currency-area hypothesis is based on the line of thought that firms headquartered in a hard currency country are able to borrow at lower rates and capitalise the earnings on FDI in softer currency countries at higher rates than the local firms. This leads to an increased comparative advantage due to higher share of capital value added and the size of premium on the local currency (Naudé and Krugell, 2003; Blonigen, 2005).

The second school relates to the risk in the exchange rate that the MNE is exposed to when it undertakes FDI in a foreign market. The nature of the MNE's activities is an important factor. In an export orientated firm, a depreciation is beneficial whereas the MNE relies heavily on imports and such depreciation would be negative. Large fluctuations increase overall economic volatility that affects all spheres of economic activity. The exchange rate also affects the value



of repatriated profits (Naudé and Krugell, 2003; Blonigen, 2005; Kumar and Pradhan, 2002).

### **2.7.2.3. Inflation rates**

Exchange rates reflect a country's external economic stability and inflation reflects its internal macroeconomic stability. Increased instability affects the attractiveness for investment negatively. High inflation reflects the inability of the government to enact solid economic policies, it increases uncertainty in the business environment and it also raises the cost of production. All these factors affect FDI negatively (Naudé and Krugell, 2003).

### **2.7.2.4. Budget deficits**

In a similar manner to exchange rates and inflation, budget deficits are also an economic stability indicator. Budget deficits mostly pertain to the sustainability of the government's fiscal stance. This affects uncertainty concerning the profitability of the investment (Naudé and Krugell, 2003; Bénassy-Quéré, 2005).

### **2.7.2.5. Investment and infrastructure**

Both Investment and infrastructure development increases productive capacity, which enables a more productive environment for foreign investors. Lower production costs and higher productivity are attractive factors for FDI (Lim, 2001; Naudé and Krugell, 2003; Bénassy-Quéré, 2005; Asiedu, 2001; Kumar and Pradhan, 2002).

#### **2.7.2.6. Political stability**

Political stability in a country embodies various concerns for MNEs. The concerns range from the disruption of production to the damage to property on a micro level to large shifts in the regulatory environment and macroeconomic instability. Overall, it influences investment security that affects the FDI decision (Kumar and Pradhan, 2002; Naudé and Krugell, 2003; Asiedu, 2001).

#### **2.7.2.7. Regional integration**

Lim (2001) argues that regional integration is beneficial to FDI. This occurs through the increase of market size that occurs through the internal abolition of trade barriers.

#### **2.7.2.8. Institutions**

Blonigen (2005) and Morisset (2000) emphasise institutions and the quality of institutions as a determinant of FDI. These factors influence the legal protection enjoyed by the MNE, especially in the area of intellectual property rights. The quality of market institutions also affects the cost of doing business in the host country. Lastly, the quality of institutions affects infrastructure development and infrastructure maintenance that, in turn, affects transport and production costs (Bénassy-Quéré, 2005; Asiedu, 2001).

### **2.7.3. Human capital as a determinant of foreign direct investment**

The study of human capital as a determinant of FDI has only recently become popular. Human capital and human capital levels affect FDI on both micro and macro levels and Human capital acts as a complement for physical capital. FDI is attracted to available relevant skill levels, acceptable levels of productivity and comparatively lower costs (Borensztein, 1998; Alfaro, 2003; Naudé and Krugell, 2003).

As seen in section 2.6.1, human capital leads to positive externalities and scale economies. This makes for a more attractive investment climate. Government education policies affect the long term supply of skilled labour and this affects the long term productivity prospects of MNEs.

The level of skills within an economy also enhances the absorptive capacity of the host to accommodate specific FDI. FDI is only effective when certain human capital thresholds exist (Borensztein, 1998). Alfaro (2003) also states that service sector FDI requires the highest level of human capital while primary sector investment requires the lowest level. Services sector FDI has the most positive effects on the economy and primary sector FDI the lowest.

### **2.7.4. The determinants of foreign direct investment in Africa**

From the growing literature on FDI in Africa, it becomes clear that, although traditional determinants of FDI are significant, Africa is somehow different. Asiedu (2002) concludes that an increased openness to trade will attract more

FDI to Africa but even more to other regions. Africa has a declining share of global FDI.

Morisset (2000) indicates that countries in Africa with the most attractive investment environments attract more FDI than countries with large markets and countries with more natural resources. Liberalisation and modernisation of the investment climate on top of strong growth is advocated. Therefore growth also now becomes a significant determinant of FDI.

Jenkins and Thomas (2002) attribute the low FDI inflows to Africa to an "Africa perception" or what is called the "Balkanisation" of Africa. This phenomenon refers back to the negative image that the member states of the former Yugoslavia obtained during the short but brutal civil war. FDI and other forms of investments dropped to an all-time low and have only recently started to recover; more than a decade later (UNCTAD 2005). Jenkins and Thomas (2002) conclude that policies to improve economic and political stability in Africa will improve FDI inflows to the region.

A summary of relevant literature identifies that economic policies are the most significant determinant of FDI to Africa. Policies that improve the business environment and open up economies are seen as the most significant (Naudé and Krugell, 2003). Dahl (2002) indicates that not only the adoption of such policies but, specifically, the timely implementation of these policies, is significant.

## **2.8. Policy implications of foreign direct investment for home and host countries**

FDI has become a significant factor, especially in developing economies. The amount of available FDI is limited by the number of MNEs and their production requirements. Therefore, various countries are in competition for a share of the available global FDI. Countries are using various similar policy models to attract this FDI. Getting policies in place to attract specific FDI rather than FDI in general has become an important part of policy formulation (OECD 2002).

Not only are host country governments responsible for policy formulation for attracting FDI, but home country governments and institutions are increasingly enacting policies that affect the MNE's FDI decision (OECD, 2002).

Policies regarding the attraction of FDI are based on putting the right determinants of FDI in place to attract the required FDI (Blomström and Kokko, 1995).

### **2.8.1. The policy challenge for host countries**

Host countries that want to attract FDI have to put policies in place that will result in an attractive investment environment. The main aim of these policies should entail overall stability, security and the mobilisation of resources.

The OECD (2002) states that these policies can be divided into three categories: improvements of the general macroeconomic and institutional frameworks;

creation of a regulatory environment that is conducive to inward FDI; and upgrading of infrastructure, technology and human capital.

Every aspect of the host country's economic government practices affects the investment climate. Countries that want to attract more FDI will have to pursue sound macroeconomic policies that are geared towards sustained economic growth, sustained employment growth, price stability and sustainable external accounts. Fiscal discipline, efficient and just tax systems linked with prudent public sector debt management must be implemented (OECD, 2002).

Improvements in the domestic financial systems will supplement and complement foreign investment. The availability of local finance, credit and capital markets improve the business climate and promote savings. Financial systems should also be based on international best practices and agreed financial standards (OECD, 2002).

The most important part of creating a regulatory environment that is conducive to FDI is the implementation of the principles of transparency. An environment of non-discrimination is also conducive to FDI. Host countries should endeavour to consolidate the rule of law and good governance through the eradication of corruption, clear and transparent financial reporting and the protection of intellectual property rights (OECD, 2002).

Further policies to enhance the conduciveness of the environment to FDI include increased openness to trade and that principles of non-discrimination be enshrined in legislation and government practices (OECD, 2002).

The final category of upgrading of infrastructure, technology and human capital forms the foundation of enabling productivity that encourages FDI and the absorptive capacity of the host to accommodate and take advantage of the benefits of FDI (OECD, 2002).

The upgrading of infrastructure will enable MNEs to form the required linkages to domestic firms to meet their required inputs. Human capital development will provide the MNEs with the required local workforce to achieve their required productivity (OECD, 2002).

Careful attention should be given to the balance between performance requirements and incentive packages offered to MNEs. The burden rests on the host to ensure that the FDI that results from their policies meets national expectations and that the promised benefits materialise in the local economic environment (OECD, 2002). Blomström and Kokko (1995) stress the importance of indirect measures of affecting benefit materialisation rather than direct measures such as local investment and competition.

### **2.8.2. The policy challenges for home countries**

There is a global trend where home countries are becoming more involved in the destination of FDI flows. Home countries now realise that they can influence FDI decisions through policy implementation. These policies serve economic and political goals and may assist or hamper host country efforts (OECD, 2002).

In order for sustainable worldwide economic development, it is important for home countries to follow the path of increasing trade liberalisation and open markets. Encouraging technology transfers to developing countries will further enhance economic development. Home countries should also review their own policies to attract FDI and assess the impact that it has on less developed nations (OECD, 2002; Morisset, 2000)).

Another area that can influence FDI flows that home countries should be aware of is the way they can use official development assistance to enhance FDI flows and the resulting spillover effects in developing nations. Global levels of aid are on the decline due to ineffectiveness. Home countries should review their stance on assistance and take the synergies between FDI and assistance into account when making policy decisions (OECD, 2002; Asiedu, 2001).

### **2.8.3. The policy challenges for MNEs**

MNEs have a social responsibility in the environment in which they operate. They should endeavour to embrace the practice of responsible corporate behaviour and be accountable to the nations in which they operate. The OECD has drawn up guidelines for MNEs to act accordingly. Home and host countries have a responsibility to hold them accountable to these practices. MNEs can further their own stature by drawing up and implementing transparent codes of conduct (OECD, 2002).



## 2.9. Summary

This chapter provided the theoretical background for this thesis. It proceeded by describing the international fund flow arena of which FDI forms part along with portfolio flows and aid flows. FDI occurs when an investment is made to acquire a lasting interest in an enterprise operating outside the economy of the investor. Such an investment is usually made to gain an effective voice in the management of such an enterprise. FDI is also separated into the categories of flows and stocks, mergers and acquisitions, and greenfields investments. The investor is called an MNE or a TNC.

The global picture of FDI indicates the relevance of investigating FDI. Currently some 64,000 TNCs generate 53 million jobs globally. FDI is the largest source of external finance for developing nations and the inward FDI stock for these nations' amounts to a third of their GDP. In 2004 FDI inflows reached US\$648 billion of which US\$233 billion went to developing nations of which China received the most. Along with the USA and the UK, China is one of the three leading recipients of FDI. The USA, the UK and Luxembourg are the largest sources of FDI. The current trend is a declining flow to developed nations and an increasing flow to developing nations.

More than half of developing nations' FDI inflows go to Asia and Oceania with China receiving around a quarter of all developing nations' FDI inflows. Latin America receives just more than 25% of developing nations' FDI inflows, Central and Southern Europe receive about 12.5% while Africa receives less than 10%. Sub-Saharan Africa receives less FDI inflows than China, Mexico and Brazil and

just a little more than India. Nigeria, Angola and Equatorial Guinea are the largest recipients of FDI in Africa. These are also the main oil exporting countries of Africa.

Africa, and especially Sub-Saharan Africa, is underperforming in relation to its peers and is therefore potentially not benefiting as much from FDI as it might.

The main effect of FDI inflows into any economy is economic growth that is caused through the direct capital expenditure, increased wages and productivity, technological spillovers, spillovers to local firms that are contracted to supply inputs, the upgrading of human capital through training and better education, and increased wages.

The determinants of FDI are grouped into micro- and macro-determinants. Micro-determinants are the factors that impact directly on the profitability of the MNE. These are market size and growth, labour costs, host government policies, tariffs and trade barriers, taxes, transport costs and agglomeration effects. Macro-determinants are the factors that impact on the profitability of the MNE at an economy-wide level. These factors comprise: Openness of trade and exports, exchange rates, inflation rates, budget deficits, investment and infrastructure, political stability, regional integration and the quality of institutions.

The traditional determinants of FDI are significant in Africa but not to the same extent as in other developing nations. This is attributed to various factors including lack of quality institutions, slow economic reform, closed trade policies and, most of all, to a negative international image that is a result of political instability.

In order to attract FDI inflows, host countries need to implement policies that will create investor-friendly climates by directing their efforts at the determinants of FDI that they can influence. Home countries are also increasingly using FDI as a policy tool to influence the behaviour of foreign governments and this needs to be taken into account by the host countries.

Understanding the theoretical background of FDI enables the understanding of the important role that FDI plays in enhancing development in growing economies. FDI by itself does not cause growth or development but it acts as a multiplier that can help developing countries to attain real development in a shorter time span. The benefits of increased human capital stocks, wages and technological diffusion can lead to increases of overall living standards in the host country.

Form the perspective of the SADC, this is important due to severe underdevelopment, lack of human capital, skewed income distribution and economic instability in the region. FDI can have a significant impact on future growth and development in the region. In order to realise the benefits of FDI, the SADC needs to attract relevant FDI in industries that will have the largest possible spillover effects. The SADC also needs to improve its infrastructure and human capital stocks to reap the greatest benefits from FDI.

In the next chapter, the theory of FDI, as set out in this chapter, will be linked to the international trade theory and the relationship between trade and FDI will be discussed.

## **Chapter 3: Foreign direct investment and trade patterns: Theoretical perspectives and international evidence**

### **3.1. Introduction**

The relationship between FDI and trade in the SADC is the main focus of this thesis and forms the basis of the central hypothesis as was discussed in Chapter 1. In chapter 2, trade and trade flows were shown to be determinants of FDI. In this chapter, the theoretical perspectives are discussed and an overview of international evidence is given in support of the theoretical basis. Some questions that arise in investigating the relationship between these economic activities are mostly related to whether they act as complements or substitutes, whether there is a lagged effect, the direction of causality, and whether intra- and inter-regional trade has an effect on both of them.

The first section of this chapter (section 3.2) examines studies that draw from both trade and FDI theory. Partial equilibrium and general equilibrium studies as well as studies that focus on the theory of firm behaviour are briefly discussed in this section. In section 3.3., causality between trade and FDI is discussed. Section 3.4. reviews the influence of global production networks on FDI and in section 3.5., regional integration is discussed. The chapter concludes in section 3.6. with an analysis of the impact of the theory of trade and FDI for the SADC.

## **3.2. Theory of FDI and trade**

Although a detailed discussion of trade theory falls outside the scope of this study, and the theory of FDI has been discussed in chapter 2, it is important to evaluate the common background and linkages of both these theories. This section will therefore investigate the link between trade and FDI.

Mekki (2004) states that theories dealing with FDI and trade have different origins and aims. Trade theory tries to explain why countries trade with one another whereas FDI theory tries to explain why firms produce abroad and invest in particular countries. Various studies such as Dunning (1981), Helpman (1984), Helpman and Krugman (1985), Markusen (1983), Brainard (1993), Horstmann and Markusen (1992), Markusen and Venables (1995) and Markusen (1995), Eaton and Tamura (1994) and Fontangé and Pajot (1997) have integrated FDI into the trade theory and concluded that FDI generates complementary trade flows of finished goods. Other studies have concluded that FDI and trade act as substitutes for finished goods but are complementary for intermediate goods (Blonigen, 2001; Head and Ries, 2001; Swenson, 2004). Mekki (2004) argues that in the case of the Tunisian economy, FDI inflows and trade are complementary for the manufacturing sectors of the economy and for some primary sectors they are substitutes.

### **3.2.1. Partial equilibrium studies**

Blonigen (2005) criticises early studies in FDI trade relationships for their view that trade and FDI are substitutes. Most of the studies he refers to assume that

FDI is a natural progression of exports when it becomes cheaper to produce in the host country and the economies of scale become significant. He refers to early studies on the trade-FDI relationships between outbound United States FDI and exports to Japan. These studies that include Blonigen (1997), Blonigen (2001), Lipsey and Weiss (1984) and Grubert and Mutti (1991) found that trade and FDI had a complementary relationship although they did not discount the host country characteristics that could influence the FDI decision.

Blonigen (2005) found that where FDI occurs for a specific product, exports in the same product declined, but exports for intermediate goods used in the production process of the same product rose significantly. The study was conducted on the ten-digit Harmonize Tariff System (HTS) and the findings held for the entire set of data. Other studies such as Head and Ries (2001) and Swenson (2004) confirm this result. The conclusion is that, in countries where strong business, political and personal relationships exist between suppliers of goods and assemblers, these relationships will have a strong impact on FDI decisions.

These relationships are vertical in nature. Blonigen (2005) also discusses subsequent studies of horizontal relationships. At first glance, these studies showed little significance or the results were very sensitive. Blonigen then augmented his study to focus only on strong relationships between larger firms and found that the probability of an MNE making a FDI decision to the same region as its "friends" increased by 20%.

### 3.2.2. General equilibrium studies

General equilibrium focuses on long-term microeconomic factors that influence the MNE's FDI decision and location. Partial equilibrium studies take into account only short-term effects and, in general, ignore long-term general equilibrium factors that affect FDI decisions and locations. Most FDI studies use cross-sectional data and this method implicitly assumes that the data represent long-term equilibrium. Constructing a model that represents both long- and short-term factors is even more difficult than just focusing on either short- or long-term effects (Blonigen, 2005).

Blonigen (2005) argues that the general equilibrium determinants are based on the theoretical evolution of international economics. Originally the theory of international economics was based on the Heckscher-Ohlin theory, which was based on trade being determined through differences in factor endowments between countries. Empirically this had little success.

The empirical shortcomings of the Heckscher-Ohlin theory led to the adoption of the gravity model of trade. Though it originally suffered from theoretical shortcomings, the gravity approach, through various studies in the 1990's, gained in theoretical standing and is widely used today. In the gravity approach, trade is specified as a function of the GDP of both trading partners and the distance between them. Various adaptations and interpretations of these factors used in the gravity approach exist (Blonigen, 2005; Deardorff, 1998; Anderson and van Wincoop, 2003).

Gravity has also been proved to explain cross-country FDI. In trade studies, the theoretical base of gravity has been proved, but this approach is still avoided when it comes to FDI (Blonigen, 2005). Intuitively, most research on FDI still focuses on the theoretical assumption that FDI is a result of either a horizontal or a vertical production choice of an MNE. Various factors have been empirically proved as explanatory for FDI in different circumstances and this indicates much more complex relationships in the field of FDI than in trade (Eckholm *et al.*, 2003; Bergstrand and Egger, 2004).

Brainard (1997) and then Markusen *et al.* (1996) did most of the early work in building a theoretical general equilibrium model for FDI. Their work focused mostly on two country, two product, imperfect competition and two sector scenarios. Both had serious shortcomings and, though they obtained positive results, the assumptions and variables used have been proved to be insufficient and unrealistic (Blonigen, 2005). This mostly refers to the handling of country size, not taking into account the differences in factor endowments and the assumption that the FDI decision of the MNE is independent of its FDI decision to other countries.

Empirical results of studies such as Hanson *et al.* (2003) and Fienberg and Keene (2003) conclude that factor differences increase FDI in industries where the factor is intensely used and the host country has a comparative advantage: It also shows that the type of FDI is sector dependent as a lot of vertical activity is found in specific manufacturing sectors (Blonigen, 2005).

Blonigen (2005), Blonigen and Davies (2004) and Carr *et al.* (2001) refer to the significance that data errors play, especially when working with less developed



countries, due to data reporting errors, whether deliberate or not. This is usually addressed by using country dummy variables and the use of logs on variables to reduce fluctuations in the error term. The suggestion of the use of logs is significant since the gravity model discussed in Chapter 5 makes use of logs to transform the model to a linear model.

Bos and Van de Laar (2001) compare Dutch FDI outflows to FDI inflows to EU accession countries of Central and Eastern Europe as well as other transitional economies in central Asia. Their use of the gravity model and their results gives credibility to the overall use of the gravity approach. It is also significant because it is a long-run general equilibrium model. Their results indicate that there is a no significant “catching up” effect on FDI inflows but rather that “normal” economic fundamentals determine FDI inflows.

Capital inflows lead to an increased demand in the host economy, in turn leading to a rise in the prices of non-tradeable goods and services relative to imported goods and services. If the host’s exports are perfectly price elastic, prices will increase relative to exports. The change will affect the returns to factors that are used intensively in the affected sectors. Thus capital inflow-induced terms-of-trade effects may affect real income for any real level of output, while the output level may not be affected (World Bank, 2004).

### **3.2.3. The theory of firm behaviour in the FDI-trade relationship**

Helpman (2006) highlights the shortcomings of the traditional trade theories in explaining individual firm behaviour in foreign activities and provides a

literature review of alternative forms of modelling the foreign activities of MNEs. The modelling includes refinements in firm-specific theoretical developments, and industry-specific refinements that include the identification of new sources of comparative advantage. Theoretical developments follow two distinct directions in focusing on heterogeneous productivity and incomplete contracts.

### **3.2.3.1. Heterogeneous productivity**

Heterogeneous productivity explains asymmetries across firms in productivity and size and the resulting differences in their behaviour in investment decisions. The heterogeneous productivity approach seeks to enhance the traditional trade theories of differences in factor endowments that focused only on product differentiation. Empirical evidence suggests that not all firms in an industry export and exporting firms do not represent a random sample from the industry. Therefore the traditional monopolistic models of all firms exporting to all countries, unless there is an external pressure for the formation of an MNE, do not hold. Heterogeneous productivity uses the asymmetry in productivity and size to explain this shortcoming (Helpman, 2006).

The background of the model of heterogeneous productivity is described below.

Due to differences in productivity and the size of the firm, its role in a specific market will lead it to close down if it cannot produce at a profit. It will only serve the domestic market if it can produce at a profit and the export cost is too high. It will export to foreign markets if its profits exceed the export costs to the market. Firms will enter the market at a specific rate and will also fall away from the

market due to the cost and productivity implications. This is called market turnover and firms will constantly have to evaluate their role in the market (Helpman, 2006; Melitz, 2003).

Trade liberalisation leads to lower costs and firms will have increased profits. More firms will subsequently choose to export. Fewer firms will also fall away or be “cut-off” from the market due to lower costs (Trefler, 2004). Horizontal FDI introduces the next level of firms. Firms that choose to invest in foreign markets will have higher fixed costs but lower variable unit costs that can, overall, lower their cost structure (Melitz, 2003). Empirical evidence suggests that MNEs are more productive than non-MNEs and therefore they produce more goods, more efficiently, and at lower costs. This will motivate successful exporting firms to move into foreign markets. There are now three types of firms: non-exporters, exporters and MNEs (Helpman *et al.*, 2004).

Bustos (2005) and Melitz (2003) find that adoption of new technology has cost implications. The aim of the adoption of new technology is to improve productivity. Adoption results in higher fixed costs and has the potential for lowering variable costs. These factors will motivate the MNE to make an investment decision. It is further stated that firms with already high productivity levels will not regularly adopt new technology due to diminishing returns to scale whereas intermediate productivity firms will be regular adopters of new technologies due to the prospects of gaining a comparative advantage. In the absence of trading costs, horizontal FDI has no economic justification. Due to lowering transport costs, this suggests more complex integration strategies of MNEs. Most MNEs will follow a mixture of vertical and horizontal FDI based upon costs, productivity and profit opportunities (Helpman, 2006).

Monopolistic competition theories have used constant elasticity demand functions extensively. This implies that mark-ups depend neither on cost nor demand levels. Prices in these theories are scaled versions of marginal costs. Empirically, it is shown that multilateral liberalisation raises the number of products in all markets and this, in turn, will cut into mark-ups. Only more productive firms will be able to accommodate it, and this will result in higher productivity and lower prices. The implication is that not only do consumers in larger markets have access to more products, they also pay less (Helpman, 2006; Melitz, 2003).

Factor proportions also affect trade flows at sectoral level. At sectoral level productivity tends to be endogenous and leads to both Ricardian and Heckscher-Ohlin type comparative advantages that induces trade. Investment in these sectors will lead to increases in productivity which will, in turn, lead to greater trade (Bernard *et al.*, 2005).

Productivity also plays a significant role in the gravity approach to international trade as it has direct trade cost implications that relate to the distance between countries. This is not the only reason why countries do not trade, but explains pure economic reasons for lack of trade in certain country relationships (Helpman, 2006).

The theory of firm behaviour in the heterogeneous productivity model indicates that productivity and pricing differences across firms in an industry have important implications for trade, trade policies and FDI flows. MNEs are always looking to maximise their profit through increasing productivity and lowering of costs.

### 3.2.3.2. Incomplete contracts

The incomplete contracts model focuses on the evolution of the firm's organisation of production and distribution. This entails the firm's prerogative to manufacture components in-house or to acquire them and whether to source components domestically or from a foreign market. The same holds for any stage of the assembly process. The difference is drawn between outsourcing and offshoring. Empirically it has been found that the percentage of intra-firm trade to total trade is positively correlated to capital-labour ratios across industries. These differences across countries also influence MNE behaviour (Helpman, 2006).

The incomplete contracts model can be described as follows:

The firm can internalise at home, outsource at home, internalise abroad (FDI), and outsource abroad. Contractual input intensity that focuses on the relative intensity requirements of various inputs in the manufacturing process is expanded to include the relative intensity requirements of inputs in the manufacturing of intermediate goods. At various stages of the product cycle, MNEs will follow different outsourcing and offshoring options due to changes in cost and productivity. This combines heterogeneous productivity with incomplete products. Another factor that influences these decisions is the headquarter centricity of the firm. The higher this centricity, the more internalisation will occur (Antràs and Helpman, 2004; Melitz, 2003; Helpman 2006).

Matching and thick market effects imply that there is no infinite elastic supply of component producers and that the MNE will have to adapt its outsourcing and offshoring policies according to availability and costs of components in a non-perfect competition supply line (Grossman and Helpman, 2002).

Non-availability of components or too high a cost can therefore directly lead to an investment decision domestically or abroad. Company-specific assets such as technology and brands will now also play a significant role in the contractual relationship with suppliers (Helpman, 2006).

The legal structure of host economies will also play a significant role on whether an MNE will choose to invest. The legal background of contracts between firms and the ability of the host to enforce these contracts leads to comparative cost advantages between countries. When the relative requirement of contract-dependent inputs varies across sectors, a Ricardian comparative advantage is reflected in the cross-sectoral variation in productivity levels (Nunn, 2005). Institutions impact costs in sectors with larger needs for contract-dependent inputs. Thus a country with better contract enforcing institutions gains a comparative advantage (Antràs, 2005; Helpman, 2006).

This section deals with incomplete contracts and their implication on the MNE's investment decision. From the discussion above, there is an indication that, from a policy perspective, governments that wish to attract investment will need to address the quality of their institutions, focus on transparency in the judicial system, and implement policies that shorten the implementation of contracts and licenses.

### 3.2.3.3. Portfolio of models

Markusen (2005) states that trade theory consists of a portfolio of models and that, by selecting relevant modules, one can better model various characteristics of the MNE's offshoring decision. Such a combination of study-specific theories will allow for better empirical specification and results.

According to Markusen (2005) the portfolio comprises:

- Comparative-advantage theories of trade.
- Non-comparative-advantage theories of trade.
- Trade in factors.
- The theory of foreign direct investment.
- Trade in business services.
- Trade liberalisation.

Although these theories of heterogeneous productivity, incomplete contracts, and a portfolio of theories are focused on firm behaviour, they help to explain that the MNE's decision to invest in a foreign market is directly linked to trade flows and the advantages they can obtain through exploiting trade channels.

### **3.2.4. Empirical evidence for the relationship between foreign direct investment, trade, and trade openness**

In the above sections, the focus was on the specific theoretical background of the relationship between trade and FDI. This section gives brief descriptions of empirical studies that were done on the relationship between trade and FDI.

Jensen (2002) finds that FDI inflows have a positive influence on the technological base of Polish exports.

Alguacil and Orts (2002) find a positive relationship between FDI outflows and exports from Spain. They hold their article in support of various other studies that gave similar results for the US, Japan and Austrian economies.

Pontes (2004) uses game theory to further the theoretical trade model and to conclude that, for high levels of trade costs, FDI and trade sometimes act as complements and otherwise as substitutes. The study also concludes that there is a significant difference in the relationship between FDI and trade in a final product industry than in an intermediate industry.

The OECD (2002) finds that, among their member countries, FDI levels are strongly correlated with trade and trade openness. However, they only treat FDI as a determinant of trade. FDI also plays a significant role in integrating countries into global trade and production networks. Countries that tried to impose tariffs to ensure tariff hopping and increases in FDI were, in general, unsuccessful among OECD member states.



The OECD (2005) summarises the relationship between trade and FDI as follows: Trade and FDI are intrinsically linked. FDI can act as a trade substitute or complement. Horizontally, FDI can substitute trade and, vertically, it can complement trade. They also find that foreign affiliates tend to create new trade flows with their parent companies, foreign suppliers and to third parties or countries. These trade flows can be in imports, exports or both. Increased trade leads to exposure to the host countries' market and investment opportunities which, in turn, leads to yet another round of FDI or to further increases in trade.

The OECD (2005) confirms their previous findings of a very strong correlation between trade and FDI. It is found that the long-term trend among OECD member states is that FDI is becoming more trade-intensive as a result of MNEs establishing global production networks and business-to-business value chains.

The World Bank (2004) finds that, in general, Asian FDI inflows are being increasingly affected by openness to trade and flows to export-orientated economies. This is driven by reformation of trade and FDI regimes as well as by substantial changes in technology that affect transport and production.

Fontagné and Pajot (1997) find that for France, Sweden, the US, the EU and Japan, the traditional trade theory of FDI acting as a substitute does not hold and that trade and FDI mostly act as complements. The only exception is that for certain manufacturing industries, trade and FDI in the US act as substitutes. The study argues that increased FDI leads to increased competitiveness that, in turn, led to increased exports from home and host countries. FDI also results in increased levels of exports and imports. At an aggregate level, some countries give mixed and insignificant results. However, at sectoral and industry level,

results are consistent with trade-FDI complementarity. The complementarity between trade and FDI is shown to be the result of spillovers between industries. In the specific case of France, outward FDI is a clear complement for bilateral exports but a substitute for imports. Inward FDI is a complement for both exports and imports. However, in the specific case of the US, outward FDI also acts as a complement for imports. It can be reasoned that US FDI outflows are associated with a trade deficit whereas, in the EU, FDI outflows are usually associated with a trade surplus.

Repkine and Walsh (1998) examine the industrial output of Bulgaria, Hungary, Poland and Romania during the first six years of the post-communist era. They found that FDI induced vertical waves of EU-orientated output where non-EU output mostly collapsed. Increased trade and FDI liberalisation with a primary focus on European ascension drove the changes in industrial output of these countries. Countries with the most aggressive EU integration policies achieved the highest growth rates and EU investments. Though most results were heavily reliant on the specific industry, the main conclusion of the study is that trade orientation and specialisation played the most significant role in FDI inflows and industrial output.

Guerrieri (1998) finds substantial differences between trade and FDI restructuring in the two regional trading blocs of CEEC and CIS. Even within CEEC, countries large differences occurred. Poland, Hungary and the Czech Republic pursued trade specialisation and achieved the best results. In conclusion, CEEC will act as a subcontractor for the rest of the EU for the foreseeable future. CIS has not integrated with the EU to such a large extent and tends to be more focused on trade with East Asia.

The literature outlined above suggests that a relationship exists between trade and FDI. This gives rise to the question on whether trade causes FDI or whether FDI causes trade. Causality between trade and FDI is discussed in the next section.

### **3.3. Causality between trade and FDI**

Causality deals with the concept of leading or being led. This implies that, in the FDI trade relationship, either one can lead the other or is being led by the other. Bi-directional causality implies that both are leading and following. In layman's terms, causality simply means that FDI causes trade; trade causes FDI; or FDI causes trade while at the same time trade also causes FDI (Jun and Singh, 1996).

Jun and Singh (1996) argue for bi-directional causality between FDI inflows and exports for developing countries. They conclude that greater export orientation will attract more FDI. Jun and Singh (1996) address the traditional scepticism (that argues that FDI belongs in the field of growth theory and not international trade) of using exports and/or export orientation as explanatory variables for FDI. If a country is export orientated, it will attract FDI through increased exports and the entry of foreign affiliates will, in turn, lead to increased export orientation. Empirically, they found that, for high FDI countries, exports are a significant determinant but not for low FDI countries, especially in the manufacturing sector (Significance: Thailand 1%, Ecuador and Portugal 5%, Greece and Singapore 10%).

Liu *et al.* (2002) find empirical bi-directional causality between Growth, FDI inflows and trade in China, but only one-way causality related to imports. The study attempts to address the shortcomings of other literature in the FDI field which, according to the authors, omit the dynamic interaction between the variables mentioned. Traditionally, FDI and trade can lead to increases in growth and increased FDI could lead to a rise in exports. Their results show that, in the case of China, there is also an effect where increased trade and increased growth lead to increased FDI. This link is viewed as weak and this is attributed to either FDI being a proxy for economic openness or that the study was done on a countrywide level rather than on a sectoral level.

Aizenman and Noy (2005) apply various statistical techniques including Granger causality tests to investigate linkages between FDI flows and trade on an international level, differentiating only between developed and developing countries. They find strong bi-directional linkages. As the data is segregated into sectors, industry, and even firm level, these linkages become stronger.

From these studies, it can be concluded that, in certain instances, trade flows are a significant determinant of FDI.

Bi-directional causality also, by nature, implies lagged effects and that trade or FDI during one period may be a determinant of the other one in a following period. This will give rise to the question as to whether lag structures should be used in modelling the relationship. Some options will be investigated in the empirical study but, because of the shortness of the series that's available, using elaborate lag structures is impractical due to the restrictions on the number of degrees of freedom.

### **3.4. Global production networks and foreign direct investment**

In the previous sections, the theory of trade and FDI and causality between trade and FDI were evaluated. In this section, the rise of global production networks (GPNs) and their influence on FDI are briefly discussed. GPNs draw from both FDI and trade theories to explain the MNEs' multilateral behaviour in setting up cross-border production networks.

GPNs are one of the direct results of continuous globalisation and increasing trade openness over recent decades. GPNs are the phenomena where MNEs differentiate their production structures over multiple hosts to take advantage of differences in factor endowments and other advantages to lower their overall costs and increase their productivity. This behaviour affects both FDI and trade in final goods and intra-firm trade (Sachwald, 2005). Intra-firm trade now represents a very significant part of international trade, as shown previously, and has been shown to be directly influenced by FDI.

Sachwald (2004) finds that European (French) firms tend to inter-firm trade with China on a horizontal level, whereas Japan and the US tend to trade at a vertical level. This is mostly related to the trade specialisation of the different economies. On the other hand, French firms tend to have vertical inter-firm trade relations with the CEEC. This emphasises the regional focus of global production networks (GPNs) as French firms tended to outsource vertical production to cheaper labour countries in the same region, but not to countries further away. There are also significant volume differences in inter-firm trade between France

and the CEEC than between France and China; more trade goes to the CEEC. France also tends to import more final goods from China than from the CEEC.

The rise of global production networks has significantly altered the way that MNEs are doing business, and the rapid changes in developing countries is also significantly altering global production networks. The main effect of this is that a whole new market segment for contract manufacturers has opened up and allowed for significant FDI flows to developing nations that have comparative advantages in the cost of production in the specific industries. This has also allowed MNEs to specifically focus their activities in various countries to enhance their overall profitability Sachwald (2004).

Sachwald (2005) concludes that part of continuing globalisation of the world economy is the diversification of MNE activities in various markets and the setting up of global production networks not only to gain global market share but also to increase productivity and to reduce costs. According to her findings, this intrinsic balance between vertical and horizontal FDI has become the main driver of global FDI flows to developing nations away from the traditional developed recipients of FDI. FDI to developing countries will continue to rise as they offer opportunities in market potential and enhanced production capabilities where profitable opportunities have dried up in developed economies. Part of the strong attraction of developing nations is high growth rates that were achieved over recent decades.

Many developing countries receive both horizontal and vertical FDI, but they tend to be in different sectors of the economy. Once again, China is the best example with horizontal FDI in the automotive industry, but vertical FDI in the

computer industry as opposed to the CEEC where FDI in the automotive industry is mostly vertical and the computer industry mostly horizontal. MNEs have to continuously search for new opportunities through continuous innovation while relocating production facilities to minimise cost. Developed economies will have to continuously increase and upgrade their productive profile in order to maintain FDI stocks and to keep high level research and development units (Sachwald, 2005).

### **3.5. Regional integration and foreign direct investment**

Regional integration has influenced both trade and FDI flows in recent decades. Countries that are geographically linked have formed regional and sub-regional trade blocs in an increasing tempo over the last few decades. These regional trading blocs represent trading entities that form common tariff and regulatory boundaries outward but with a lower internal structure of restrictions. Regional integration also increases economies of scale as larger common markets are formed (Te Velde and Bezemeer, 2004).

Eaton and Tamura (1994) used a gravity model to assess the relationship of bilateral trade and FDI on a regional basis. The study spanned more than 100 countries and 11 regions. They found that countries with strong exports to the US and Japan also had significant FDI from the US and Japan, the only exceptions being that Japan is more open to US trade whereas the EU has more US FDI.

Te Velde and Bezemeer (2004) show that regional integration leads to increases in extra-regional FDI but caution the use of their results as they also show that

the host country's position in the region is a significant factor for attracting FDI and that the type of regional provisions and level of integration are also significant factors.

Jordaan (1993) shows that, for the Mexican economy, integration into NAFTA has led to increased intra-regional FDI within, and between, manufacturing industries. There is also a spillover effect to other regions.

Another factor to be considered is the rise of what is called export platform FDI. This occurs when an MNE decides to invest in a foreign market with the objective of exporting to various other countries especially countries neighbouring the host. Vertical fragmentation across various hosts has also been identified, where affiliates in various hosts ship intermediate goods between them to produce a more complete product that is then shipped back to the home country. Export platform FDI could be considered to be influenced by regional integration as it has been proved significant for US - Latin American trade, US - Canadian trade, and US - EU trade. Affiliates of US firms in these regions not only serve the region, but also export significant volumes to the US (Blonigen, 2005).

Blonigen (2005) argues that host country interdependencies are the way in which various host economies relate to one another. These relationships encompass trade, trade agreements, investments and institutions. The relationships between possible host economies will inevitably affect the MNE's investment decision. An example of interdependency is an MNE having to choose the best host in a region for export-based FDI. The choice of one host affects FDI and possible trade to the others. Spatial effects have been proved in the EU where the FDI into a



neighbouring country have been shown to adversely affect FDI to the focus country. It must also be mentioned that the types of interdependencies and their influence on FDI depend significantly on the specific countries in the study (Blonigen, 2005).

Okuda (1996) found that APEC exports grew more rapidly than the rest of the world from 1970 to the early 1990s. The main contributors were Japan and the US but, over time, other members' share grew significantly. This led to significant changes in comparative advantage which, in turn, induced substantial FDI outflows from developed economies. This, again, led to an increased intra-regional interdependence in APEC that benefits the developing countries.

Japan lost its comparative advantage in labour-intensive goods, which led to substantial FDI outflows into ASEAN and China (Okuda, 1996). Further findings also included that, from the early 1970s to the 1990s, trade between APEC members shifted from being vertical to being horizontal. The implementation of NAFTA and AFTA had significant influence on intra-regional trade and FDI flows. The integration of Hong Kong and China had a further significant impact on trade and FDI flows in the region towards China (Okuda, 1996). Okuda (1996) concluded that liberalisation of FDI and trade regimes had the overall effect of increased investment in trade in the region and a spillover effect of increased growth and income.

### **3.6. The implications of the theory of trade and foreign direct investment for the SADC**

From the review of literature in this chapter, it can be seen that there is a relationship between FDI and trade. This relationship is mostly complementary but can, in some instances, also be substitutional. Bi-directional causality is also suggested between trade and FDI.

In order to attract FDI inflows, the SADC will need to focus on this relationship between FDI and trade. Policies will need to be implemented that will increase trade. Trade openness is therefore essential. An integrated tariff structure for the entire region can also help to attract FDI as it will minimise the cost risk for MNEs in their production and exports.

The theory of firm behaviour suggests that, in order to attract MNE investment, the SADC will need to increase productivity and improve the quality of its institutions.

The emergence of GPNs and regional integration over recent decades can also directly be linked to increases in FDI and trade flows. Export platform FDI and trade openness resulting from this has led to significant increases in FDI and trade flows into developing economies. The SADC will need to integrate their economies coherently and provide stimulus for MNEs to outsource production processes in their production networks to the region.

### 3.7. Summary

The first section of this chapter examined studies that drew from both trade and FDI theory. Partial equilibrium and general equilibrium studies as well as studies that focus on the theory of firm behaviour were briefly discussed.

These studies indicate that there is a relationship between FDI and trade. This relationship is mostly complementary but can, in some instances, also be substitutionary. The lower the level of data, the stronger the evidence that emerges for these relationships. It is therefore necessary to use data at the lowest level and to avoid using aggregate data where possible.

The theory of firm behaviour indicates that MNEs will seek to maximise their profit and minimise their cost when deciding on whether to export or invest. Host countries therefore need to focus on increased productivity, providing needed skills and ensuring the quality of their institutions.

Though most literature treats FDI as a trade determinant, it is also shown that FDI influences trade significantly, especially in developing countries. In the literature where causality between trade and FDI was investigated a bi-directional relationship is suggested.

In the latter part of the chapter, studies that relate to the causality between trade FDI, the influence of global production networks on FDI, and regional integration were discussed. The chapter concluded with an analysis of the impact of the theory of trade and FDI for the SADC.

In the next chapter, a brief overview of the SADC, regional bodies that interact with SADC, trade agreements and initiatives that influence SADC policies, and the current statistics of FDI and trade for the SADC are presented.

## **Chapter 4: The Southern African Development**

### **Community: Trade and foreign direct investment**

#### **4.1. Introduction**

In the previous chapters, a theoretical foundation was laid through the investigation of the theory of FDI in Chapter 2 and the theory of trade and FDI in Chapter 3.

A brief overview of the SADC is given in this chapter in the context of the purposes of this study. Recent developments in FDI and trade patterns of the SADC are discussed. The focus of this part of the study will include a discussion of the main products that the SADC trades and the main trade partners of SADC.

The working hypothesis of this study is that increased trade between SADC members and increased trade with the SADC's main trading partners will lead to increased levels of FDI in the region and that this is a more significant determinant of FDI to the SADC than sectoral (resource) considerations.

The relationship between trade and FDI is not well understood in Africa. Elsewhere in the world, it has been found that the direction of trade leads flows in FDI. For Africa, such a relationship could be important in view of (a) African economies' greater openness to trade following more and more countries' adoption of trade liberalisation programmes and regional integration schemes and (b) the greater desire among African countries to further regional trade (as

seen, for instance, in the objectives of the African Union, NEPAD and regional trade agreements such as the SADC).

Currently, the SADC is attracting very little FDI although, as a region, there are mixed results in FDI inflows. Does increasing intra- and inter-regional trade also lead to increasing levels of FDI, and what policy implications will this have for the SADC? Is the sector that attracts FDI also the sector in which there is external trade?

The answers to these questions are important because, as suggested by Asiedu (2001), Africa is different from the rest of the world and adopting the same policies and incentives as other regions of the world will not have the desired effect.

This chapter consists of two parts. In section 4.2 a brief overview of the SADC and its history is given. Other African regional bodies that have an influence on the SADC are briefly discussed in section 4.3. as well as the relevant international initiatives and agreements that currently shape the SADC's current international relationships in section 4.4. In section 4.5. and section 4.6. a qualitative view of FDI and trade in SADC is presented.

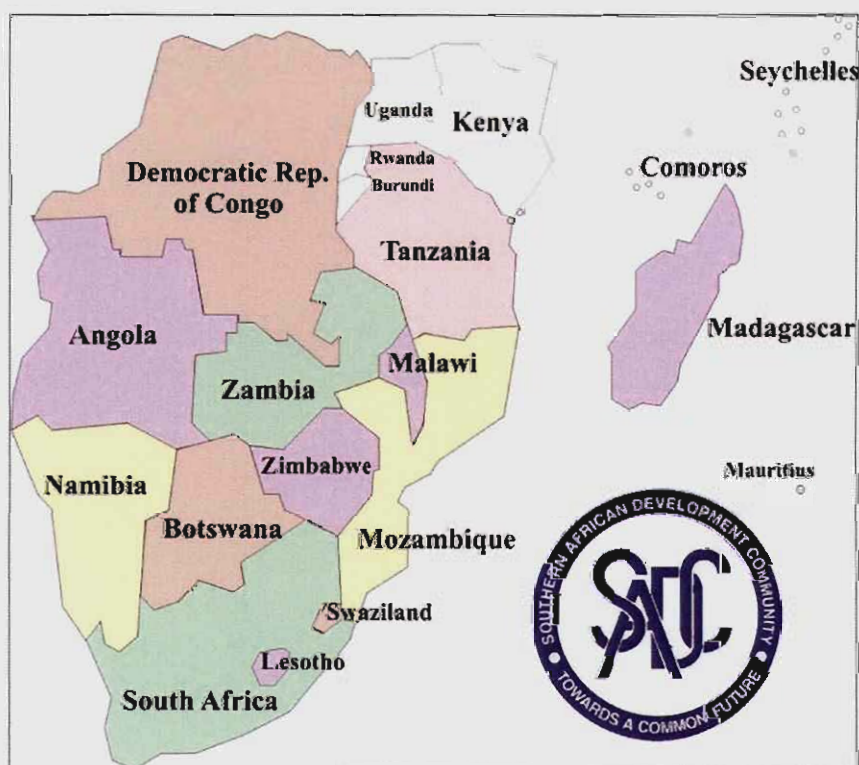
## **4.2. A brief history of the SADC**

Globalisation has lead to an increased focus on economic regions and trading blocs. Although Africa consists of many regions and regional bodies, the main regional body of which South Africa is part is the Southern African Development

Community (SADC). The SADC represents the most developed region of Sub-Saharan Africa and, economically, the largest contributor to the African economy (SADC, 2006).

The Southern African Development Co-ordination Conference (SADCC) evolved into the Southern African Development Community (SADC) in 1992. Where the SADCC had only a mandate to oversee development projects, the newly formed SADC had a much broader mandate. The main goals of the SADC are to achieve economic growth, alleviate poverty and to enhance the standard and quality of life of the people of Southern Africa through regional integration and cooperation (SADC, 2006).

Figure 4.1: Map of the SADC



Source: Own Illustration

The SADC has the following 14 member states: Angola, Botswana, Democratic Republic of Congo, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, South Africa, Swaziland, Tanzania, Zambia and Zimbabwe (SADC, 2006).

As Figure 4.1. shows, six more countries could be included in the SADC in the long term. They are Burundi, Comoros, Kenya, Rwanda, Seychelles and Uganda. For the purposes of this study, they are included as their trade and geographic locations are completely intertwined with the SADC.

At the ordinary summit of the heads of state of the SADC in August 2006, a "Regional Indicative Strategic Plan" (RISDP) was verified (SADC, 2006). It has the following regional integration roadmap:

- 2008 – Free Market
- 2010 – Customs Union
- 2015 – Common Market
- 2016 – Monetary Union

The RISDP will be the main focus for the SADC countries for the next decade. It will require the stringent implementation of trade protocols and various macroeconomic policies. The overall effect will be that, in a short time span, internal trade borders will disappear and the whole SADC will become a united trading bloc.



### **4.3. African regional bodies that directly influence the SADC**

A complete discussion of all the regional bodies in Africa that affect the SADC directly falls outside the scope of this study. This section contains only brief discussions on these regional organisations and their relationship to the SADC. The aim of this is to further enhance the understanding of the “playing field” in which the SADC operates, namely the background of increasing globalisation and regional integration of international economics and politics.

#### **4.3.1. The African Union**

The Organisation of African Unity (OAU) evolved into the African Union (AU) in 2002. The organisation includes 53 countries and has its headquarters in Ethiopia. It is modelled after the EU and its goal is to achieve pan-African integration at the level of the EU (AU, 2006).

The main objectives of the OAU were, *inter alia*, to rid the continent of the remaining vestiges of colonialism and apartheid; to promote unity and solidarity among African States; to coordinate and intensify co-operation for development; to safeguard the sovereignty and territorial integrity of Member States, and to promote international cooperation within the framework of the United Nations (AU, 2006).

The AU might be a recent development in the African landscape, but it has the political backing to become the most significant regional body on the continent.

In the coming decade this political power, will also spill over into other spheres of socio-economic development in Africa (AU, 2006).

#### **4.3.2. The South African Customs Union**

The SACU is the one regional body that not only has a significant impact on the SADC, but also limits the analysis of trade data for this study. South Africa, Namibia, Botswana, Lesotho and Swaziland make up the customs union. All are also members of SADC. Common tariffs existed before 2002 but, since then, the SACU has also pursued unified trade agreements (Grant, 2006).

Essentially, the SACU is a customs-free zone with a common external tariff imposed against all non-members of the customs union as well as having a common excise tax. Trade data collected for the countries are only recorded as SACU except for South Africa. Therefore an analysis of FDI and trade will have to be for the SACU and not the independent countries, other than South Africa. National figures exist, but they are only estimates based on the SACU trade regime (Grant, 2006).

#### **4.3.3. The East African Union**

The East African Community (EAC) consists of Kenya, Uganda and Tanzania. The EAC is similar to the SACU but has failed to implement many of its agreements and initiatives. Tanzania's decision to join the SADC and the rise of the IGAD as a major regional player may well lead to the eventual disbandment of this community (EAC, 2006; SADC, 2006).

#### **4.3.4. The Intergovernmental Authority on Development**

The Intergovernmental Authority on Development (IGAD) became significant after the Ethiopian droughts of the mid 1980s. Its mandate changed to become a body committed to the regional integration of the northern part of COMESA modelled after the SADC. The inclusion of Uganda and Kenya in this body along with the inclusion of Tanzania in the SADC has caused a lot of regional tension especially for COMESA countries (IGAD, 2006).

Along with the SADC, the IGAD makes up the two regions that are negotiating EPAs with the EU in east and southern Africa. Many SADC members are included in the East African negotiations. Uganda and Kenya are also economically more integrated with the SADC countries and a political solution for current regional demarcation disputes is currently widely negotiated without success (IGAD, 2006; SADC, 2006).

#### **4.3.5. The Economic Customs Union of Central Africa**

The Economic Customs Union of Central Africa / Communauté Economique des Etats de l'Afrique Centrale (ECCAS – CEEAC) was founded ensure regional integration in central Africa, but has virtually been rendered ineffectual by non payment of membership fees by many of the member states. Recent incentives especially, from the EU, have seen some regeneration of this body. The Democratic Republic of Congo and Angola have also since joined the SADC and there are moves within the SADC for Rwanda and Burundi to eventually be integrated into the SADC (SADC, 2006; CEEAC, 2006).

#### **4.3.6. The Common Market for Eastern and Southern Africa**

The Common Market for Eastern and Southern Africa (COMESA) includes 20 member states from north, east and southern Africa. COMESA was founded to achieve a free trade area across this region as well as a customs union. Once again, the COMESA is plagued by lack of proper implementation of agreements and intra-regional discord (COMESA, 2006).

Recent discord between the SADC and the COMESA came to front with the SADC ministerial meeting in August 2006 when SADC members who also hold COMESA membership were severely criticised and admonished to abandon COMESA for SADC only membership (SADC, 2006).

In conclusion, it can be said that the SADC, unlike the other regional bodies mentioned here, has not only political goodwill of its members, but it also has the economic will and necessity to integrate along the SADC RISDP. The role that South Africa, as the economic "dynamo" of southern and eastern Africa, plays ensures that the future and further integration of the SADC in one or another form. Only the Economic Community of West African States (ECOWAS) as a regional body can compare in importance to the SADC in Sub-Saharan Africa.

#### **4.4. SADC international initiatives and agreements**

There are many recent developments in initiatives and agreements to enhance trade, investment and regional co-operation in the SADC region. These include

NEPAD, AGOA, independent WTO agreements, the SADC EU economic partnership agreements, and the Millennium Development Goals.

This section briefly gives the background of the most significant developments. These initiatives and agreements ensure the economic integration of SADC members into the global economic community and increasingly lead to more trade openness as this is a prerequisite for further globalisation.

#### **4.4.1. NEPAD**

The New Partnership for African Development (NEPAD) forms an integrated socio-economic strategic framework for Africa's renewal and development, based on a vision of intra-African co-operation as well as co-operation with strategic international partners. This initiative is probably the most significant African policy initiative to date and not only carries the full backing of most African governments, but also that of the international community. Organisations such as the UN, the IMF and the World Bank have also given NEPAD their full support (NEPAD, 2006).

The main goals of NEPAD are:

- The eradication of poverty.
- To ensure that all African countries are placed on a path of sustainable economic growth and development.
- To halt the international marginalisation of Africa in the globalisation process and to fully integrate Africa into the global economy.

- To ensure the empowerment of women.

The goals of NEPAD are to be achieved through:

- Good governance as a basic requirement for peace, security and sustainable political and socio-economic development;
- African ownership and leadership, as well as broad and deep participation by all sectors of society;
- Anchoring the development of Africa on its resources and the resourcefulness of its people;
- Partnership between and amongst African peoples;
- Acceleration of regional and continental integration;
- Building the competitiveness of African countries and the continent;
- Forging a new international partnership that changes the unequal relationship between Africa and the developed world; and
- Ensuring that all Partnerships with NEPAD are linked to the Millennium Development Goals and other agreed development goals and targets.

NEPAD attempts to put into motion the ideas of the African Renaissance and its policies have been widely accepted and adopted. Problems remain from the international perspective in that some countries have adopted NEPAD but are lagging in the implementation of the programme. The success of NEPAD is not negotiable as it is a mirror of Africa to the rest of the world and it is what Africa needs to change international perspectives and attract capital flows and increase trade opportunities (NEPAD, 2006).

#### **4.4.2. WTO – Agreements**

Increasing bilateral and plurilateral trade agreements under various WTO agreements, including the Doha development agenda, have given the SADC countries greater access to global markets over the last decade. The effects of this were increased trade and trade openness amongst members as well as globally. Even though trade negotiations about the eradication of trade subsidies in key sectors of developed nations have all but stalled, some SADC members have reaped new trade opportunities. The SADC is also renegotiating key trade agreements with its main trading partner, the EU, and has opened long-term trade negotiations with both India and China (SADC, 2006).

Although much depends on the successful conclusion of the WTO trade negotiations, the increased international exposure of the SADC economies to the global market will continue to play a significant role in their continued integration into the global economy.

#### **4.4.3. The AGOA**

The African Growth and Opportunity Act (AGOA) was promulgated in the United States in May 2000 and significantly liberalises trade between the US and 37 designated Sub-Saharan African (SSA) countries. The Act originally covered the 8-year period from October 2000 to September 2008, but amendments signed into law by U.S. president George Bush in July 2004 further extend the AGOA to 2015. At the same time, a special dispensation relating to apparel was extended by three years to 2007 (AGOA, 2006).

The AGOA builds on existing US trade programmes by expanding the (duty-free) benefits previously available only under the Generalised System of Preferences (GSP) programme. Duty-free access to the US market under the combined AGOA/GSP program now stands at approximately 7,000 product tariff lines, including the roughly 1,800 product tariff lines that were added to the GSP by the AGOA legislation. Notably, these include items such as apparel and footwear, wine, certain motor vehicle components, a variety of agricultural products, chemicals, and steel (AGOA, 2006).

All SADC members except Zimbabwe (and for the purposes of this study, Comoros) fall under the AGOA. As with the economic partnership with the EU, the AGOA gives SADC members increased trade opportunities and exposure to the world's largest economy. Not all members have reaped all the benefits of the agreement, but for the individual SADC "brands", the AGOA provides a platform that will influence trade with, and investment to and from the US, for the next decade through increasing trade and market exposure (SADC, 2006).

#### **4.4.4. The SADC – EU economic partnership agreement**

The EU has set out to replace old ACP trade agreements, which have been deemed unlawful by the WTO, with economic partnership agreements (EPAs) by 2007. The SADC is one of the regions with which the EU is negotiating such a partnership. EPAs are preferential market access agreements that include regional integration, market access, rules of origin, trade facilitation, technical barriers to trade and phytosanitary measures (Grant, 2006).



The EPA between all of the SADC and the EU is not straightforward. The EU has a separate, more detailed, and specific agreement with South Africa. The SADC has been combined with the East African Community and split into SADC (Southern SADC) and ESA (East African) groups. This is further complicated by the overlapping of various regional bodies such as the EAC, the IGAD, the COMESA and the SADC (Grant, 2006).

These negotiations are scheduled for completion by the end of 2007 and will impact trade patterns and further regional integration in the SADC as the EU remains the SADC's main trading partner.

#### **4.4.5. The Millennium Development Goals**

The United Nations Millennium Development Goals (MDGs) are aimed at the eradication of global poverty and the attainment of sustainable growth. At its heart is the uplifting of poverty-stricken societies in a sustainable manner that will include healthier living environments. The goals provide countries around the world with a framework for development and time-bound targets by which progress can be measured (UNCTAD, 2006).

*UN Millennium Declaration, 8 September 2000: "We [the United Nations General Assembly] resolve to halve by the year 2015, the proportion of the world's people whose income is less than one US dollar a day. We also resolve to take special measures to address the challenges of poverty eradication and sustainable development in Africa, including debt cancellation, improved market access, enhanced Official*

*Development Assistance, and increased flows of Foreign Direct Investment as well as transfers of technology.”*

From this declaration, it is clear that a strong emphasis is placed on FDI and transfers of technology as a solution for alleviating poverty. No consensus exists on whether the MDGs are a positive development for Africa or whether they can actually be achieved or what the impact would be (Teunissen *et al.*, 2005).

Asiedu (2004) states that, in order to attain the goal of halving the number of people who earn less than a US dollar a day in Sub-Saharan Africa, an annual resource gap of US\$64 billion needs to be filled, which is about 12% of GDP. The bulk of these finances will have to come from outside the region as savings and income levels are low.

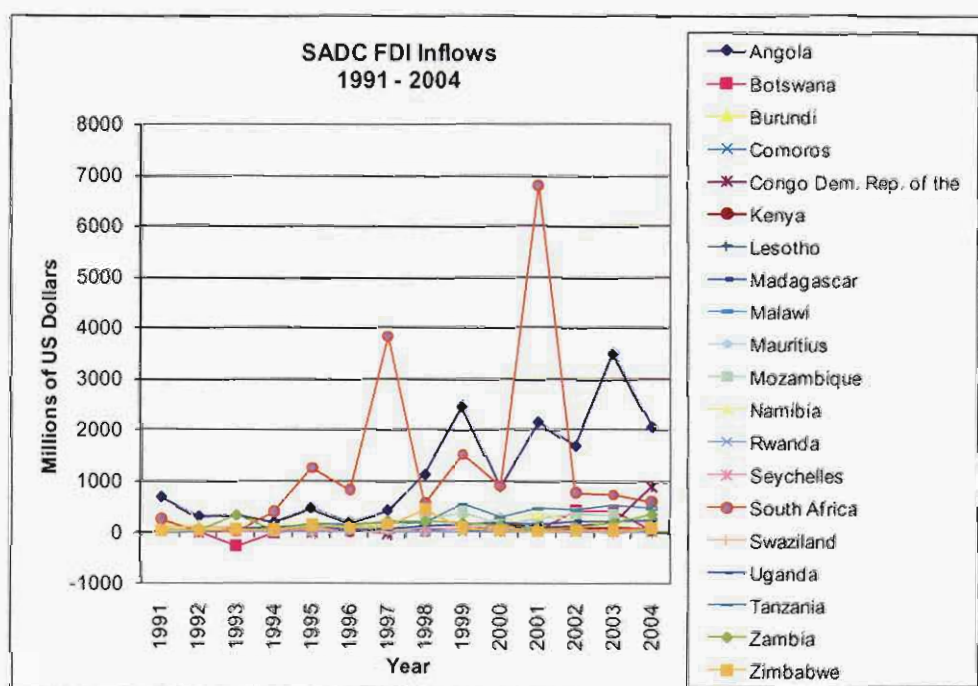
As stated in Chapter 2, the MDGs only highlight the plight of Africa and the necessity of finding determinants of FDI and growth that will substantially increase these economic entities.

These initiatives and agreements have set African countries, especially SADC countries on a road to trade openness and global integration on an unprecedented scale. If a direct link between trade and FDI inflows can be established the importance of consolidating and reaping the benefits of these initiatives and agreements will be paramount for future policy formulation.

## 4.5. FDI in the SADC

The status of FDI in Sub-Saharan Africa has already been placed in global context in Chapter 2. The aim of this section is to build upon that by taking a closer look at the relevant FDI standings within the SADC to establish a broader overview of FDI in the region.

**Figure 4.2: SADC FDI inflows from 1991 to 2004**

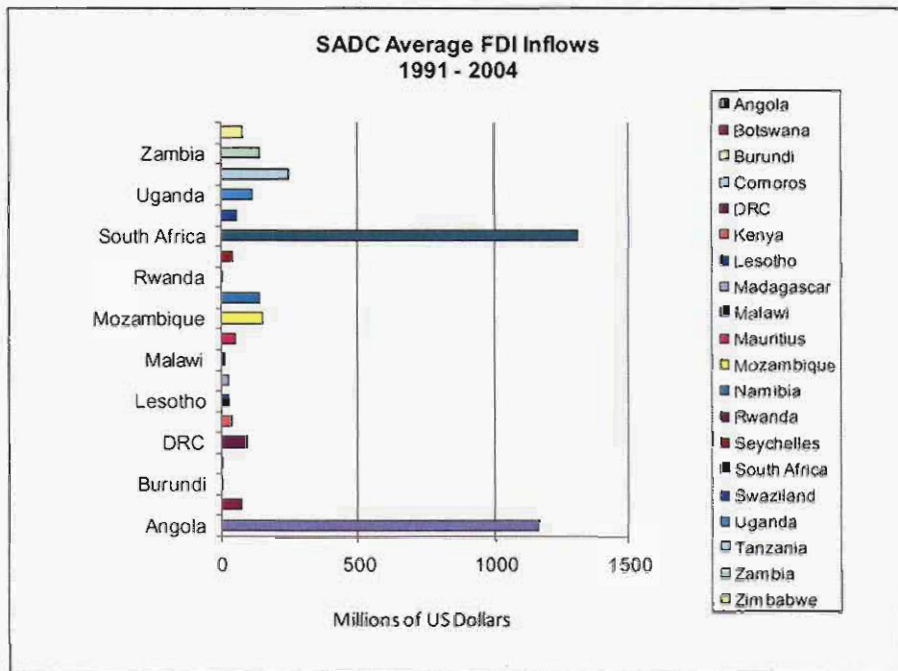


*Source: Data from UNCTAD World Investment Report 2005*

From Figure 4.2. it can be deduced that FDI inflows in the SADC region are dominated by South Africa, Angola and, towards 2004, the DRC. Both Angola and the DRC show substantial overall increases, while South Africa shows initial increases based on substantial spikes but the general trend tapers off towards 2004. It should be noted that both Angola and the DRC are resource-rich

countries and that are both are slowly recovering from years of unrest and civil war.

**Figure 4.3: SADC average FDI inflows from 1991 to 2004**



*Source: Data from UNCTAD World Investment Report 2005*

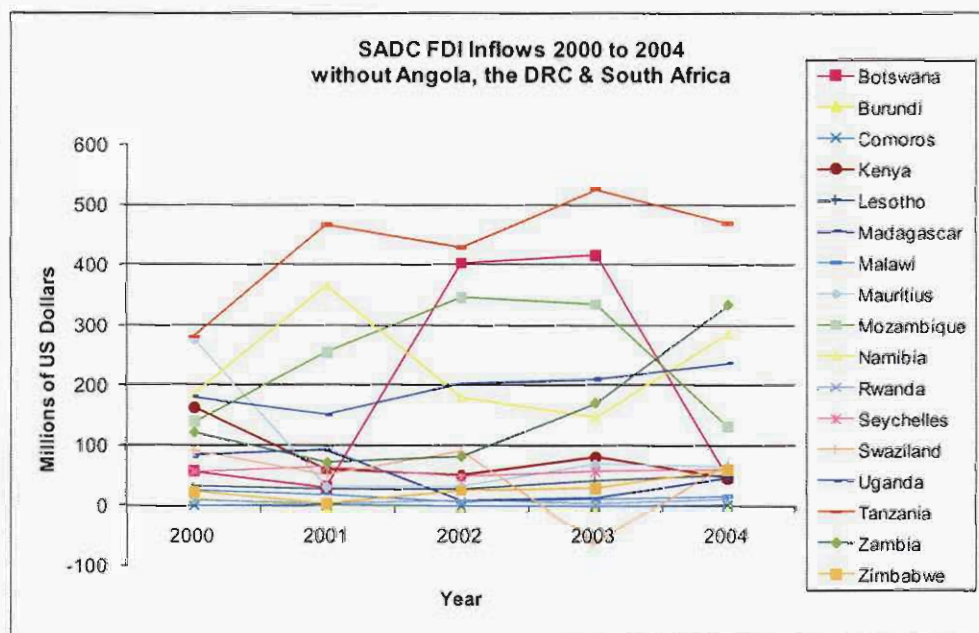
Figure 4.3. shows the average FDI inflows from 1991 to 2004 for the SADC. The absolute dominance of South Africa and Angola is clearly visible. The other countries that take a significant portion are Namibia, Tanzania, Mozambique and Zambia.

In order to get a better view of the other countries in the region, these three countries are removed from Figure 4.4. In Figure 4.4. there are clear indications that there are really two groups of countries within the SADC. Tanzania, Uganda and Zambia also show strong growth in FDI inflows from 2000. Botswana,

Namibia and Mozambique could be seen as having a general upward trend. This is offset by substantial fluctuations. These fluctuations coincide with the fluctuations of the South African graph and can therefore be attributed to the level of integration between these countries.

The other group of countries, consisting of the rest of the SADC, only show marginal increases in FDI inflows or even decreases from 2000 levels.

**Figure 4.4: SADC FDI inflows from 2000 to 2004 without Angola, South Africa and the DRC**

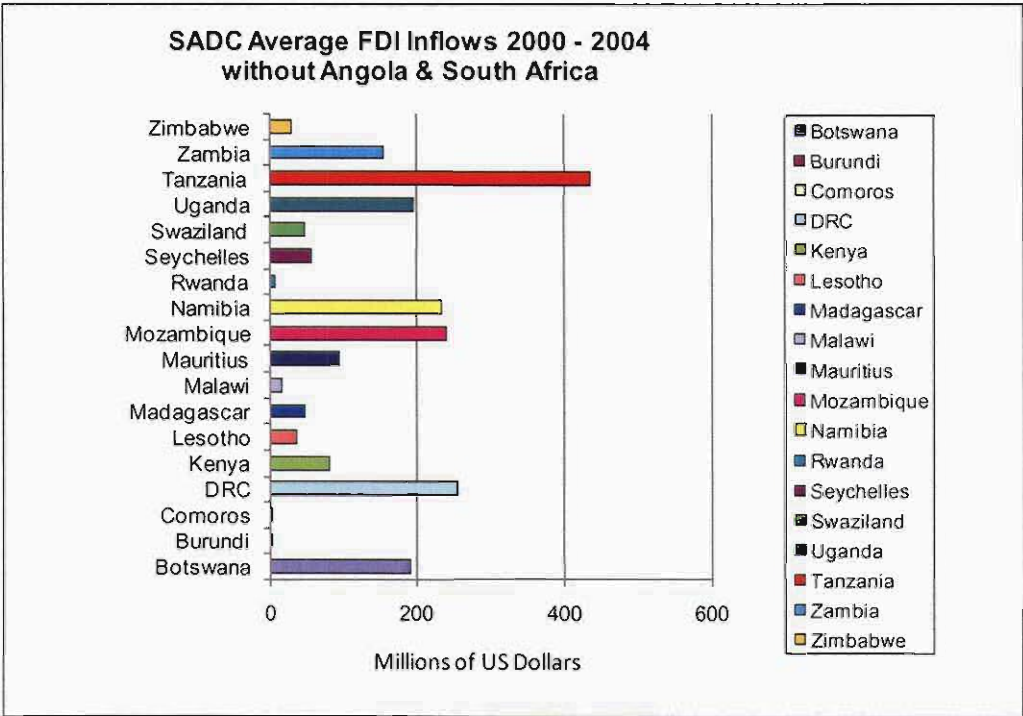


*Source: Data from UNCTAD World Investment Report 2005*

Figure 4.5. shows the average FDI inflows of the SADC from 2000 to 2004 without South Africa and Angola. As with Figure 4.3. Tanzania, Mozambique, Zambia and Namibia remain significant. The DRC, Uganda, Botswana and Mauritius now also have a significant share of FDI inflows in the region. It must be noted that both Namibia and Botswana are relatively small economies.

Zimbabwe on the other hand, which has a fairly large economy, is one of the worst performers on the graph.

**Figure 4.5: SADC average FDI inflows from 2000 to 2004 without Angola and South Africa**



*Source: Data from UNCTAD World Investment Report 2005*

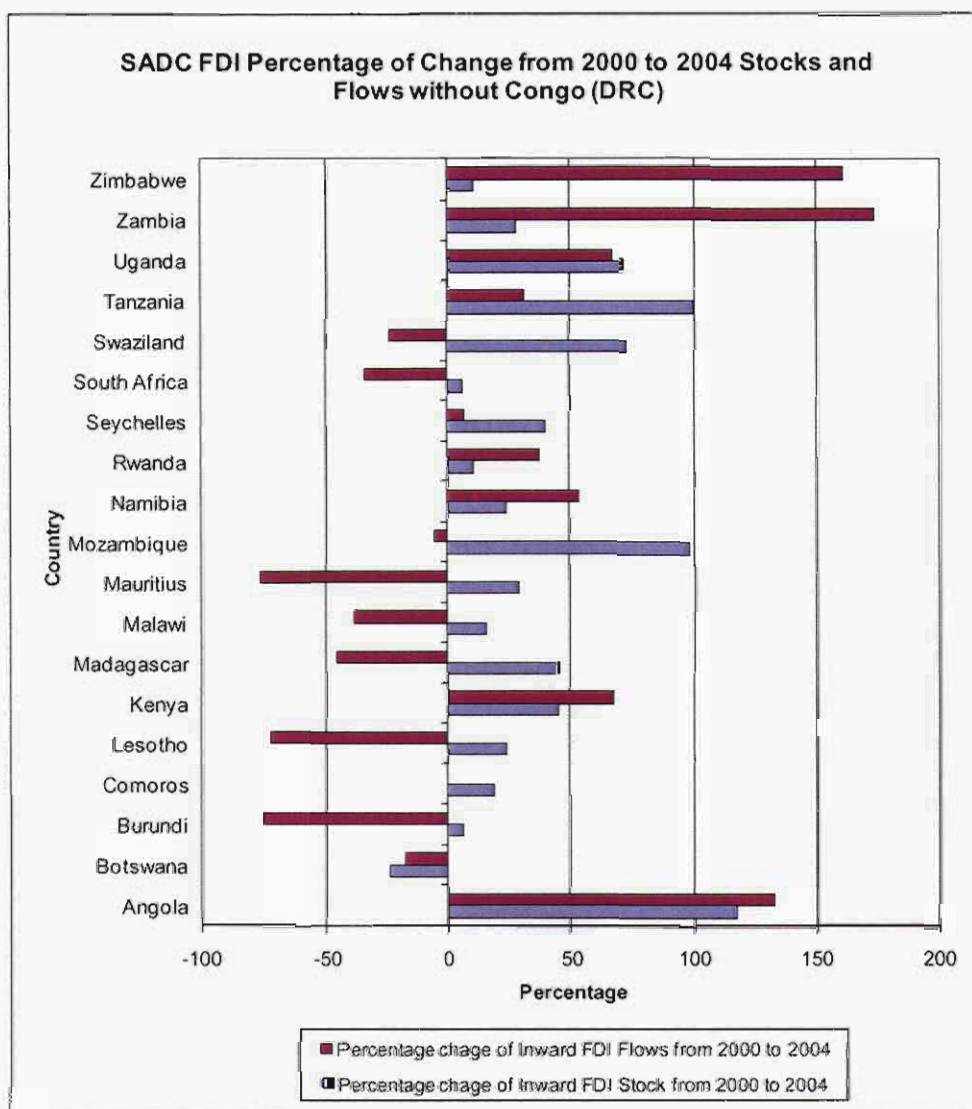
Dahl (2002) suggests the use of four criteria to evaluate FDI in the region. The first two criteria are a percentage change in the latest period from a predetermined previous period in both FDI stocks and flows. The last two criteria are FDI stocks and flows as a percentage of GDP. The problem with the percentage change criteria is that it gives only a current snapshot and gives no long-term indications. If used together with FDI as a percentage of GDP, it limits the analysis to one period only, but gives a strong indication as to the current FDI performance of the countries in the region.

For the purposes of this study, the percentage change from 2000 to 2004 in FDI stocks and flows are calculated. The results are shown in Figure 4.4. For practical reasons, the DRC has been omitted from Figure 4.4. The DRC achieved a greater than 200% increase in FDI stocks and a 3500% increase in FDI flows. These results would make it nearly impossible to assess the other countries' results.

The results shown in Figure 4.6 confirm the strong performances of Angola, Zambia, Tanzania, Uganda and Namibia. Kenya and Rwanda can also be seen as strong FDI growth countries. The very good performance of Zimbabwe shows the limitations of this method as the overall picture for Zimbabwe shows the opposite.

The results of Figure 4.2 are confirmed with South Africa, Botswana and Mozambique showing poor performance for this particular period, but a general trend that fluctuates. If Figure 4.6 had been drawn for the period 2000 to 2002 as an example, all three these countries would have shown substantial increases.

Figure 4.6: SADC FDI percentage change from 2000 to 2004, stocks and flows without the DRC

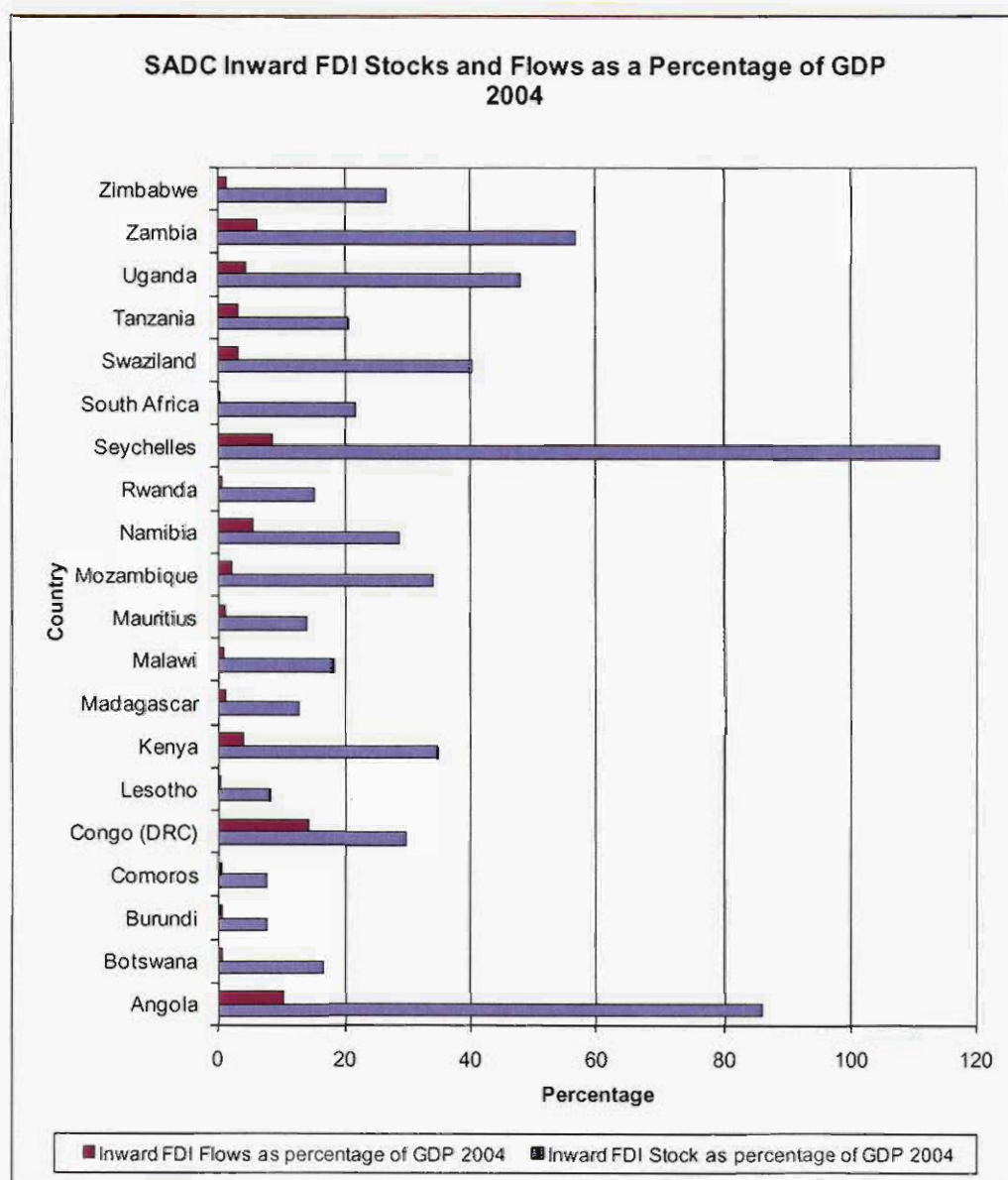


Source: Calculations on data from UNCTAD World Investment Report 2005

Figure 4.7 shows inward FDI flows and stocks as percentages of the respective countries' GDPs. FDI as a percentage of GDP places the FDI figures in the context of the size of the country's economy. FDI as percentage of GDP can be calculated for all periods and this will be evaluated as a time series in Chapter 5.



Figure 4.7: SADC inward FDI stocks and flows as a percentage of GDP 2004



Source: Calculations on data from UNCTAD World Investment Report 2005

The results shown in Figure 4.7 support the earlier findings. They add to the picture by showing the relative success of the smaller SADC countries like Botswana, Lesotho, Namibia, Rwanda, Seychelles and even Swaziland in

building up FDI stocks. Furthermore they confirm the earlier results that show South Africa's inability to attract large FDI inflows.

Most FDI into the SADC region are into the primary sector industries, mostly mining and agriculture. This is followed by the services sector primarily focused on tourism. The exception to this trend is South Africa and, to a lesser extent, Botswana and Uganda. South Africa has one of the most diversified economies in Africa and is therefore well suited to attract a variety of FDI inflows. Botswana and Uganda have also focused heavily on attracting more diversified FDI, although the main focus of FDI in these countries is still mining, agriculture and tourism. Large FDI inflows into Angola are in the petroleum industry (SADC Review, 2006).

The sources of FDI in the SADC are mainly from the leading global suppliers of FDI. The UK, the USA and Germany are the main investors in the region. France, Italy, Belgium, Sweden, Portugal and Ireland are also large investors in the SADC, but not as significant as the first three countries. The notable omission here is Japan, which has a significantly lower impact on FDI in the SADC than in other regions (SADC Review, 2006; Thomas and Leape, 2005).

Both China and India have also become relevant players in the SADC region in the last few years. Chinese FDI is mainly resource-seeking FDI in primary sectors of the economies while India has made more diversified investments in the SADC, including the primary sector, manufacturing and services (SADC Review, 2006).

Growing in stature, but becoming a very significant investor in the SADC after 2000 is South Africa. Many MNCs having strong presences in South Africa use their position to invest further in the region as well as many South African companies having a region-specific advantage have ventured across the national boundaries to gain market share in the region. An example of this is that South African outward FDI to the DRC reached ZAR62 billion in 2005 (SADC Review, 2006; Thomas and Leape, 2005).

Sector-specific data for FDI inflows in the SADC are, at best, incomplete. The different countries record only different sectors that are of interest to them and many have only recently started to collect sector-specific data at all (UNCTAD, 2006). Although this affects the ability of this study to analyse SADC-wide FDI by sector, analysis will be made for the specific sectors and countries for which the data is available along with a total FDI analysis. This is discussed in detail in Chapter 5.

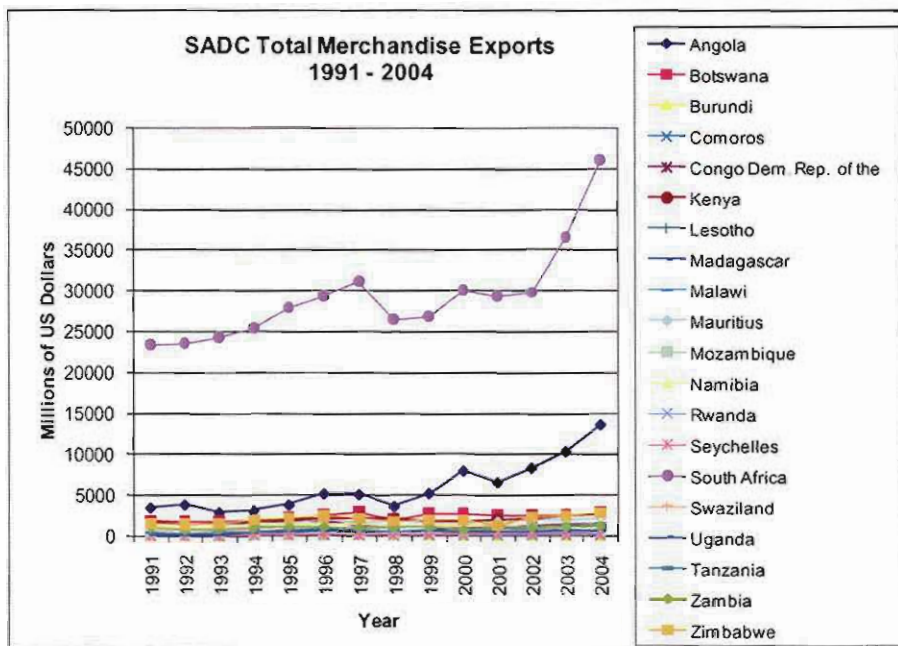
#### **4.6. Trade in the SADC**

In section 4.4. of this chapter, the background of the SADC trade environment was established. In this section we take a brief look at the country-specific trade figures to enhance the picture that has been established.

Figure 4.8 shows the total merchandise export figures for the SADC region from 1991 to 2004. As was seen with the FDI figures, the scale of the South African economy completely overshadows the other SADC countries. Angolan exports have also increased significantly over this period and have placed Angola in a

clear second place for exports in the region. According to the SADC review (2006) Angolan exports are almost all in petroleum products and mining, especially diamonds.

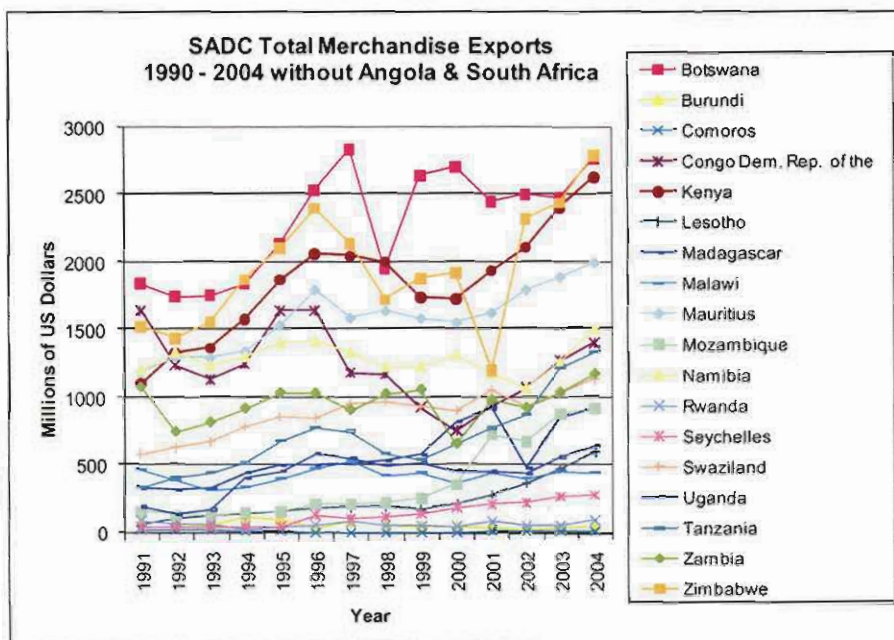
Figure 4.8: SADC total merchandise exports 1991 to 2004



Source: Data from UNCTAD Handbook of Statistics 2005

Figure 4.9 shows the same figures, but omits South Africa and Angola. This clarifies the scale of the impact that South Africa and Angola have on the figures so that the other SADC members can be more closely viewed. The picture that emerges shows that the overall trends for most SADC countries are significant increases in exports. Only Rwanda, Burundi and Comoros show little, if any, growth in exports.

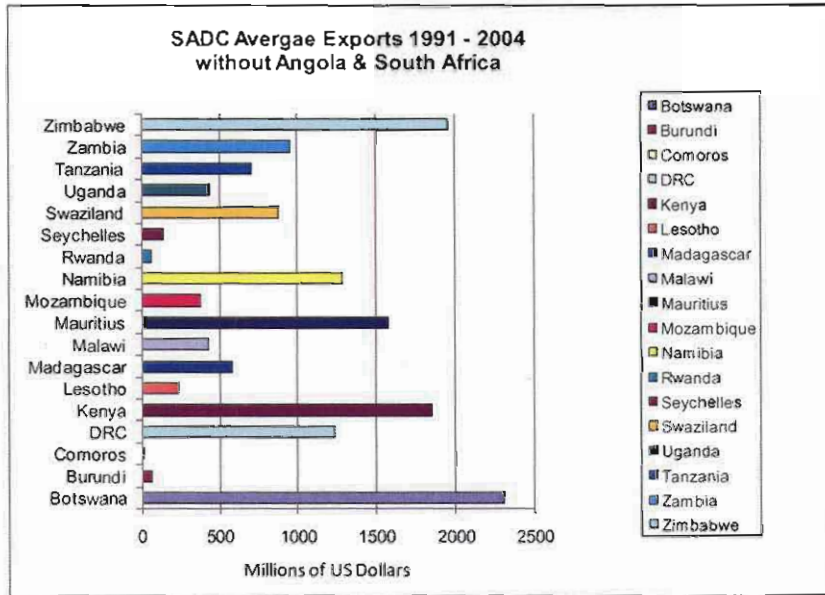
Figure 4.9: SADC total merchandise exports 1991 to 2004 without South Africa and Angola



Source: Data from UNCTAD Handbook of Statistics 2005

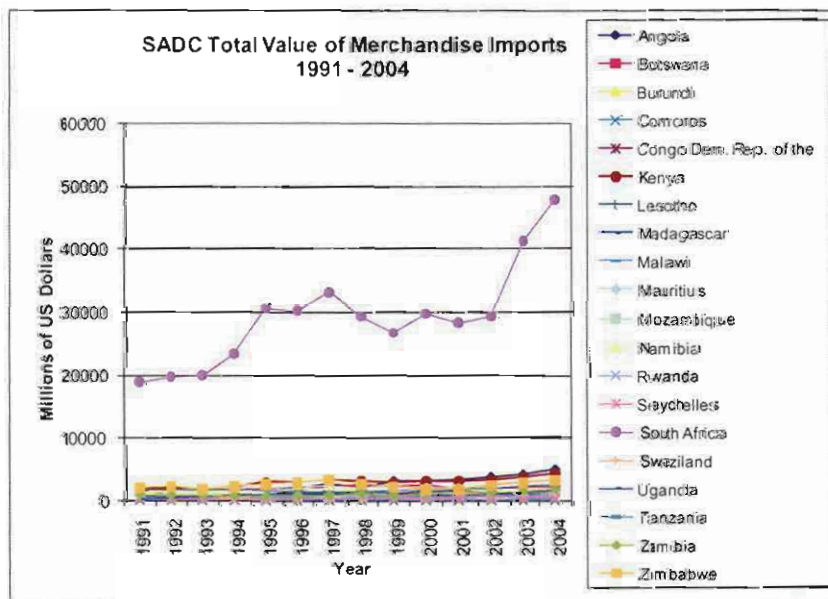
Figure 4.10 shows the average merchandise exports of SADC from 1991 to 2004 without South Africa and Angola. The size of the economies of the DRC, Botswana, Namibia, Zimbabwe Mauritius and Kenya are clearly visible. Except for Zimbabwe, these results together with the FDI results show that the larger economies attract the most FDI. Although Namibia and Botswana are smaller countries, their economic sizes are significant in the larger SADC (SADC, 2006).

Figure 4.10: SADC average merchandise exports from 1991 to 2004 without South Africa and Angola



Source: Data from UNCTAD Handbook of Statistics 2005

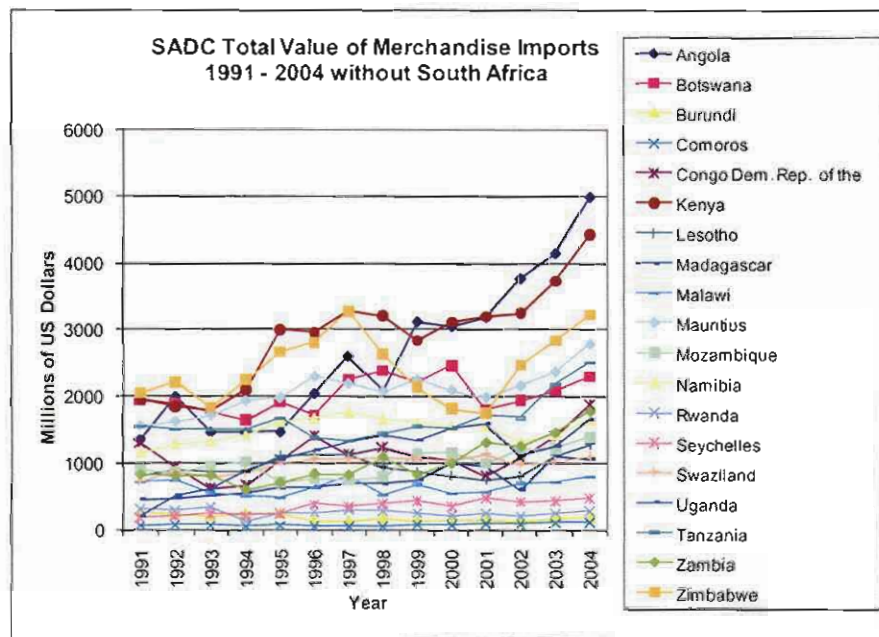
Figure 4.11: SADC total merchandise imports 1991 to 2004



Source: Data from UNCTAD Handbook of Statistics 2005

Figure 4.11 and Figure 4.12 show total SADC merchandise imports from 1991 to 2004. As with the export figures, the scale of the South African economy dominates these figures and in Figure 4.12 they are omitted to allow a clearer view of the rest of SADC. The overall picture shows that almost all SADC countries have had strong growth in imports over this period in line with the growth in exports shown in Figure 4.8 and Figure 4.9. Once again, Rwanda, Burundi and Comoros show almost no growth.

Figure 4.12: SADC total merchandise imports 1991 to 2004 without South Africa

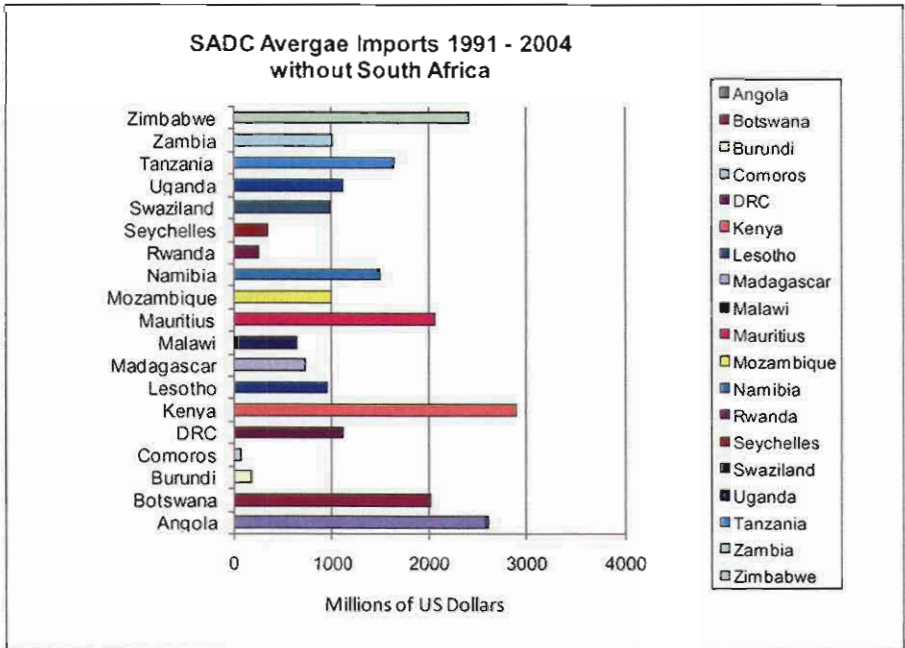


Source: Data from UNCTAD Handbook of Statistics 2005

Figure 4.13 shows the average imports of the SADC from 1991 to 2004 without South Africa. The overall results are the same as in Figure 4.10 that represents the exports. Angola is still significant but with imports significantly less than on the exports side. The “cake” is more evenly distributed than with exports. This

indicates that imports will not be as significant as exports when analysed as determinants of FDI in the region.

**Figure 4.13: SADC average merchandise imports from 1991 to 2004 without South Africa**

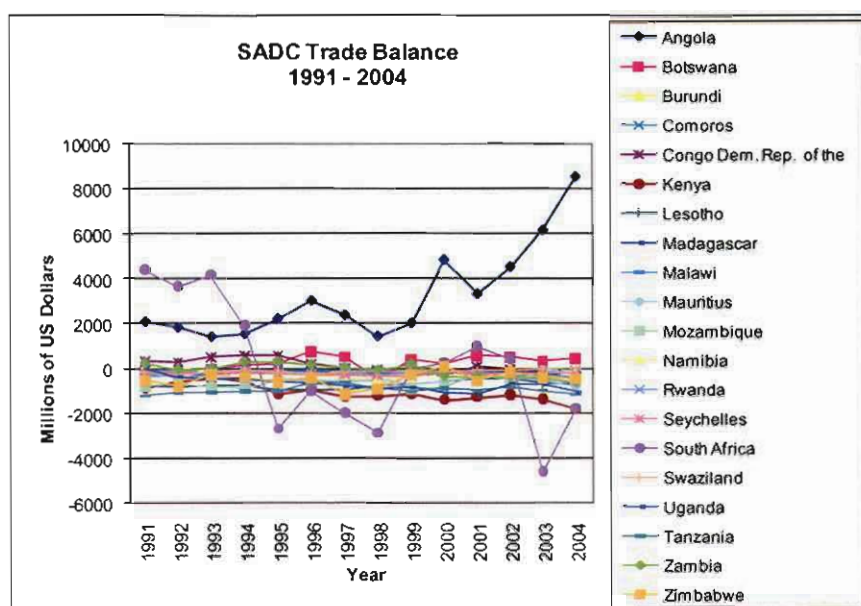


Source: Data from UNCTAD Handbook of Statistics 2005

Figure 4.14 shows the trade balance for the SADC from 1991 to 2004. The graph shows that almost all the SADC countries import and export equally as the overall trend for all the countries tends to be cyclically around zero. The exceptions are Angola, South Africa and Kenya. Angola tends to have substantial annual increases in trade surplus, while Kenya tends to have a slow growing trade deficit. South Africa went from large trade surpluses in the early 1990s to struggling to keep its trade deficit in check.



**Figure 4.14: SADC trade balance 1991 to 2004**



*Source: Data from UNCTAD Handbook of Statistics 2005*

The main products exported by the SADC are raw materials and minerals. These include diamonds, gold, coal, iron, copper, platinum, nuts, fruits, flowers, coffee, and tobacco and, in the case of Angola, oil and gas. Zimbabwe also used to be a main exporter of corn but, due to the land reforms, they are now a net importer. Of all the SADC countries, only South Africa exports significant levels of manufactured goods and services (SADC Review, 2006).

The main trading partners for the SADC are the USA and the EU. Of the EU countries, the UK and Germany are the main partners, followed by France, Belgium, Portugal, Italy and Sweden. These countries are also the leading providers of FDI in the region. South Africa is the only country that exports significantly to Japan, but Japan figures prominently in import relationships (SADC Review, 2006; Thomas and Leape, 2005).

Trade with both India and China has also increased in the last five years and will continue to increase along with substantial economic growth in both those countries. As with the FDI figures, China is mostly interested in obtaining raw materials while India is buying raw materials and manufactured products. South Africa has become a major exporter and re-exporter of manufactured goods and services to the whole SADC region and is increasingly buying raw materials from other SADC countries (SADC Review, 2006; UNCTAD, 2005).

#### **4.7. Summary**

The SADC is the strongest, and therefore the most significant, trading bloc in Africa. If the SADC could achieve significant growth and development, it will spill over into the rest of Sub-Saharan Africa. If poverty and underdevelopment in Africa is to be eradicated, it will need to start in the SADC.

The SADC currently spans 14 countries in Southern Africa and could include six additional countries in the future. The SADC represents the most coherent trade bloc in Africa and has the strongest ability to create a sustainable common market in the future.

Other regional trade blocs in the region interact, and even compete, with the SADC. The IGAD and the COMESA overlap with the SADC and that causes some regional friction. Other bodies such as the AU and the SACU seem to cooperate more successfully with the SADC. The long-term prospects of all these regional bodies are determined by the membership of the SADC of South Africa, Angola, the DRC and Tanzania which gives the SADC the economic mandate and leverage lacking in the other bodies.

Recent trade initiatives and agreements allow the SADC countries the opportunity to increase their trade with the rest of the world and give them increasing exposure to the global marketplace. These initiatives include the NEPAD, various WTO agreements, the AGOA, the SADC EU economic partnership agreement, and the Millennium Development Goals. This, in itself, has already led to some increases in growth. However, much higher levels of growth need to be achieved if the Millennium Development Goals are to be achieved.

Except for Angola and the DRC, the SADC seems to have a problem in attracting FDI. If a relationship between the increasing growth in trade and FDI can be established, it can be harnessed to increase FDI flows and provide the resulting economic growth. It must be noted that Botswana and Namibia are doing extremely well for their respective sizes among their SADC peers in attracting FDI inflows.

In terms of exports, the SADC landscape is dominated by South Africa. Other significant players are Angola, the DRC, Botswana, Namibia, Zimbabwe Mauritius and Kenya. These countries, with the exception of Zimbabwe, are also the main recipients of FDI in the region. This is an early indication that a strong relationship exists in the SADC between trade and FDI.

Although SADC imports are dominated by South Africa, the import figures for the other countries are more evenly divided. The same countries that dominate in exports are also the ones that dominate in imports.

Angola is the only country that shows a significant deviation from zero in its trade surplus. The fact that it has a positive trade deficit is also positive. If the Angolan government applies this correctly, it should be turned into significant economic growth. It was estimated that the Angolan economy would grow at about 27% in 2006 (SADC, 2006). All other SADC countries seem to have an average null trade deficit. South Africa has an increasing deficit.

Most of the FDI inflows in the SADC are primary sector related with some service sector investments in tourism. Ways will need to be found to gain FDI in the manufacturing sector and other parts of the service sector. FDI inflows should not be viewed as a “one or the other” case, but rather that FDI in the primary sector should be alongside new FDI in other sectors. The reason for this is that, although primary sector FDI has its downside, it still leads to growth, job creation and increases disposable income. The challenge for SADC governments is to use the benefits of the current FDI inflows to ensure greater variety in future FDI inflows.

In the next chapter, the methodology of the empirical study and the data that is used is discussed before the results are presented in Chapter 6.

## **Chapter 5: Methodology**

### **5.1. Introduction**

The empirical study will involve the analysis of data by using an adapted gravity model, which will expand upon the central hypothesis, showing the relationships between FDI, trade and various other factors. The gravity approach will be based on the same fundamentals that Bos and Van de Laar (2004) and Borrmann *et al.* (2005) use to explain FDI but, in this study, in terms of trade.

The chapter starts with the explanation of the gravity model and its usage (section 5.2.). Furthermore, the model itself is adapted for use in the explanation of FDI in terms of trade, as “mass” variables and other variables as “distance” variables.

In section 5.3 of this chapter, an overview of the empirical methodology is provided. The empirical estimation process is described with specific focus on the models applied, data and data sources used, as well as the estimators used.

### **5.2. Theoretical foundation of the gravity approach**

#### **5.2.1. Introduction to gravity**

Bos and Van de Laar (2004) provide an overview and history of the gravity approach for modelling economic variables. Although gravity has been used for many years in various social science disciplines, the gravity model was initially

introduced in economics to explain bilateral trade flows between countries in the 1960s. It is derived from Newton's gravity equation that holds that the gravitational pull between two objects is directly and positively related to their mass, with the distance between the objects acting as a restraint (Borrmann *et al.*; 2005).

The application in economics implies that an economic flow between two economic entities will depend on their respective economic sizes and the distance between them. Distance can be represented as physical distance or a psychological restraint or encouragement to do business (Borrmann *et al.*; 2005). For FDI it can also be stated that gravity, in general, refers to the forces that work to bring actual FDI flows in line with expected FDI flows (Bos and Van de Laar; 2004).

Although there have been criticisms against using the gravity approach for explaining FDI (Blonigen, 2005)<sup>2</sup>, the traditional approaches to FDI are not sufficient for dealing with FDI and subsequent policy decisions in Africa (Asiedu, 2002). Blonigen (2005) clearly supports the use of gravity in FDI as an alternative if the theoretical implications are well thought through. Bos and Van de Laar (2004) and Helpman (2006) also suggest that the use of gravity is gaining in popularity as a more mainstream approach in FDI studies.

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<sup>2</sup> Blonigen (2005) cites the fact that the theory of FDI is based on the growth theory and relies heavily on the investment decision of the MNE. This, combined with the mixed results obtained by studies that use the gravity approach, gives no support to the use of gravity.

### 5.2.2. The basic gravity model

The general gravity formula states that the attractive force between objects i and j

can be defined as: 
$$F_{ij} = G \frac{M_i M_j}{D_{ij}^2} \quad (1)$$

Where:

- $F_{ij}$  is the attractive force
- $M_i$  and  $M_j$  are the masses
- $D_{ij}$  is the distance between the two objects
- $G$  is a gravitational constant

In the field of economics gravity is used as follows:

- $F_{ij}$  is the flow between to economic entities i and j
- $M_i$  and  $M_j$  are the economic sizes of the entities
- $D_{ij}$  is the distance between the two entities
- $G$  becomes an economic constant.

Bos and Van de Laar (2004) use this as their basis to state that FDI is a function of the economic sizes of the countries (GDP) and GDP per capita.

$$FDI_{ij} = A_{ij} \frac{GDP_i GDP_j}{Dist_{ij}} \quad (2)$$

Where:

- $FDI_{ij}$  is the flow in FDI from home country i to host country j
- $GDP_i$  and  $GDP_j$  are the respective gross domestic products.
- $Dist_{ij}$  is the distance between home country i to host country j
- $A_{ij}$  is a constant

From this basis, they include the population size in order to work with GDP per capita. In the specific case mentioned here, it also holds true that the home country size and population remains the same for all host countries and therefore cannot be considered a determinant of FDI. Therefore, in this instance only, the host countries' sizes and populations are taken into account.

Their final equation when transformed into a log linear form is as follows:

$$\ln FDI_{ij} = \beta_0 + \beta_1 \ln GDP_j + \beta_2 \ln POP_j - \beta_3 \ln Dist_{ij} + \varepsilon_{ij} \quad (3)$$

(With  $\beta_0$  a simple constant,  $\varepsilon_{ij}$  the error term,  $\beta_1$  and  $\beta_2$  are positive)

### 5.2.3. Measures of size

Borrmann *et al.* (2005) and Bos and Van de Laar (2004) explain that the main purpose of using gravity is to explain the effect of economic mass on economic flow. The central hypothesis in this thesis is that trade influences FDI flows in the SADC. Trade of the host countries and home countries is thus fixed as the two economic masses that explain FDI inflows in the SADC region.

As described in chapters 2 and 3, there are two types of FDI, market-seeking and resource-seeking FDI. In chapter 3, it was established that market-seeking FDI is complementary to trade and resource-seeking FDI can be either complementary or substitutionary to trade. It can therefore be reasoned that, according to the theoretical background, resource-seeking FDI relies on home country imports and host country exports.



The basic fundamentals of gravity imply that both the coefficients for economic masses are always expected to be positive.

#### **5.2.4. Measures of distance**

Bos and Van de Laar (2004) use various terms and variables to explain distance as they prove that distance does not necessarily imply geographical distance. Distance can be in terms of language, culture, historical ties, rule of law, levels of education, transport costs, available technological advancements, and institutional integrity.

Borrmann *et al.* (2005) call these variations of possible distance variables psychological distance. They conclude that physical distance cannot be ignored as it functions as a proxy variable for transport cost.

In bilateral trade, physical distance and transport costs act as restraints for trade. In the case of FDI, these can actually act as an incentive for FDI. Although basic gravity fundamentals imply that distance has a negative coefficient, the nature of FDI indicates that it can also have a positive coefficient, depending on the total effect of all the distance variables (Borrmann *et al.*; 2005).

Yoshida (2006) also states that distance represents transport cost, but expands upon this idea by including transport cost in the total cost to trade. Total cost to trade represents all the psychological and physical barriers for an MNE to do business in a host country. Time delays that occur as a result of shipping problems, ineffective customs systems and corruption will also increase overall

transport cost (Venables; 2005). This should be more strenuous for landlocked countries as goods have to pass through two sets of customs and a dummy variable will be used during estimation to accommodate landlocked countries.

Yoshida (2006) finds that, in the case for Japanese export firms, there is a local and regional agglomeration effect. This implies that firms tend to agglomerate in centres that provide for the lowest transport cost to distribute their product in the region. Firms also choose to invest abroad in centres that provide for lower transport cost for its products in the region. This reallocation of production thus enables them to service a wider market and benefit from increasing returns to scale. Furthermore there is a strong home-market effect with Japanese firms exporting mainly products for which there is a very strong local demand in the Japanese economy and that has a high transport cost.

Venables (2005) finds that, in cases where factor endowments are fixed (for example natural resources), investment will tend to go to the source while supporting industries may still cluster together for reasons of return to scale.

The implication for this study of the above findings is that distance should be measured between production centres of the home and host countries rather than an aggregate geographical centre point. Distance has to be seen as a bouquet of different factors that can inhibit or stimulate FDI flows between the home and the host.

### 5.2.5. Augmenting the gravity model

In most studies that focus on the gravity approach to model FDI, FDI is explained by using measures of GDP and therefore large panel models are used. Such models look mainly at the different interpretations of distance to explain fluctuations in FDI between different host countries.

The aim of this study is to investigate the relationship between FDI and trade. FDI is modelled as a dependent variable on the trade of host countries and home countries as well as various variables that represent distance (see section 5.3. for a more detailed discussion).

If these principles are applied to explain FDI in terms of trade the equation can be written as:

$$FDI_{ij} = A_{ij} \frac{X_i X_j}{Dist_{ij}} \quad (4)$$

Where:

- $FDI_{ij}$  is the flow in FDI from home country  $i$  to host country  $j$
- $X_i$  and  $X_j$  are the respective export totals of  $i$  and  $j$
- $Dist_{ij}$  is the distance between home country  $i$  to host country  $j$
- $A_{ij}$  is a constant

$$\ln FDI_{ij} = \beta_0 + \beta_1 \ln X_i + \beta_2 \ln X_j - \beta_3 \ln Dist_{ij} + \varepsilon_{ij} \quad (5)$$

(With  $\beta_0$  a simple constant,  $\varepsilon_{ij}$  the error term,  $\beta_1$  and  $\beta_2$  are positive)

As stated previously, the coefficient for the distance term need not be negative. The outcome is reflected in whether distance is a deterrent for FDI or a magnet.  $Dist_{ij}$  represents a vector of variables that represent distance.

Theory will also dictate that, in the case of resource seeking FDI, the imports of the home country will determine FDI rather than exports. Therefore  $X_i$  should be replaced with  $Z_i$  where FDI is tested for as resource-seeking.

This will also hold if the equation is estimated for FDI at a sectoral level. In such a case, the export figures will be for the respective Standard International Trade Classification (SITC) category.

#### **5.2.6. General problems with gravity model estimation**

Bos and Van de Laar (2004) cite "sample bias", "omitted variables" and "non-linearity" as the three main concerns when estimating gravity models. There is no definite solution to these problems as they are mostly tied in with the specific study.

On sample bias, their conclusion is to have, at all times, the largest and most accurate sample for estimation and to interpret the result with the limitations of the data in mind.

There are omitted variable tests that give an indication as to whether the explanatory variables sufficiently explain the dependent variable. These tests will be done with the estimation of the model. The aim of the study is to investigate

whether trade has a significant influence on FDI in the SADC region. Therefore an indication as to whether trade explains FDI sufficiently lies in the omitted variable tests along with the other specification and evaluation tests that will be applied in the next section.

Gravity models are inherently non-linear, but can be transformed to linear with natural logarithms. The reason this is important is that the interpretation and use of coefficients must reflect this and be made on the non-linear nature of the equations

### **5.3. Empirical estimation**

#### **5.3.1. Model**

During the estimation process, three models are investigated using the gravity approach as set out in the previous section. Each model builds upon, and is an extension of, the previous one. The strategy entails first modelling data at an aggregate level and then gradually expanding the model to include individual home and host countries. The first model, Model 1 serves only as a preliminary investigation into the data and is done at an aggregate level for all variables as specified in the gravity equation 5 in Section 5.2.5.

In Model 2, Model 1 is expanded to include the export totals of the major trading partners of the SADC as separate variables. Both of the first two models give an indication as to the viability and validity of using the adapted gravity approach.

With positive results in the first two models, a panel regression is carried out at a country level for all SADC members in Model 3.

As indicated in chapter 2, FDI into different sectors has different effects on the economy, especially in terms of human capital development and productivity (Alfaro, 2003). It would therefore be appropriate to investigate the FDI trade relationship further at sectoral level. For the purposes of this study, this is not possible as data is not readily available and UNCTAD, the main publisher of FDI figures, only started collecting data on this level in the late 1990s. The only country for which data is readily available is South Africa. Data for the primary, secondary and tertiary sectors is only available for nine observations each and therefore statistical modelling at sectoral level is not viable at this stage.

### **5.3.2. Data**

The most significant problems that were encountered in the empirical study are data related. Modelling had to be adapted to the data that was available and, even in the estimation process, the limitation of data for African countries played a significant role. Table 3 lists the variables that were used in the empirical study and their sources.

**Table 3: List of variables used in final estimations**

<i>Variables used</i>	<i>Description</i>	<i>Source</i>
<i>Model 1:</i>		
SADCFDI	Total FDI inflows to the SADC	UNCTAD FDI online: www.unctad.org (UNCTAD, 2006)
SADCExports	Total trade exports of the SADC to the developed world	UNCTAD Handbook of statistics: www.unctad.org (UNCTAD, 2006)
MajorExports	Total trade of the major developed countries to the rest of the world	UNCTAD Handbook of statistics: www.unctad.org (UNCTAD, 2006)
MajorExportstoAfrica	Total trade of the major developed countries to Africa	UNCTAD Handbook of statistics: www.unctad.org (UNCTAD, 2006)
Distance	Distance from South Africa to the UK is used because, in the aggregate data, single equation distance is a constant.	Distances were calculated with the www.infoseek.com distance calculator. It uses co-ordinates from the US Geological survey to calculate distance between two points on the surface of a sphere (ball of the earth).
Dummy90	Dummy variable with values of 1 in 1979, 1985, 1990 and 1994; otherwise 0. These years were years in which the SADC experienced political turmoil.	Own calculations
<i>Model 2:</i>		
SADCFDI	Total FDI inflows to the SADC	UNCTAD FDI online: www.unctad.org (UNCTAD, 2006)
SADC Exports	Total trade exports of the SADC to the developed world	UNCTAD Handbook of statistics: www.unctad.org (UNCTAD, 2006)
USExports, UKExports, JapanExports	Total trade of USA, the UK and Japan, to Africa	UNCTAD Handbook of statistics: www.unctad.org (UNCTAD, 2006)
Distance	Distance from South Africa to the UK is used because, in the aggregate data, single equation distance is a constant.	Distances were calculated with the www.infoseek.com distance calculator. It uses co-ordinates from the US Geological survey to calculate distance between two points on the surface of a sphere (ball of the earth).
Dummy76	Dummy Variable with values of 1 in 1976, 1979, 1985, 1990 and 1994; otherwise 0. These years were years in which the SADC experienced political turmoil.	Own calculations
<i>Model 3:</i>		
FDIinflows	Stacked variable of the FDI inflows to the	UNCTAD FDI online:

	respective SADC countries	www.unctad.org (UNCTAD, 2006)
ExportsSADC	Stacked variable of the value of merchandise exports of the respective SADC countries	UNCTAD Handbook of statistics: www.unctad.org (UNCTAD, 2006)
ExportsUS, ExportsUK, ExportsGermany, ExportsFrance, ExportsItaly, ExportsJapan	Total trade of the individual trading partners to Africa	UNCTAD Handbook of statistics: www.unctad.org (UNCTAD, 2006)
DistanceUS, DistanceUK, DistanceGermany, DistanceFrance, DistanceItaly, DistanceJapan	A stacked variable of distance from the respective SADC countries to their individual trading partners - the USA, the UK, Germany, France, Italy and Japan.	Distances were calculated with the www.infoseek.com distance calculator. It uses co-ordinates from the US Geological survey to calculate distance between two points on the surface of a sphere (ball of the earth).
Dummyspol	Stacked dummy variable that represents political instability and natural disasters in the respective SADC countries.	Crudely constructed by using the brief historical overviews of the individual SADC countries and years of instability as given in the CIA Factbook (CIA, 2006) and the Encyclopaedia Britannica (Britannica, 2006).

Other variables were also tested but proved to be not significant or limited the estimation to too few degrees of freedom and they could not therefore be used. They included the Transparency international corruption perception index ([www.transparency.org](http://www.transparency.org)) (Transparency International, 2006); the World Bank good governance indicators ([www.worldbank.org](http://www.worldbank.org)) (World Bank, 2006); trade balances, current account balances, various trade variables, tourist arrivals, number of commodities traded on debts owed from the UNCTAD Handbook of statistics ([www.unctad.org](http://www.unctad.org)) (UNCTAD, 2006); IMF exchange rates ([www.imf.org](http://www.imf.org)) (IMF, 2006); and internet connectivity figures from the World Bank development indicators ([www.worldbank.org](http://www.worldbank.org)) (World Bank, 2006).



### 5.3.3. Estimation

In this section, the different models that were fitted are briefly discussed and their results shown. The results are discussed and interpreted in Chapter 6.

#### 5.3.3.1. Model 1

As a preliminary investigation into the data a model (Model 1) is fitted for the aggregate or total figures of the variables using the gravity approach discussed in the previous section. The aim of this investigation is to determine whether there is any foundation for a more detailed analysis.

Specification Model 1:

$$\begin{aligned} & \log(\text{Total FDI inflows to SADC}) \\ & = \text{constant term} \\ & + \log(\text{Total exports of the SADC to the developed world}) \\ & + \log(\text{Total exports of the developed world to the developing} \\ & \text{world}) \\ & - \log(\text{Distance}) \\ & + \text{error term} \end{aligned} \tag{6}$$

The major concern with such a model is that aggregate data also imply aggregate data measurement error. Furthermore, because the SADC is a heterogeneous amalgamation of economies, the total data also include aggregate country-specific effects that may severely affect the estimation output.

Given the above concerns, Ordinary Least Squares (OLS) is used as the estimation method. Greene (2002) states that OLS is the most robust estimation method when data integrity is in question and will deliver the best linear unbiased estimator in such circumstances.

Various other variables are tested and variables like the World Bank good governance indicators and Transparency International's corruption perception index (CPI) have insignificant results. This was expected as these series are at most only eight observations and that limits the regression to only eight or fewer observations. This is unacceptable for a single equation regression.

The estimation results of this estimation are discussed in Chapter 6.

### **5.3.3.2. Model 2**

Model 2 is a continuance of Model 1 as far as it remains a single equation estimation and that it models total FDI inflows into the SADC over the period 1974 to 2004. For the purposes of Model 2, total SADC exports to the developed world, total exports of the US, the EU, and Japan are included as separate explanatory variables. Using the different countries' export totals will give a further indication as to whether country-specific modelling in a panel regression will be meaningful.

Specification Model 2:

$$\begin{aligned} & \log(\text{Total FDI inflows to the SADC}) \\ & = \text{constant term} \\ & + \log(\text{Total exports of the SADC to the developed world}) \\ & + \log(\text{Total exports from the USA to the developing world}) \\ & + \log(\text{Total exports from the EU to the developing world}) \\ & + \log(\text{Total exports from Japan to the developing world}) \\ & - \log(\text{Distance}) \\ & + \text{error term} \end{aligned} \tag{8}$$

All test results indicate a very good fit but, due to the possibility of multicollinearity and the possible existence of unit roots in the levels of the data used, a further investigation into the accuracy of the equation is needed.

A number of tests are conducted to verify the accuracy of the estimation results. A Ramsey reset test is used to confirm the specification of the model. Breusch Godfrey Lagrange multiplier tests for serial correlation are carried out to verify the results of the Durban-Watson test for serial correlation. White's test for heteroskedasticity is used to investigate whether a pattern of increasing variation occurs in the residuals. An ARCH Lagrange multiplier test is used to test for an ARCH process in the residuals. Measures of kurtosis and skewness are used along with a Jarque-Bera test to confirm that the residuals have a normal distribution. Unit root tests are conducted to investigate whether co-integration exists within the residuals.

The final tests that are carried out are the forecast accuracy tests. These tests indicate the predictive accuracy of the estimation results. The most significant tests for forecasting accuracy are the mean absolute error and the mean absolute percentage error.

As with Model 1, various other variables were tested and, like the World Bank good governance indicators and Transparency International's corruption perception index (CPI), they are insignificant in the estimation results and this contributed to the fact that these series are at most only eight observations and that limits the regression to only eight or fewer observations. This is unacceptable for a single equation regression. They are tested again in Model 3 which is an unbalanced panel regression on a country level for the whole SADC region.

Model 2 concludes the preliminary investigation of the data and the results of the estimation process will be discussed in Chapter 6.

### **5.3.3.3. Model 3**

Model 3 consists of six panel regressions for the twenty included countries in a gravity specification for their main trading partners and sources of FDI. The programme Econometric views (Eviews) was used for the estimations. Eviews does not currently support nested panels and therefore the six panels were estimated individually.

Specification of the panel regressions:

$$\begin{aligned} & \log(\text{FDI inflows to individual SADC countries}) \\ & = \text{constant term} \\ & + \log(\text{Total value of merchandise exports of individual SADC} \\ & \text{countries}) \\ & + \log(\text{Total exports of the main individual trading partners to the} \\ & \text{developing world}) \\ & + \log(\text{Distance to the individual trading partners from the} \\ & \text{individual SADC countries}) \end{aligned} \tag{10}$$

The main trading partners are also the main sources of FDI (see Chapter 4). They are the USA, the UK, Germany, France, Italy and Japan. China and India have only become significant players in the global FDI arena in the last five years and it is therefore not yet possible to include them in this study.

Each panel is first estimated using OLS and only the direct variables as set out in the gravity specification. The estimation is done with a sample of 1989 to 2004. This is due to the Namibian figures that are only available from independence in 1989.

After this step, various alternative distance-related variables are evaluated along with dummy variables that represent landlocked countries, cultural connections and political instability. It must be noted that none of the alternative distance variables were significant.

These variables include the Transparency International's corruption perception index, the World Bank good governance indicators, and internet connectivity. Many of these specific variables were only reported in the late 1990s and are still fewer than eight observations per country. In the case of Transparency International, the only year in which all twenty countries are covered is 2005.

The next step is to evaluate cultural preferences, whether a country is landlocked and political stability.

The same dummy variable representing political instability is used on all equations in Model 3 and it is the most significant variable in all the equations. Most countries have different years in which they experienced political instability and this is represented in the stacked variable *Dummypol*. The dummy variable is not altered between estimations and therefore contributes to the estimation error because the different partners react differently to the instability in the SADC region. This has direct and very important consequences for any conclusion and interpretations flowing from this study.

From a scientific perspective, it does not make sense to change a dummy variable in this study too much for each trading partner as it can be seen as trying to artificially make variables fit the model and give false results. The dummy was therefore kept "as is" in all equations and the results noted.

Once the variables have been evaluated in the context of OLS, more advanced estimation techniques were used to ensure more accurate and stable coefficient estimations. GMM with White's cross-section weights and White's cross-section errors and covariance corrected procedure is used to include the dynamic aspects

of the panel and limit potential estimation error in the coefficients (Naudé and Krugell, 2007). The sample length restricts the specification of random or fixed effects in the software used when cross-terms and adjustments for heteroskedasticity are used in the estimation procedure.

Residual tests for panel estimations in Eviews are limited and therefore measures such as including AR(1) or AR(2) terms are used to indicate a specification problem. Normality tests are used along with unit root tests to investigate the residuals.

The results of these panel estimations and their possible implications are discussed in Chapter 6.

#### **5.4. Summary**

To investigate the relationship between trade and FDI for 20 SADC countries, the gravity model is used in this thesis. Gravity is used because it represents a flow between two masses that occurs as a result of their respective sizes and is constrained by the distance between them.

The use of the gravity specification for modelling the relationship between FDI inflows and trade gives a strong indication of the role that trade plays in attracting FDI. Although it is not widely used, it is gaining in popularity as a specification method. Gravity cannot be seen as the final word in any investigation into FDI inflows but, in the case of trade and FDI, it can be used effectively to determine whether there is a strong role of trade in the FDI arena.

In any study of multiple African countries, the main constraint is the availability of regular suitable data. This picture is slowly changing as more and more international bodies collect more specific data and international organisations such as the World Bank and the UN are forcing African governments to produce more detailed, transparent and accurate data.

The modelling process starts at the level of total variables and was expanded gradually until country level was reached. Three models are used to investigate the relationship between trade and FDI. The scope and specification is limited through the availability of suitable data for the entire set of countries.

Model 1 is a single equation regression that uses the gravity specification to estimate total FDI inflows into the respective SADC countries as a function of their total exports, the total exports of their main trading partners, and sources of FDI as well as the geographical distance between them.

Model 2 expands the specification of Model 1 to include the respective individual total export figures for the major three trading partners and sources of FDI of the SADC. They are the USA, the UK and Japan.

OLS is used as the estimation method in both Model 1 and Model 2 as it is the most robust estimation method given the inherent problems that occur when total values are used that include a heterogeneous amalgamation of countries such as the SADC.



Model 3 represents the main body of empirical work of this study. It consists of six panel estimations that model the FDI inflows of the respective SADC countries as functions of their respective exports, the exports of their main trading partners – the USA, the UK, Germany, France, Italy and Japan. Distance and political instability are the “friction” that has a negative relationship with FDI inflows. Six panel estimations are used because the software used for the estimations cannot estimate nested panels. Each trading partner was therefore included in as separate panel.

Various alternative measures of distance are tested to investigate the role of psychological distance. Dummy variables are used to test whether cultural, landlocked and political stability have a significant effect on FDI inflows.

Many of the variables tested in the modelling process proved to be insignificant. This is the result of a short sample period as many of the new indicators that are being recorded have not previously been available and therefore have no history. Most of them are only available for eight or fewer periods. This limits their significance in any model. The lack of a suitable, regular set of data for sectoral FDI inflows also leads to the inability to do investigations at a sectoral level.

Advanced estimation techniques can be used to model the data, but the results are limited due to the limited number of degrees of freedom caused by missing values as well as instability in the data of most of the countries. Nonetheless, the results still give a clear indication on the central hypothesis of FDI being caused by trade in the SADC region. These results are discussed in Chapter 6.

## Chapter 6: Empirical results

### 6.1. Introduction

In this chapter, the results of the empirical analysis are presented, discussed, and interpreted in the context of the previous chapters. The results were obtained as outlined in the previous chapter.

The results consist of the individual results of the three specified models. These models are specified according to the gravity model that states that the flow between two masses is determined by their respective sizes and the distance between them (see Chapter 5).

Model 1 and Model 2 are single-equation regressions where total FDI inflows to the SADC are estimated as a function of total exports from the SADC to the developed world; total exports of the major developed countries to Africa, and the geographical distance between the SADC and the UK as a proxy for all distances, as distance is a constant in these models. Model 2 differs from Model 1 in that total exports of the major developed countries is replaced with the individual total exports of the USA, the UK and Japan as separate explanatory variables.

Model 3 consists of six panel estimations of the stacked series of FDI inflows of the respective SADC countries against the stacked series of their exports, the exports of the individual major six trading partners and sources of FDI, the

respective geographical distances between the SADC members and their trading partners as well as a dummy variable for political instability.

The results are discussed in sequence and then followed by a general conclusion that takes the overall results into account to evaluate the goals of the study as set out in Chapter 1.

## 6.2. Model 1

Table 4 shows the estimation output for the first regression of Model 1. The sample period is from 1970 to 2004.

**Table 4: Model 1 – First regression**

Dependent Variable: LOG(SADCFDI)			
Method: Least Squares		Sample: 1970-2004	
Variable	Coefficient	t-Statistic	Prob.
LOG(SADCExports)	-1.725	-1.075	0.292
LOG(MajorExports)	2.142	2.045	0.049*
LOG(Distance)	-0.468	-1.274	0.212
R-squared			0.486
Adjusted R-squared			0.453
Akaike info criterion			2.961
Schwarz criterion			3.096
Durbin-Watson stat			1.114

In the first regression, the distance from South Africa to the United Kingdom is used as a proxy for the distance from the SADC to its major trading partners in the developed world. This is a further problem of using a single equation in

gravity type estimations, as distance is a constant and therefore becomes part of the intercept term.

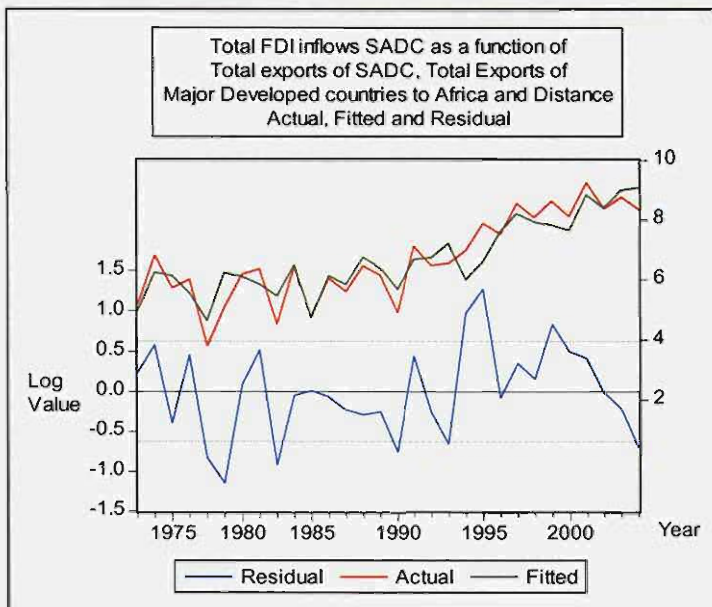
**Table 5: Model 1 – Final regression**

Dependent Variable: LOG(SADCFDI)			
Method: Least Squares		Sample: 1973-2004	
Variable	Coefficient	t-Statistic	Prob.
LOG(SADCExports(Lag1))	3.972	5.064	0.000*
LOG(MajorExportstoAfrica(Lag1))	-1.353	-1.482	0.151
LOG(Distance)	-1.867	-2.023	0.053*
Dummy90	-0.543	-2.486	0.020*
AR(2)	0.635	5.641	0.000*
R-squared			0.837
Adjusted R-squared			0.811
Akaike info criterion			2.043
Schwarz criterion			2.276
Durbin-Watson stat			1.604

Table 5 shows the results of the final regression. Total exports of the developed world are limited to their exports to Africa only. A dummy variable (Dummy90) is introduced. Dummy90 is zero except for 1979, 1985, 1990 and 1994 where it is one. These years were of great consequence for the SADC region as they represent the end of the Rhodesian conflict in 1979, the debt freeze of South Africa 1985, significant political changes announced in South Africa, Tanzania, Mozambique and Kenya in 1990; and the changes in South Africa in 1994. It explains why the variable is significant at the 5% level. The explanatory variables are “lagged” for one period and, finally, an AR(2) term proves to be highly significant at the 5% and 1% levels. All these changes bring about significant change in the estimation results.

The "Total exports of the developed world" variable is the only variable that is insignificant, even at the 10% level.

**Figure 6.1: Model 1 – Final results in terms of actual, fitted and residual values**



Although the direct statistics indicate an acceptable fit, the estimation results of Model 1 are clearly affected by the instability in the amalgamated country effects of the data. Figure 6.1 supports this statement. Figure 6.1 shows the actual, fitted and residual values of the final regression. Although the actual and fitted values have the same general trend and pattern, the residual values indicate that there are a number of significant fluctuations that are not captured by the equation.

Because Model 1 is only a preliminary investigation no further investigation is carried out.

The fact that, in the various regressions, the SADC export variables were nearly always significant at the 1% level and, in the last regression, the distance variable was also significant at the 10% level, clearly indicates that the relationships set out in the adapted gravity model exist within the data. This warrants a more in-depth investigation.

Final result Model 1:

$$\begin{aligned}
 & \log(\text{Total FDI inflows to SADC}) \\
 & = 3.97*[\log(\text{Total exports of the SADC to the developed world}(-1))] \\
 & - 1.35*[\log(\text{Total exports of the developed world to the Africa}(-1))] \\
 & - 1.87*[\log(\text{Distance})] \\
 & - 0.54*[\text{Dummy90}] \\
 & + 0.64*[\text{AR}(2)] \qquad \qquad \qquad (7)
 \end{aligned}$$

The implications of the results are discussed in the conclusion of this chapter.

### 6.3. Model 2

Table 6 shows the results of the first regression of model 2. The results are fairly positive for a first regression. From the basis of this regression, the regression model is repeated and changes made to the specification as suggested by Model 1.

**Table 6: Model 2 – First regression**

Dependent Variable: LOG(SADCFDI)			
Method: Least Squares		Sample: 1970-2004	
Variable	Coefficient	t-Statistic	Prob.
LOG(SADCExports)	2.864	3.082	0.004*
LOG(USexports)	3.038	1.937	0.063*
LOG(UKexports)	-2.138	-0.823	0.417
LOG(Japanexports)	-2.645	-2.407	0.023*
LOG(Distance)	-0.258	-0.421	0.677
R-squared			0.671
Adjusted R-squared			0.626
Akaike info criterion			2.632
Schwarz criterion			2.856
Durbin-Watson stat			1.966

**Table 7: Model 2 – Second regression**

Dependent Variable: LOG(SADCFDI)			
Method: Least Squares		Sample: 1974-2004	
Variable	Coefficient	t-Statistic	Prob.
LOG(SADCExports)	2.702	7.601	0.000*
LOG(USexports)	3.096	5.531	0.000*
LOG(UKexports)	-2.402	-2.541	0.018*
LOG(Japanexports)	-2.483	-6.502	0.000*
LOG(Distance)	0.056	0.179	0.860
Dummy76	-1.003	-14.324	0.000*
R-squared			0.965*
Adjusted R-squared			0.958*
Akaike info criterion			0.528*
Schwarz criterion			0.808*
Durbin-Watson stat			1.607

In Table 7, the results are shown as if the total exports of the trading partners are limited to exports to Africa only as suggested by Model 1. A dummy variable (Dummy76) that is an expansion of Dummy90 from Model 1 is also included.

The years of 1977 and 1983 are added as having a value of one to 1979, 1985, 1990 and 1994 to take into account the Angolan and Rhodesian conflicts of 1977, the aftermath of the Soweto riots of 1976, and the severe droughts and food shortages that occurred in the region in 1983. All variables except EU exports and distance, which, once again, forms the constant term, are significant at the 1% level. Due to some missing values, the sample size is reduced to 1974 to 2004.

All test results indicate a very good fit but, due to fears of multicollinearity and unit roots, further investigation into the accuracy of the equation is needed. The total exports variables are all subject to concurrent global economic trends and could lead to multicollinearity and also unit roots in the residuals that could bias the estimation results.

**Figure 6.2: Model 2 – Final results in terms of actual, fitted and residual values**

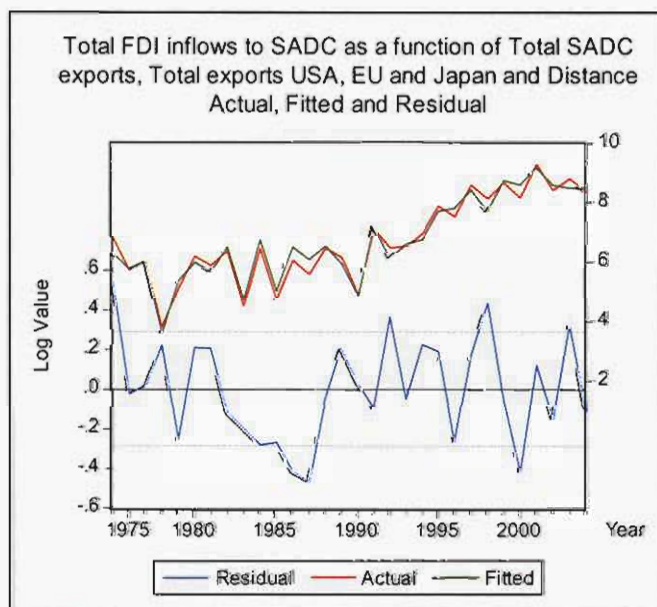




Figure 6.2 shows the fitted, actual and residual values of the regression. There is clearly a significant improvement from Model 1. Some spikes occur in the residuals and that could be addressed by the amendment of the dummy variable, such changes must be economically justifiable and not just be made to better the fit.

**Table 8: Model 2 – Summary of test results on final regression**

Summary of test results		
Ramsey RESET test:	F-statistic	0.048
	Log likelihood ratio	0.063
White heteroskedasticity test:	F-statistic	0.912
	Obs*R-squared	20.085
Breusch-Godfrey Serial Correlation LM test:	F-statistic	0.062
	Obs*R-squared	0.168
ARCH test:	F-statistic	0.893
	Obs*R-squared	0.929
Normality tests:	Jarque-Bera	0.781
	Jarque-Bera probability	0.677
	Skewness	0.080
	Kurtosis	2.226
Unit root tests:	Augmented Dickey-Fuller test statistic	-4.844
	Augmented Dickey-Fuller test probability	0.001
	Phillips-Perron test statistic	-4.844
	Phillips-Perron test probability	0.001
Forecast tests:	Mean Absolute Error	0.268
	Mean Absolute Percentage Error	4.360

The first test carried out on Model 2's final regression is the Ramsey reset test. It is shown in Table 8. This test is a specification test which is used to test the

accuracy of the specification, in this case the gravity specification. The results indicate that the specification is significantly correct.

Table 8 also shows the results of the standard residual tests that are carried out to verify the estimation output test results. These results indicate that there is no heteroskedasticity, serial correlation, or ARCH effects in the residuals and that the estimation output can be accepted as accurate. The results shown in Table 8 indicate that the residuals are normally distributed and this reinforces the results of the other tests.

Table 8 further shows the results of two unit root tests carried out on the residual values of Model 2. Variations of these tests were performed, but all indicate a strong rejection of a unit root in the residuals. Therefore it can be stated that there is no co-integration in the model.

The final tests that are carried out are the forecast accuracy tests shown in Table 8. These tests confirm the results of the estimation output and indicate accurate forecasts of the fitted model.

Other variables were tested, and variables like the World Bank good governance indicators and Transparency International's corruption perception index (CPI) had indifferent results. This was expected as these series are, at most, only eight observations and that limits the regression to only eight or fewer observations.

Model 2 concludes the preliminary investigation into the data. It shows a significant relationship between FDI inflows to the SADC and exports in the gravity specification. The near null coefficient for distance also shows its

insignificance as a constant value. The model represents neither country-specific effects nor the differences in scale economies or significant differences in FDI inflows between SADC members as shown in Chapter 4.

A further problem is the negative coefficients of the total exports of the EU and Japan. In the light of the other results, especially Model 3, this indicates that FDI and trade for the SADC and its major partners in the one direction are mostly substitution and complementary in the other direction. Trade from the SADC to its trading partners is positive towards FDI but in trade from the EU and Japan there is a negative relationship to FDI. It is difficult to accept such a conclusion as this could also be the result of the aggregation of the variables to achieve aggregate data.

Final results of Model 2:

$$\begin{aligned} & \log(\text{Total FDI inflows to SADC}) \\ & = 2.702 * [\log(\text{Total exports of the SADC to the developed world})] \\ & + 3.096 * [\log(\text{Total exports USA to Africa})] \\ & - 2.402 * [\log(\text{Total exports EU to Africa})] \\ & - 2.482 * [\log(\text{Total exports Japan to Africa})] \\ & + 0.056 * [\log(\text{Distance})] \\ & - 1.003 * [\text{Dummy76}] \end{aligned} \tag{9}$$

The implications of these results are discussed in the context of the broader findings of this study in the conclusion of this chapter.

## 6.4. Causality tests

As mentioned in chapters 2 and 3, there is some question as to whether trade causes FDI or whether FDI causes trade. Most evidence for developed countries suggests that FDI causes trade with little FDI being caused by trade. Therefore it is pertinent to examine the causality between trade and FDI in the SADC before doing the panel estimations.

Table 9 shows the results of a Granger causality test that was done on the stacked series of FDI inflows to the individual SADC countries and the stacked value of merchandise exports.

**Table 9: Causality test 1 for FDI and trade in the SADC**

Pairwise Granger Causality Tests	Sample: 1970-2005	
Lags: 1	Obs	523
<i>Null Hypothesis:</i>	F-Statistic	Probability
LOG(ExportsSADC) does not Granger Cause LOG(FDIinflows)	37.199	0.000
LOG(FDIinflows) does not Granger Cause LOG(ExportsSADC)	1.530	0.217

The test was repeated with various lagged options, but always gave the same result. The test indicates that, in the specific case of the 20 countries included in the study, trade causes FDI. These results will be confirmed by the panel estimations below.

## 6.5. Model 3

Model 3 consists of six panel estimations using the gravity specification as outlined in Chapter 5. Each estimation is made for a different trading partner while the panel represents the variables for the 20 SADC countries.

Alternative distance-related variables were evaluated along with dummy variables that represent landlocked countries, cultural connections, and political instability. It must be noted that none of the alternative distance variables delivered any significant results. They are, therefore, not discussed any further. These variables include the Transparency International corruption perception index, the World Bank good governance indicators, and internet connectivity. Many of these specific variables were only reported in the late nineties and still amount to fewer than eight observations per country. In the case of Transparency International, the only year in which all 20 countries are covered is 2005.

Cultural preferences; whether a country is landlocked; and political stability were also evaluated. Only with European countries did landlocked countries and cultural preferences indicate possible significance. This was to be expected as the European countries are former colonial occupiers and therefore should have historical links with their former colonies. Both these variables became insignificant when a dummy variable was introduced that represented political instability.

The individual results are shown in the following sections and the overall implications of the results are discussed in the conclusion of this chapter.

### 6.5.1. SADC and the United States of America panel estimation

Table 10 shows the final estimation results for the panel estimation of the 20 SADC countries with the USA. All variables are significant at the 1% level except total trade of the USA with Africa. The large negative coefficients of distance and “Dummypol” are very significant results on their own. This can be interpreted as follows: No matter how strong the economic environment of the SADC countries, they are geographically very distant to the USA and firms in the USA will not invest in countries that are perceived as politically unstable. The overall measures of fit indicate a rather mediocre fit that will need to be evaluated further.

**Table 10: Model 3 panel estimation SADC USA**

Dependent Variable: LOG(FDIinflows)			
Method: Panel GMM EGLS (Cross-section weights)		Sample: 1989-2004	
Variable	Coefficient	t-Statistic	Prob.
Constant	58.589	3.554	0.000
LOG(ExportsSADC)	0.876	11.0479	0.000
LOG(ExportUS)	-0.132	-0.201	0.841
LOG(DistanceUS)	-6.208	-4.260	0.000
Dummypol	-3.768	-6.466	0.000
AutoRegressionTerm(1)	0.272	3.630	0.000
Weighted Statistics		Unweighted Statistics	
R-squared	0.599	R-squared	0.529
Adjusted R-squared	0.591	Sum squared residual	696.427
Durbin-Watson stat	1.936	Durbin-Watson stat	1.859
J-statistic	0.076		

The result of the panel unit root tests in Table 11 indicates that no unit root, whether individual or common, is present at the 1% level. The Hadri Z-stat (see

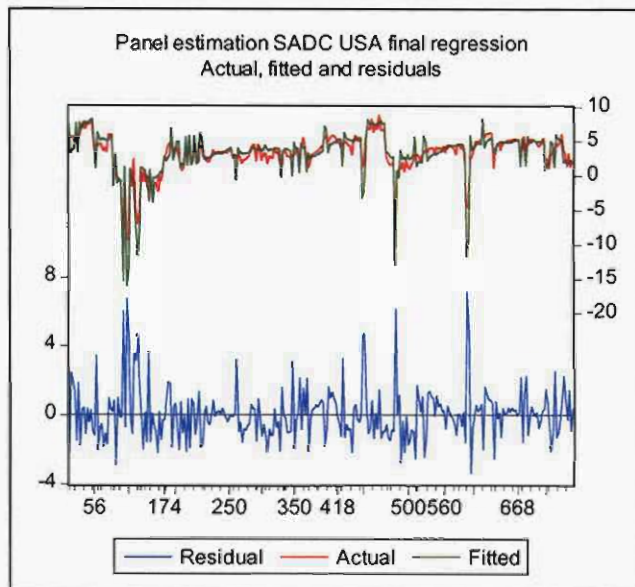
Hadri, 2000) rejects the null hypothesis of stationarity and indicates that a common unit root process might be present at the 1% level. The conflicting results of the different tests can be attributed to the short sample period and can therefore be seen as inconclusive. Further tests also indicate that normality cannot be assumed for the residuals. This is attributed to the severe fluctuations in the data which coincides with periods of political instability.

**Table 11: Model 3 panel estimation SADC USA unit root test summary**

Panel unit root test: Summary		
Newey-West bandwidth selection using Bartlett kernel		
Method	Statistic	Prob.**
Null: Unit root (assumes common unit root process)		
Levin, Lin and Chu t*	-7.068	0.000
Null: Unit root (assumes individual unit root process)		
Im, Pesaran and Shin W-stat	-5.301	0.000
Augmented Dickey-Fuller - Fisher Chi-square	107.031	0.000
Phillips-Perron - Fisher Chi-square	184.652	0.000
Null: No unit root (assumes common unit root process)		
Hadri Z-stat	2.590	0.004

Figure 6.3 is a graphical representation of the actual, fitted and residual values of the estimation. The problems with the residuals as indicated above are confirmed by the graph. In periods of substantial fluctuations there is constant over- or underestimation of the actual value. This could be addressed by amending the dummy variable. This is not advisable because the fluctuations in the residuals should be seen as the inability of the gravity specification to capture all the relevant variables that explain FDI inflows or the inability of the dummy variable to completely capture the political instability of the various SADC countries.

**Figure 6.3: Model 3 – Panel estimation SADC USA actual, fitted and residual values**



Final results of Model 3: SADC USA

$$\begin{aligned}
 & \log(\text{FDI inflows to SADC countries}) \\
 & = 58.58925 \\
 & + 0.875784 * [\log(\text{Value of merchandise exports of SADC countries})] \\
 & - 0.132303 * [\log(\text{Total exports of the USA to Africa})] \\
 & - 6.208407 * [\log(\text{Distance of the SADC countries to the USA})] \\
 & - 3.767616 * [\text{Dummpol}] \\
 & + 0.271808 * \text{AR}(1) \qquad \qquad \qquad (10)
 \end{aligned}$$

The conclusion on the panel estimation of the FDI inflows of the SADC and the USA is that the general trend in FDI inflows is significantly explained in the estimation by SADC exports and distance.



The insignificance of the USA export figure can also be interpreted as FDI inflows which do not depend on the level of imports from the USA by the SADC countries, but on the level of exports to the USA. This is significant from the perspective that the USA is a net importer of goods and services. Therefore the finding could be seen as a confirmation that the USA will invest in industries abroad that will lead to exports to the USA rather than seeking market share as outlined in chapters two and three.

The estimation fails in times of severe fluctuations and that indicates an omitted variable. In future research, the specification can be opened up to include other variables that might explain the fluctuations more clearly. In a country-specific evaluation, other results might be obtained. Both of these suggestions fall outside the scope of this thesis.

### **6.5.2. SADC and the United Kingdom panel estimation**

Table 12 shows the final estimation results for the panel estimation of the 20 SADC countries with the UK. All variables are significant except total trade with Africa of the UK. The large negative coefficients of distance and "Dummypol" are very significant results on their own. The overall measures of fit indicate a rather mediocre fit that will need to be evaluated further. It should be noted that the coefficient of SADC exports is nearly on a one to one basis. This implies that for every 1% increase in SADC exports there is a 0.96% increase in FDI.

**Table 12: Model 3 panel estimation SADC UK**

Dependent Variable: LOG(FDIinflows)			
Method: Panel GMM EGLS (Cross-section weights)		Sample: 1989-2004	
Variable	Coefficient	t-Statistic	Prob.
Constant	36.665	2.204	0.028
LOG(ExportsSADC)	0.963	8.657	0.000
LOG(ExportUK)	-0.816	-0.688	0.492
LOG(DistanceUK)	-3.452	-3.665	0.000
Dummyspol	-4.218	-4.796	0.000
AutoRegressionTerm(1)	0.305	4.276	0.000
Weighted Statistics		Unweighted Statistics	
R-squared	0.453	R-squared	0.327
Adjusted R-squared	0.443	Sum squared residual	976.573
Durbin-Watson stat	1.951	Durbin-Watson stat	1.869
J-statistic	0.000		

**Table 13: Model 3 panel estimation SADC UK unit root test summary**

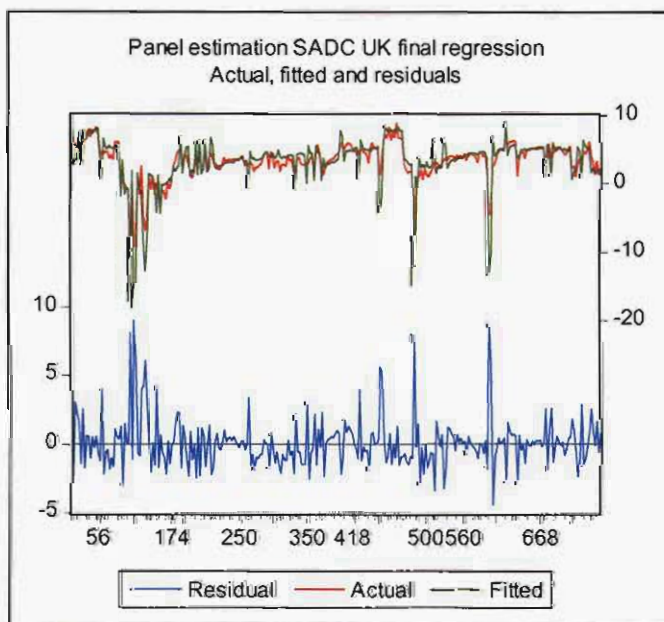
Panel unit root test: Summary		
Newey-West bandwidth selection using Bartlett kernel		
Method	Statistic	Prob.**
Null: Unit root (assumes common unit root process)		
Levin, Lin and Chu t*	-6.999	0.000
Null: Unit root (assumes individual unit root process)		
Im, Pesaran and Shin W-stat	-5.787	0.000
Augmented Dickey-Fuller - Fisher Chi-square	114.263	0.000
Phillips-Perron - Fisher Chi-square	203.560	0.000
<b>Null: No unit root (assumes common unit root process)</b>		
Hadri Z-stat	2.177	0.015

The result of the panel unit root tests in Table 13 indicate that no unit root, whether individual or common, is present at the 1% level. Further tests also

indicate that normality cannot be assumed for the residuals. This can be attributed to the short sample period or a structural problem.

Figure 6.4 is a graphical representation of the actual, fitted and residual values of the estimation. The problems with the residuals as indicated above are confirmed by the graph. In periods of substantial fluctuations there is constant over- or underestimation of the actual value. This is more significant for the figures of Burundi than for the other countries. This problem could be addressed by amending the dummy variable. This is not advisable because the fluctuations should be seen as the inability of the gravity specification to capture all the relevant variables that explain FDI inflows or the inability of a dummy variable to completely explain the effects of political instability.

**Figure 6.4: Model 3 – Panel estimation SADC UK actual, fitted and residual values**



Final results of Model 2: SADC UK

$$\begin{aligned} & \log(\text{FDI inflows to SADC countries}) \\ & = 36.6646 \\ & + 0.963089 * [\log(\text{Value of merchandise exports of SADC countries})] \\ & - 0.816368 * [\log(\text{Total exports of the UK to Africa})] \\ & - 3.452361 * [\log(\text{Distance of the SADC countries to the UK})] \\ & - 4.218251 * [\text{Dummypol}] \\ & + 0.304556 * \text{AR}(1) \end{aligned} \tag{11}$$

The conclusion on the panel estimation of the FDI inflows of the SADC and the UK is that the general trend in FDI inflows is significantly explained in the estimation by SADC exports and distance. The insignificance of the UK exports to Africa variable is consistent with the USA findings and can be viewed as FDI inflows to the SADC not depending on imports from the specific country but on exports to it.

Other variables outside the scope of the gravity specification might be more effective in explaining the fluctuations. Country-specific evaluation might deliver different results because the results are not obtained with the overall error that includes the joint series of country residuals.

### **6.5.3. SADC and the Germany panel estimation**

Table 14 shows the final estimation results for the panel estimation of the 20 SADC countries with Germany. All variables are significant except the constant

term that was therefore omitted. The negative influence shown by the coefficients of distance and “Dummyspol” are significantly less than the results for the USA and the UK. The overall measures of fit also indicate a much better fit than the other estimations. The joint positive coefficients of SADC exports and German exports are almost on a two to one basis. This implies that for every 1% increase in trade there is an almost 2% increase in FDI.

**Table 14: Model 3 panel estimation SADC Germany**

Dependent Variable: LOG(FDIinflows)			
Method: Panel GMM EGLS (Cross-section weights)		Sample: 1989-2004	
Variable	Coefficient	t-Statistic	Prob.
LOG(ExportsSADC)	0.908	17.468	0.000
LOG(ExportGermany)	1.124	2.599	0.009
LOG(DistanceGermany)	-1.324	-3.037	0.003
Dummyspol	-3.385	-11.964	0.000
Weighted Statistics		Unweighted Statistics	
R-squared	0.625	R-squared	0.571
Adjusted R-squared	0.621	Sum squared residual	632.501
Durbin-Watson stat	1.329	Durbin-Watson stat	1.232
J-statistic	6.584		

This is also the first estimation where the exports to Africa variable is significant and has a positive coefficient. This indicates a complementary process between trade and FDI in the case of SADC and Germany.

The result of the panel unit root tests in Table 15 indicate that no unit root, whether individual or common, is present. The Hadri Z-stat, which has a null hypothesis of “No unit root”, contradicts the other results and indicates that a common unit root process might be present at the 1% level. The contradiction in

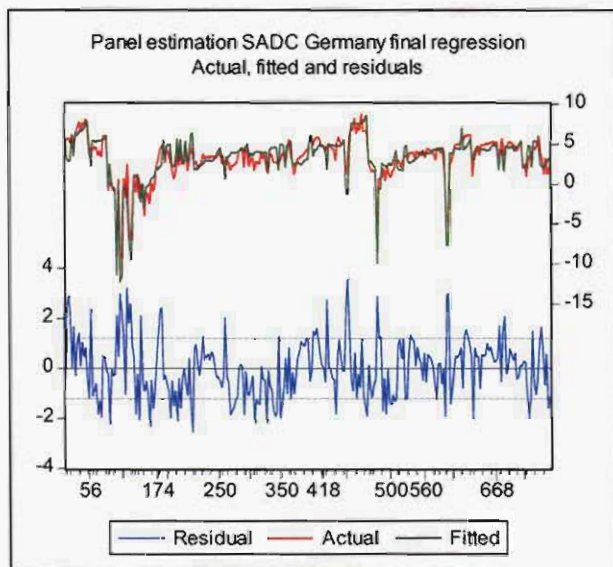
results can be attributed to the short sample period and can therefore be seen as inconclusive. Further tests also indicate that normality cannot be assumed for the residual series and that indicates a specification error or a structural problem.

**Table 15: Model 3 panel estimation SADC Germany unit root test summary**

Panel unit root test: Summary		
Newey-West bandwidth selection using Bartlett kernel		
Method	Statistic	Prob.**
Null: Unit root (assumes common unit root process)		
Levin, Lin and Chu t*	-5.696	0.000
Null: Unit root (assumes individual unit root process)		
Im, Pesaran and Shin W-stat	-3.489	0.000
Augmented Dickey-Fuller - Fisher Chi-square	78.750	0.000
Phillips-Perron - Fisher Chi-square	119.995	0.000
Null: No unit root (assumes common unit root process)		
Hadri Z-stat	3.574	0.000

Figure 6.5 is a graphical representation of the actual, fitted and residual values of the estimation. The problems with the residuals as indicated above are confirmed by the graph. The overall actual and fitted values seem to follow each other closely. There seems to be a general pattern in the residuals which confirms the suspicion of an omitted variable. None of the tested variables could alter this problem and a solution will need to be found outside the FDI trade gravity specification.

**Figure 6.5: Model 3 – Panel estimation SADC Germany actual, fitted and residual values**



Final results of Model 3: SADC Germany

$$\begin{aligned}
 \log(\text{FDI inflows to SADC countries}) = & \\
 & + 0.908494 * [\log(\text{Value of merchandise exports of SADC countries})] \\
 & + 1.124166 * [\log(\text{Total exports of Germany to Africa})] \\
 & - 1.324049 * [\log(\text{Distance of the SADC countries to Germany})] \\
 & - 3.384835 * [\text{Dummyspol}] \tag{12}
 \end{aligned}$$

The conclusion on the panel estimation of the FDI inflows of the SADC and Germany is that the general trend in FDI inflows is significantly explained by the gravity model. Other variables outside the scope of the gravity specification might be effective in explaining the pattern observed in the residuals. Country-specific evaluation might deliver different results because the results are not obtained with the overall error that includes the joint series of country residuals.

There is a clear complementary process in the trade and FDI between these trading partners, which is a significant departure from the SADC USA and SADC UK relationships.

#### 6.5.4. SADC and France panel estimation

Table 16 shows the final estimation results for the panel estimation of the 20 SADC countries with France. All variables are significant except the constant term that was duly omitted. The negative influence as shown by the coefficients of distance and "Dummpol" are significantly less than the results of the USA and the UK and in line with those of Germany. The overall measures of fit indicate a much better fit than the other estimations. The joint positive coefficients of SADC exports and French exports are almost on a two to one basis.

Table 16: Model 3 panel estimation SADC France

Dependent Variable: LOG(FDIinflows)			
Method: Panel GMM EGLS (Cross-section weights)		Sample: 1989-2004	
Variable	Coefficient	t-Statistic	Prob.
LOG(ExportsSADC)	0.879	12.565	0.000
LOG(ExportFrance)	1.355	2.367	0.019
LOG(DistanceFrance)	-1.620	-2.660	0.008
Dummpol	-3.200	-7.297	0.000
AutoRegressionTerm(1)	0.328	6.145	0.000
Weighted Statistics		Unweighted Statistics	
R-squared	0.720	R-squared	0.698
Adjusted R-squared	0.716	Sum squared residual	463.594
Durbin-Watson stat	1.976	Durbin-Watson stat	1.977
J-statistic	3.032		



The results of the panel unit root tests in Table 17 indicate that no unit root, whether individual or common, is present. The Hadri Z-stat, which has a null hypothesis of “No unit root”, contradicts the other results and indicates that a common unit root process might be present at the 1% level. The contradiction in results can be attributed to the short sample period and can therefore be seen as inconclusive. Further tests also indicate that normality cannot be assumed for the residual series and that indicates a specification error or a structural problem.

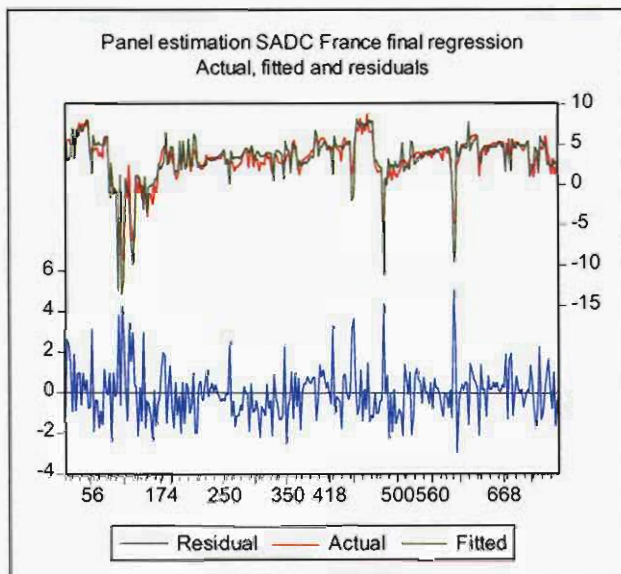
**Table 17: Model 3 panel estimation SADC France unit root test summary**

Panel unit root test: Summary		
Newey-West bandwidth selection using Bartlett kernel		
Method	Statistic	Prob.**
<b>Null: Unit root (assumes common unit root process)</b>		
Levin, Lin and Chu $t^*$	-6.319	0.000
<b>Null: Unit root (assumes individual unit root process)</b>		
Im, Pesaran and Shin W-stat	-5.341	0.000
Augmented Dickey-Fuller - Fisher Chi-square	107.429	0.000
Phillips-Perron - Fisher Chi-square	201.994	0.000
<b>Null: No unit root (assumes common unit root process)</b>		
Hadri Z-stat	2.785	0.003

Figure 6.6 is a graphical representation of the actual, fitted and residual values of the estimation. The problems with the residuals as indicated above are confirmed by the graph. The overall actual and fitted values seem to follow each other closely. In periods of substantial fluctuations there is constant over- or underestimation of the actual value. This is more significant for the figures of Burundi than for the other countries. This problem could be addressed by amending the dummy variable. This is not advisable because the fluctuations

could also be seen as the inability of the gravity specification to capture all the relevant variables that explain FDI inflows.

**Figure 6.6: Model 3 – Panel estimation SADC France actual, fitted and residual values**



Final results of Model 3: SADC France

$$\begin{aligned}
 \log(\text{FDI inflows to SADC countries}) = & \\
 & + 0.878543 \cdot [\log(\text{Value of merchandise exports of SADC countries})] \\
 & + 1.355023 \cdot [\log(\text{Total exports of France to Africa})] \\
 & - 1.620427 \cdot [\log(\text{Distance of the SADC countries to France})] \\
 & - 3.200687 \cdot [\text{Dummypol}] \\
 & + 0.327515 \cdot \text{AR}(1)
 \end{aligned} \tag{13}$$

The conclusion on the panel estimation of the FDI inflows of the SADC and France is that the general trend in FDI inflows is significantly explained by the gravity model. The behaviour of the estimation for France is almost identical to that of Germany. This indicates a different relationship between the SADC and mainland Europe (this excludes Great Britain) than with the two Anglophone countries, the USA and the UK.

Other variables outside the scope of the gravity specification might be effective in explaining the fluctuation observed in the residuals. Country-specific evaluation might deliver different results because the results are not obtained with the overall error that includes the joint series of country residuals.

### 6.5.5. SADC and the Italy panel estimation

Table 18: Model 3 panel estimation SADC Italy

Dependent Variable: LOG(FDIinflows)			
Method: Panel GMM EGLS (Cross-section weights)		Sample: 1989-2004	
Variable	Coefficient	t-Statistic	Prob.
LOG(ExportsSADC)	0.924	14.663	0.000
LOG(ExportItaly)	0.932	1.651	0.099
LOG(DistanceItaly)	-1.157	-2.044	0.041
Dummypol	-2.632	-7.701	0.000
AutoRegressionTerm(1)	0.357	5.112	0.000
R-squared			0.854
Adjusted R-squared			0.852
Durbin-Watson stat			2.029
J-statistic			3.382

Table 18 shows the final estimation results for the panel estimation of the 20 SADC countries with Italy. All variables are significant with some discrepancy as to total exports of Italy to Africa and distance at the 10% and 5% levels respectively. These two variables are on the fringe of being significant or insignificant. As with France and Germany, the negative influence shown by the coefficients of distance and “Dummpol” are significantly less than the results of the USA and the UK. The overall measures of fit also indicate a reasonable fit.

The result of the panel unit root tests in Table 19 indicate that no unit root, whether individual or common, is present at the 1% level. Further tests also indicate that normality cannot be assumed for the residual series and that indicates a specification error or a structural problem.

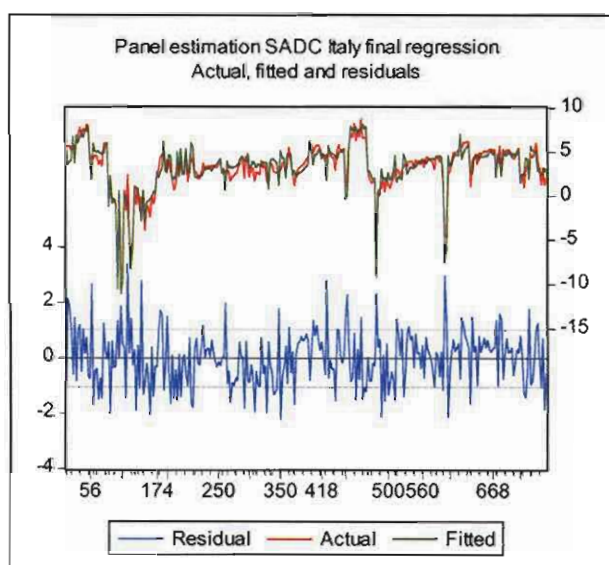
**Table 19: Model 3 panel estimation SADC Italy unit root test summary**

Panel unit root test: Summary		
Newey-West bandwidth selection using Bartlett kernel		
Method	Statistic	Prob.**
Null: Unit root (assumes common unit root process)		
Levin, Lin and Chu t*	-3.576	0.000
Null: Unit root (assumes individual unit root process)		
Im, Pesaran and Shin W-stat	-4.956	0.000
Augmented Dickey-Fuller - Fisher Chi-square	100.236	0.000
Phillips-Perron - Fisher Chi-square	208.121	0.000
Null: No unit root (assumes common unit root process)		
Hadri Z-stat	2.225	0.013

Figure 6.7 is a graphical representation of the actual, fitted and residual values of the estimation. The problems with the residuals as indicated above are confirmed

by the graph. The overall actual and fitted values seem to follow each other closely. There seems to be a general pattern in the residuals which confirms the suspicion of an omitted variable. None of the tested variables could alter this problem and a solution will need to be found outside the FDI trade gravity specification.

**Figure 6.7: Model 3 – Panel estimation SADC Italy actual, fitted and residual values**



Final results of Model 3: SADC Italy

$$\begin{aligned}
 \log(\text{FDI inflows to SADC countries}) = & \\
 & + 0.924035[\log(\text{Value of merchandise exports of SADC countries})] \\
 & + 0.931515[\log(\text{Total exports of Italy to Africa})] \\
 & - 1.156573[\log(\text{Distance of the SADC countries to Italy})] \\
 & - 2.632448[\text{Dummypol}] \\
 & + 0.357035\text{AR}(1)
 \end{aligned} \tag{14}$$

The conclusion on the panel estimation of the FDI inflows of the SADC and Italy is that the general trend in FDI inflows is significantly explained by the gravity model. In this estimation, the total exports of Italy to Africa can be seen as significant. This is in line with Germany and France and opposed to the USA and the UK.

Other variables outside the scope of the gravity specification might be effective in explaining the fluctuation observed in the residuals. Country-specific evaluation might deliver different results because the results are not obtained with the overall error that includes the joint series of country residuals.

### 6.5.6. SADC and the Japan panel estimation

Table 20: Model 3 panel estimation SADC Japan

Dependent Variable: LOG(FDIinflows)			
Method: Panel GMM EGLS (Cross-section weights)		Sample: 1989-2004	
Variable	Coefficient	t-Statistic	Prob.
LOG(ExportsSADC)	0.911	12.348	0.000
LOG(ExportJapan)	-0.449	-0.650	0.516
LOG(DistanceJapan)	0.248	0.384	0.701
Dummyspol	-3.237	-5.649	0.000
AutoRegressionTerm(1)	0.357	5.086	0.000
Weighted Statistics		Unweighted Statistics	
R-squared	0.712	R-squared	0.687
Adjusted R-squared	0.707	Sum squared residual	481.931
Durbin-Watson stat	1.975	Durbin-Watson stat	1.951
J-statistic	0.618		

Table 20 shows the final estimation results for the panel estimation of the 20 SADC countries with Japan. The low activity of Japan in the SADC region is

shown with both total exports of Japan and distance being insignificant at the 10% level, all the other variables are significant at the 1% level. The overall measures of fit indicate a reasonable fit. One problem seems to be the negative coefficient of total exports of Japan to Africa and the positive coefficient of distance.

The result of the panel unit root tests in Table 21 indicate that no unit root, whether individual or common, is present at the 2% level. Further tests also indicate that normality cannot be assumed for the residual series and that indicates a specification error or a structural problem.

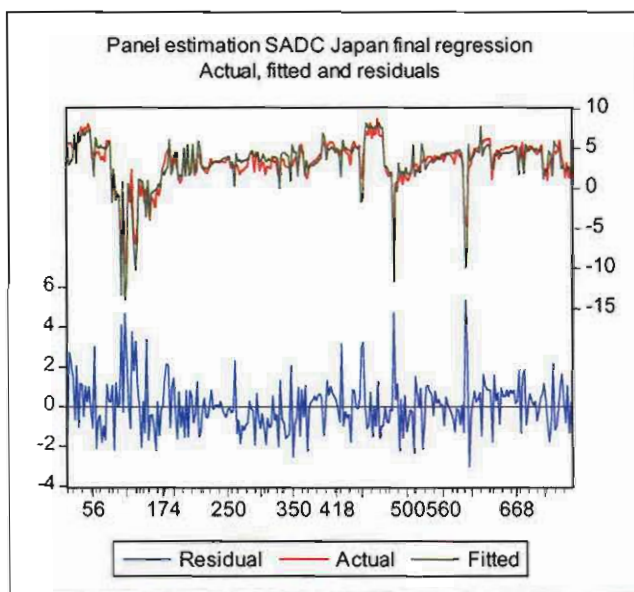
**Table 21: Model 3 panel estimation SADC Japan unit root test summary**

Panel unit root test: Summary		
Newey-West bandwidth selection using Bartlett kernel		
Method	Statistic	Prob.**
Null: Unit root (assumes common unit root process)		
Levin, Lin and Chu t*	-6.508	0.000
Null: Unit root (assumes individual unit root process)		
Im, Pesaran and Shin W-stat	-5.759	0.0000
Augmented Dickey-Fuller - Fisher Chi-square	113.982	0.0000
Phillips-Perron - Fisher Chi-square	209.962	0.0000
Null: No unit root (assumes common unit root process)		
Hadri Z-stat	1.996	0.023

Figure 6.8 is a graphical representation of the actual, fitted and residual values of the estimation. The problems with the residuals as indicated above are confirmed by the graph. The overall actual and fitted values seem to follow each other closely. In periods of substantial fluctuations there is constant over- or underestimation of the actual value. This is more significant for the figures of

Burundi than for the other countries. This problem could be addressed by amending the dummy variable. This is not advisable because the fluctuations should be seen as the inability of the gravity specification to capture all the relevant variables that explain FDI inflows in the specific case of Japan.

**Figure 6.8: Model 3 – Panel estimation SADC Japan actual, fitted and residual values**



Final results of Model 3: SADC Japan

$$\begin{aligned}
 \log(\text{FDI inflows to SADC countries}) = & \\
 & + 0.910957 * [\log(\text{Value of merchandise exports of SADC countries})] \\
 & - 0.448892 * [\log(\text{Total exports of Japan to Africa})] \\
 & + 0.248494 * [\log(\text{Distance of the SADC countries to Japan})] \\
 & - 3.236816 * [\text{Dummypol}] \\
 & + 0.356565 * \text{AR}(1) \qquad (15)
 \end{aligned}$$



The conclusion on the panel estimation of the FDI inflows of the SADC and Japan is that the general trend in FDI inflows is significantly explained by the gravity model. Both variables that are specific to Japan are insignificant and it is therefore clear that, in the case of Japan, the assumptions of gravity and trade do not hold true.

Other variables outside the scope of the gravity specification might be effective in explaining the fluctuation observed in the residuals. Country-specific evaluation might deliver different results because the results are not obtained with the overall error that includes the joint series of country residuals.

## **6.6. Summary**

This chapter contained the estimation results of the empirical analysis. Although the statistical results confirm discrepancies in the results, the results represent the best possible fit given the underlying data and the use of the gravity specification. Therefore the patterns that emerge from the results are still informative and can be used to evaluate the central hypothesis set out for this thesis. The results consist of the results of the three individual models that are used to evaluate the relationship between trade and FDI in the SADC.

Model 1 is a single equation regression that uses the gravity specification to estimate total FDI inflows into the respective SADC countries as a function of their total exports, the total exports of their main trading partners and sources of FDI as well as the geographical distance between them. Although the results are inconclusive at best, a relationship between trade and FDI can be discerned.

Model 2 expands the specification of Model 1 to include the respective individual total export figures for the three major trading partners and sources of FDI of the SADC. They are the USA, the UK and Japan. This specification delivers the strongest result of all the models used, with only distance being insignificant. It also becomes clear that political instability is the single largest negative influence on FDI inflows in this specification.

Granger causality tests on the stacked series of FDI inflows and value of merchandise exports delivers a conclusive set of results as it indicates that, for the specific case of the SADC, trade causes FDI inflows and not that FDI causes trade as is the general theoretical view.

Model 3 represents the main body of empirical work of this study. It consists of six panel estimations that look at the FDI inflows of the respective SADC countries as functions of their respective exports, the exports of their main trading partners, the USA, the UK, Germany, France, Italy and Japan. Distance and political instability are the “friction” that has a negative relationship with FDI inflows.

Six panel estimations were used because the software used for the estimations cannot estimate nested panels. Each trading partner was therefore included in a separate panel. Although each trading partner had different results, the overall picture that emerged was that, as with model 2, the most significant factors that influence FDI inflows to the SADC in the gravity specification used is SADC exports and political instability.

Both the USA and the UK had a negative coefficient and were insignificant. Imports were also tested but remained insignificant. This can be seen as either that the gravity specification of FDI and trade does not capture the relationship, or that these countries are resource-seeking and therefore their exports in themselves do not represent a significant factor.

German, French and Italian results differed from the USA and the UK and were mostly inline with the theoretical specification. It can therefore be said that there is a complementary relationship between trade and FDI in the economic sphere between the SADC and mainland Europe (excluding the UK and Ireland).

In the case of Japan, all variables related to Japan were insignificant. In general, Japan does not have a record of FDI in Africa as seen in Chapter 4. It should, however, be noted that many Japanese MNEs have representation in the SADC, mostly in South Africa, yet these offices fall under the European regional offices. The absence of Japanese trade as a factor in FDI should therefore be seen as a redirection of flows since most Japanese firms that have invested in the SADC region did so through their European subsidiaries based mainly in Germany.

The overall conclusion of the results of these models is that FDI inflows into the SADC are dependent on SADC exports to the developed world and the distance to these countries. Different trade patterns emerge in the panel estimations. They include the USA and the UK that have a trade and FDI substitution relationship with the SADC, Continental Europe that has a trade FDI complementary relationship with the SADC and, lastly, Japan that has no clear trade FDI relationship with the SADC.

Distance as a variable proved most significant, unlike other international studies mentioned in Chapter 3. The result confirms the fact that the SADC is generally viewed as geographically very distant from major economic hubs. This implies that MNEs who invest are interested in scarce resources or in a specific market segment where the returns will outweigh the costs.

Dummy variables were tested for in various ways. Political instability far outweighed other measures. Landlocked dummies and cultural dummies were significant only until the introduction of political instability. This implies that these underlying factors exist, but in the SADC the political turmoil has so far outweighed these factors that they are insignificant.

Political instability was by far the most successful variable in the estimation process and also had the largest coefficient. The variable used for the panel estimation consisted of mostly zeroes and ones for times of political upheaval in the respective countries. Rwanda and Burundi were the countries that contributed the most to severe fluctuations in the data. However, excluding them will not ensure a better fit as the DRC, Tanzania, South Africa, Angola and Zimbabwe also showed severe fluctuations in times of political upheaval. Botswana and Namibia were the most stable countries. What becomes clear is that the SADC has a definite international image problem. The fact that the dummy that coincides with times of political instability is so significant implies that the negative image of the region is not unfounded.

Geographical distance and political instability represent the largest negative influence on the FDI trade relationship. Both these variables have serious policy implications for the SADC if it wants to attract more foreign investment. The

SADC will need to clear its house in governance and telecommunications if it wants to attract more relevant FDI.

The results of the empirical study indicate that, in the SADC, trade causes FDI inflows into the host economies. This is confirmed by the Granger causality tests and the significance of the host export variables for all the models. It can furthermore be seen that in all the models the export variable has a positive coefficient that is close to one. This indicates that for every 1% increase in exports of SADC there is a corresponding 1% increase of FDI.

When the FDI inflows to the SADC variable are evaluated in the light of the exports of the home countries, three patterns emerge. Although the variable is significant on the aggregate level, it is in the panel estimations where the pattern can be seen.

The working hypothesis of this study is that increased trade between the SADC members and increased trade with the SADC's main trading partners will lead to increased levels of FDI in the region and that this is a more significant determinant of FDI to the SADC than sectoral (resource) considerations.

In terms of the central hypothesis, the results can be summarised as follows: In the SADC, trade causes FDI, but only in certain cases does the assumption hold that there is a complementary bi-directional relationship. From an SADC-only point of view, the hypothesis can be accepted in that there is a distinct positive relationship between SADC exports and FDI.

The use of gravity can be criticised as limiting the scope of possible explanatory variables and opening the door for possible specification error due to the state of the data. It is, however, important to note that the aim of this thesis was to evaluate the relationship between trade and FDI in the SADC. From this perspective, the gravity specification proved itself to be adequate.

In Chapter 7 a summary of the study is presented and conclusions and recommendations are made.

## Chapter 7: Summary and conclusions

This study focused on the relationship between trade and FDI in the SADC. While FDI is seen as a stimulus for growth and development, Africa is falling behind other regions in attracting FDI. The working hypothesis of this study was that increased trade between SADC members and increased trade with the SADC's main trading partners will lead to increased levels of FDI in the region and that this is a more significant determinant of FDI to the SADC than sectoral (resource) considerations.

Chapter 2 reviewed the theory of FDI. FDI occurs when an investment is made to acquire a lasting interest in an enterprise operating outside the economy of the investor. Such an investment is usually made to gain an effective voice in the management of such an enterprise. FDI is placed in the context of global fund flows, and global FDI flows are reviewed to examine the status and global context of FDI inflows to Africa. Africa is receiving less than 10 % of FDI inflows to developing countries and Sub-Saharan Africa receives less FDI inflows than countries like China, Brazil and Mexico. A review of the economic effects of FDI indicates that FDI leads to economic growth, increased levels of productivity, the implementation of new technologies, and the upgrading and development of human capital. It can therefore be seen that FDI becomes significant as a conduit for economic development. The determinants of FDI are varied and unique to each situation. The determinants of FDI are grouped in to micro- and macro-determinants. Micro-determinants are the factors that directly impact on the profitability of the MNE. They are market size and growth, labour costs, host government policies, tariffs and trade barriers, taxes, transport costs and

agglomeration effects. Macro-determinants are the factors that impact on the profitability of the MNE at an economy-wide level. These factors consist of: Openness of trade and exports, exchange rates, inflation rates, budget deficits, investment and infrastructure, political stability, regional integration and the quality of institutions.

In order to attract FDI inflows, SADC countries need to implement policies that will create investor friendly climates by directing their efforts at the determinants of FDI that they can influence. Home countries are increasingly using FDI as a policy tool to influence the behaviour of foreign governments and this needs to be taken into account by the host countries. Policies need not always aim for the lowest tariffs and taxes. MNEs evaluate investment opportunities by taking into account risk factors that result from transparency and economic and political stability. Understanding the theoretical background of FDI enables the understanding of the important role that FDI plays in enhancing development in growing economies. FDI by itself does not cause growth or development but it acts as a multiplier that can help developing countries to attain sustainable development. The benefits of increased human capital stocks, wages and technological diffusion can lead to increases of overall living standards in the host country. From the perspective of the SADC, this is important due to severe underdevelopment, lack of human capital, skewed income distribution and economic instability in the region. FDI can have a significant impact on future growth and development in the region. In order to realise the benefits of FDI, the SADC needs to attract relevant FDI in industries that will have the largest possible spillover effects. The SADC also needs to improve its infrastructure and human capital stocks to reap the greatest benefits from FDI.



Chapter 3 examined studies that drew from both trade and FDI theory. Partial equilibrium and general equilibrium studies as well as studies that focus on the theory of firm behaviour were investigated. Studies that focused on the causality between trade and FDI, the effects of the rise of global production networks on FDI and trade, and the effect of regional integration on FDI and trade were examined. These studies indicate that there is definite relationship between FDI and trade. This relationship is mostly complementary but can, in some instances, also be substitutionary. The lower the level of data, the stronger the evidence that emerges for these relationships. It is therefore necessary to use data at the lowest level and to avoid using aggregate figures where possible. The theory of firm behaviour indicates that MNEs will always seek to maximise their profit and minimise their cost when deciding on whether to export or invest. Host countries therefore need to focus on increased productivity, providing needed skills and ensuring the quality of their institutions. Although most literature treats FDI as a trade determinant, it is also shown that FDI influences trade significantly, especially in developing countries. In the literature, where causality between trade and FDI was investigated, a bi-directional relationship is suggested. The emergence of GPNs and regional integration over recent decades can also directly be linked to increases in FDI and trade flows. Export-platform FDI and trade openness resulting from this has led to significant increases in FDI and trade flows into developing economies.

The SADC will need to rethink its policies in the light of the findings of this study. Openness of trade and increased trade volumes will lead to more FDI. Quality of institutions means lower costs for investors. This is one of the main concerns that MNEs have when investing in Africa. The same conclusion that was drawn in chapter 2, that a transparent business environment with solid

institutions and judiciary will go a long way to create a suitable investment climate can be made. The SADC will also need to focus their policies on coherent regional integration through joint trade and tariff structures that will reduce investment risk factors for MNEs. Policies should also focus on attracting production of intermediate goods as many MNEs are diversifying their production processes and setting up cross-border production networks.

Chapter 4 gave a brief history of the SADC, studied other African regional bodies that interact with the SADC, briefly considered current international agreements and initiatives that provide trade opportunities and influence SADC policies, investigated the current FDI flows to the SADC, and discussed trade patterns in SADC countries. The SADC is the strongest and the most significant trading bloc in Africa. If the SADC could achieve significant growth and development it will spill over into the rest of Sub-Saharan Africa. If poverty and underdevelopment in Africa is to be eradicated, it will need to start in the SADC. The SADC also represents the most coherent trade bloc in Africa that also has the strongest ability to create a sustainable common market in the future. Recent trade initiatives and agreements allow SADC countries the opportunity to increase their trade with the rest of the world and give them greater exposure to the global marketplace. These initiatives include NEPAD, various WTO agreements, AGOA, the SADC-EU economic partnership agreement and the Millennium Development Goals. This in itself has already led to some increases in growth. However, much higher levels of growth need to be achieved if the Millennium Development Goals are to be achieved.

Except for Angola and the DRC, the SADC seems to face difficulties in attracting FDI. If a relationship between the increasing growth in trade and FDI can be

established it can be harnessed to increase FDI flows and the resulting economic growth. It must be noted that Botswana and Namibia are doing extremely well for their respective sizes among their SADC peers in attracting FDI inflows. In terms of exports, the SADC landscape is completely dominated by South Africa. Other significant players are Angola, the DRC, Botswana, Namibia, Zimbabwe, Mauritius and Kenya. These countries, with the exception of Zimbabwe, are also the main recipients of FDI in the region. This is an early indication that a strong relationship between trade and FDI exists in the SADC. Although SADC imports are also dominated by South Africa, the import figures for the other countries are more evenly divided. The same countries that dominated in exports are also the ones that are more dominant in imports. Angola is the only country that shows a significant deviation from zero in its trade surplus. The fact that it has a positive trade deficit is also positive. All other SADC countries seem to have an average null trade deficit. South Africa has an increasing deficit.

Most of the FDI inflows in the SADC are primary sector related with some service sector investments in tourism. Ways will need to be found to gain FDI in the manufacturing sector and other parts of the service sector. FDI inflows should not be viewed as a "one or the other" case but rather that FDI in the primary sector should be alongside new FDI in other sectors. The reason for this is that although primary sector FDI has its downside, it still leads to growth, job creation and increases in disposable income. The challenge for SADC governments is to use the benefits of the current FDI inflows to ensure more variety in future FDI inflows.

Chapter 5 described the methodology of the empirical investigation. The use of the gravity approach was evaluated after which the estimation process and the

data used were described. Gravity was used because it represents a flow between two masses that occurs as a result of their respective sizes and is constrained by the distance between them. The use of the gravity specification for modelling the relationship between FDI inflows and trade gives a strong indication on the role that trade plays in attracting FDI. Although it is not widely used, it is gaining in popularity as a specification method. Gravity cannot be seen as the final word in any investigation into FDI inflows but, in the case of trade and FDI, it can be used effectively to determine whether trade plays a leading role in the FDI arena.

In any study into multiple African countries, the main constraint is the availability of adequate data. This situation is slowly changing as more and more international bodies collect more specific data and international organisations such as the World Bank and the UN are requiring African governments to produce more detailed, transparent and accurate data. The data used were mainly from the Handbook of Statistics and FDI-online of UNCTAD. The modelling process starts at the level of aggregate variables and was expanded gradually until country level was reached. Three models are used to investigate the relationship between trade and FDI. The scope and specification is limited through the availability of suitable data for the entire set of countries. Each model used the gravity specification of FDI inflows as a function of host exports, home exports and distance. Model 1 and Model 2 were estimated as single equations using aggregate figures as a preliminary investigation. Model 3 represents the main body of empirical work of this study. It consists of six panel estimations that look at the FDI inflows of the respective SADC countries as functions of their respective exports, the exports of their main trading partners, the USA, the UK, Germany, France, Italy and Japan. Distance and political instability are the “friction” that has a negative relationship on FDI inflows.

Many of the variables tested in the modelling process proved to be insignificant. This is the result of a short sample period as many of the new indicators that are being recorded are not available for long periods. Most of them are only available for eight or fewer periods. This effectively limits their significance in any model. Various alternative measures of distance are tested to investigate the role of psychological distance. Dummy variables were used to test whether cultural, landlocked, and political stability have a significant effect on FDI inflows. The lack of a suitable, regular set of data for sectoral FDI inflows also leads to the inability to do investigations at a sectoral level. Advanced estimation techniques can be used to model the data, but the interpretation of the results is limited due to the limited number of degrees of freedom caused by missing values as well as instability in the data of most of the countries. The results still give a clear indication on the central hypothesis of FDI being caused by trade in the SADC region.

Chapter 6 presented the estimation results of the empirical study. Although the statistical results confirmed discrepancies, results represent the best possible fit given the underlying data and the use of the gravity specification. Therefore the patterns that emerge from the results are still significant and can be used to evaluate the central hypothesis of the study. The following patterns emerged from the estimation results. There is a significant relationship between FDI inflows to the SADC and SADC exports. The result is confirmed with a Granger causality test. The test indicates that in the case of the SADC, trade causes FDI rather than FDI causing trade. Distance and political instability are both always significant and have large negative coefficients. In some equations, cultural and landlocked dummies were significant but when political instability was

introduced they became insignificant. This implies that, although underlying assumptions of FDI may hold in the SADC, they are significantly outweighed by political instability in the region. The export variables for home countries left mixed results with the USA and the UK having insignificant and negative coefficients. Germany, France and Italy had positive significant coefficients but insignificant constant values. The results for these mainland European countries indicate a complementary role between home exports and host FDI inflows. The results for Japan were inconclusive, which is in line with UNCTAD (2005) findings. The result of distance confirms the fact that the SADC is generally viewed as geographically very distant from major economic hubs. This implies that MNEs that invest are interested in scarce resources or in a specific market segment where the returns will outweigh the costs.

Political instability was the most significant variable in the estimation process and also had the largest coefficient. Rwanda and Burundi were the countries that contributed the most to severe fluctuations in the data. However, excluding them will not ensure a better fit as the DRC, Tanzania, South Africa, Angola and Zimbabwe also showed severe fluctuations in times of political upheaval. Botswana and Namibia were the most stable countries. It is clear that the SADC has a problem with international perceptions. The fact that the dummy that coincides with times of political instability is so significant implies that the negative image of the region is not unfounded.

Geographical distance and political instability represent the largest negative influence on the FDI trade relationship. Both these variables have serious policy implications for the SADC if it wants to attract more foreign investment. The SADC will need to clear its house in terms of good governance and

telecommunications if it wants to attract more relevant FDI. Alternative measures of distance proved to be insignificant during the estimation process. This does not mean that they can be ignored. These variables are mostly new variables that have only been available for a short period. As the available series become longer and more widely accepted, they will almost certainly become significant as determinants of FDI inflows. This is hinted at by the significance of the dummy variables that represented political instability.

In terms of the central hypothesis, the results can be summarised as follows: In the SADC, trade causes FDI, but only in certain cases does the assumption hold that there is a complementary bidirectional relationship. From an SADC only point of view, the hypothesis can be accepted in that there is a clear positive relationship between SADC exports and FDI. The use of gravity can be criticised as limiting the scope of possible explanatory variables and opening the door for possible specification error due to the state of the data. It is, however, important to note that the aim of the study was to evaluate the relationship between trade and FDI in the SADC. From this perspective the gravity specification proved itself to be adequate.

The following policy implications can be derived: The SADC will need to focus on attracting investment from countries that provide for complementary FDI and trade. In Chapter 3, it was shown that this is optimal for poverty alleviation and job creation. The results of the estimations also give an indication that the SADC has a long way to go in terms of regional integration as the panel estimation shows that the different countries are still functioning independently of the others. The SADC as a regional body will need to focus on transforming itself into a homogenous trading bloc. Internet connectivity in the region will need to

be addressed as a matter of priority. Not only is this the only way to directly address the negative significance of distance, the UN general assembly stated in October 2006 that access to broadband internet has become as necessary for economic development as running water.

To conclude, this study has made four contributions:

Firstly, it has provided an empirical test of the relationship between trade and FDI in the SADC. The results indicate that in the SADC, FDI is dependent on exports, the distance to the home country, and political stability. These results were produced using advanced econometric techniques in a developing country context.

Secondly, it has contributed to the literature on trade and FDI and the literature on FDI in Africa, especially in the SADC. Very few studies exist, that focus on African countries alone and even fewer on the FDI inflows of African countries.

Thirdly, it added to the current debate that the traditional determinants of FDI in Africa are not sufficient to explain the lack of FDI inflows in Africa in comparison with other regions. Trade, especially exports to the developing world, and Africa's negative image of being politically and economically unstable, are significant factors that determine FDI inflows to the SADC.

Fourthly, it has contributed to the current FDI policy debate in the SADC. Clear indications are made of which policies will attract FDI inflows. The



recent peer approval of Zimbabwe (SADC, 2006) while the international community are shunning Zimbabwe, is just one example of how the SADC countries will need to rethink their overall policy approach to attract FDI for development purposes. The SADC needs to encourage exports, political and economic stability, transparent business environments, the limitation of bureaucratic "red tape" and quality institutions.

Data limitations may have affected the results adversely. Insufficient data was available to evaluate FDI inflows at a sectoral level, and very little source data is available to evaluate country- specific FDI inflows. The situation regarding data for SADC countries is changing fast and more data is becoming readily available. Within the next decade, the picture will most certainly change quite significantly and therefore a continuous review of the situation in further studies will be necessary. The role of China and India will also change the trade and investment environment in the SADC region and this will need to be investigated further, when appropriate data becomes available. The absolute growth of the internet in removing distance will probably become a significant factor in economic flows in the SADC. Further studies should focus on the role of telecommunications in attracting FDI inflows.

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