THE GEOGRAPHICAL DETERMINANTS OF FOREIGN DIRECT INVESTMENT INFLOWS TO THE SOUTHERN AFRICAN DEVELOPMENT COMMUNITY (SADC) REGION

MASTER OF ARTS (ECONOMICS) THESIS

By

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DECLARATION

I the undersigned hereby declare that this thesis is my own original work, which has not been submitted to any other institution for familiar purposes. Where other peoples' work has been used, acknowledgements have been made.

_____

Full legal name

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Signature

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Date

CERTIFICATE OF APPROVAL

The undersigned certify that this thesis represents the student's own work and effort and has been submitted with our approval.

Signature: _____Date: _____

E. B. D. Silumbu, PhD (Senior Lecturer)

Supervisor

DEDICATION

I dedicate this work to my parents who have tirelessly provided moral and material support that have brought me this far. The work is also dedicated to my sister, Florence, and my brothers, David and Joseph, for the motivation they gave me during my studies. Above all, to God be the glory; this work would not have materialized without his providence.

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ABSTRACT

The present study explores whether geographical factors play a significant role in the determination of foreign direct investment (FDI) inflows in Southern Africa Development Community (SADC) countries. The study uses panel data of 15 SADC countries during the period of 2000-2011. To explore the determining factors, the study uses a one-step System GMM in the estimation process. The results of the study show that geography, particularly geographical variables such as agglomeration, land area (size of the country), urban population and being resource rich play a significant role in determining FDI inflow. The study has also shown that there is a significant difference between FDI inflow going to land-locked countries and coastal-based countries in the SADC region. These results have a number of policy implications for the SADC region.

Key terms: Foreign Direct Investment (FDI), SADC, System GMM, geography

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GDP	Gross Domestic Product
FDI	Foreign Direct Investment
IMF	Internal Monetary Fund
MNC	Multinational Corporation
TNC	Transnational Corporation
SADCC	The Southern African Development Co-operation Conference
SADC	Southern African Development Community
UNCTAD	United Nations Conference of Trade and Development
SACU	Southern African Customs Union
COMESA	The Common Market for Eastern and Southern Africa
ECOWAS	Economic Community of West African States
OECD	Organization for Economic Co-operation and Development
OLS	Ordinary Least Squares
GMM	General Method of Moments
FGLS	Feasible Generalized Least Squares
GLS	General Least Squares
DGMM	Differenced Generalized Method of Moments
SGMM	System Generalized Method of Moments
ANOVA	Analysis of Variance

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

Most countries in Africa have experienced sustained economic growth, with growth rates exceeding 5 percent per year (Zamfir, 2016). Foreign direct investment (FDI) has been identified as one of the factors of growth in Africa. Over the years, Africa has practically been unable to attract a significant FDI. Between 2011 and 2013 FDI inflows to Africa rose only by 4 percent from $48 billion to $57 billion, driven by international and regional market-seeking flows, and infrastructure investments (UNCTAD, 2014). Like many other regional economic blocks, the Southern African Development Community (SADC) is aware of the importance of FDI and its member states are actively seeking FDI not only to enhance their economic growth but also to promote their integration into the world economy (Mhlanga et al, 2009). Against this backdrop, in 2010, SADC developed a finance and investment protocol aimed at producing a favorable investment climate in the SADC region to attract investment (SADC, 2010). It was hoped that the protocol would help the region attain a diversified and expanded economy, sustainable economic development and growth, and eradication of poverty. Unfortunately, the initiative is yet to generate its intended results. For example, an UNCTAD (2014) world investment report that analysed the level of FDI attraction in Africa's economic regional blocks from 2009-2013 revealed that the Economic Community of West African States (ECOWAS) claimed a lion's share of 37 percent while SADC got a small share of only 17 percent.

Mhlanga, et al (2009) notes a heavy Cross-Developing Country FDI trend, which they defined as “south-south” flows. The trend is attributed to the fact that it is easy for an investor to invest in a familiar territory. A handy example is countries such as Malawi, Mozambique, Namibia, Uganda and the United Republic of Tanzania that have received a sizeable amount of FDI stock from the region (excluding stock from Mauritius), mostly from South Africa (UNCTAD, 2014). The UNCTAD (2014) report further observes that South-South FDI flows help African firms enhance their competitiveness by increasing their scale, by developing their production know-how, and by providing access to better and cheaper resources.

Geography is important because it determines climate, natural resource endowments, disease burdens, transport costs and diffusion of new innovations (Naude and Krugell, 2007). Over the years, geography has attracted tremendous attention from economists because researchers have shown its importance and its potential in determining where FDI goes. By understanding geographical determinants therefore, one may be able to understand how foreign investors determine their investment location. In other words, besides the presence of finance and SADC investment protocols, an investor may be swayed by other reasons such as geography. It is against this background; the present study explores whether geography influences FDI inflows in the SADC region.

1.2 Problem Statement

Asiedu (2002) argues that FDI determinants vary from country to country therefore some determinants may be relevant to Africa while others may not. Along this vein, SADC (2010) points out that major factors influencing FDI in the SADC region are market size, political stability, economic prospects, cost of production, infrastructure

quality, natural resource endowment, and other factors largely difficult to affect through public policy. Geography is one of the factors that cannot be affected through public policy. Furthermore, geographical factors are not like the traditionally accepted determinants of FDI. This is because the traditionally accepted determinants of FDI are often proxies for the underlying more general determinants that may have a high potential of being related to omitted variables, which can impede causal inference. This therefore gives geographical factors an advantage over the traditionally accepted determinants of FDI.

Fairgrieve (1917) argued that human action is possible only within the limits set by geography and often takes the path set as rational by geography. This then means that investors also consider geography in their decision making. Geographical location has an influence on flow of goods, factors of production and innovation (Guerin, 2002). African geographically landlocked countries, for example, face huge cost disadvantages owed to high shipping and insurance costs compared to coastal-based countries (Selhausen, 2009). An investor wishing to reduce their costs would consider it wise to invest in the coastal-based countries.

The SADC is the prefect area of interest for this study. SADC has existed since the 1980s despite the presence of other strong organizations such as the Southern African Customary Union (SACU) and the Common Market for Eastern and Southern Africa (COMESA). OECD (2002) describe the SADC as an organization that has advanced more than other regional organizations in Africa. In the mid-1990s SADC was regarded as the most successful regional organization in Africa (Adelman, 2003). To

top it off, southern Africa has some of the largest deposits of mineral resources (e.g. South Africa, Botswana and Democratic Republic of Congo) in the whole of Africa.

The present study will make a twofold contribution to literature. Firstly, it will establish whether geographical factors play a significant role in the determination of FDI inflows to the SADC region. Secondly, the study will assess if there are any significant differences in FDI inflows between resource rich countries and non-resource rich countries and landlocked and coastal-based countries in the SADC region.

1.3 Objectives

1.3.1 Main objective

The main objective of the study is to determine how geographical factors play a significant role in the determination of FDI in the SADC region.

1.3.2 Specific objective

i. To assess if there is a significant difference between resource rich countries and non-resource rich countries in FDI inflow in the SADC region.

ii. To assess if there is significant difference between landlocked countries and coastal countries in FDI inflow in the SADC region.

1.4 Hypothesis

i. There is no significant difference between landlocked countries and coastal countries in FDI inflow in the SADC region.

ii. There is no significant difference between resource rich countries and non-resource rich countries in FDI inflow SADC region.

1.5 Organization of the Study

The present thesis is in six chapters. Chapter one introduces the study, and, its problem statement, objectives and hypothesis. Chapter two presents a general overview of FDI trends in the SADC region. It looks at the history of SADC and a description of the member states of SADC and looks at some of the policies and initiatives put in place by SADC to attract FDI. The study's literature review i.e. theoretical and empirical, is presented in chapter three while chapter four concerns itself with discussing the methodology, the empirical model specification and the estimation technique used in the study. Chapter five presents and discusses results of the study based on the model estimations. Lastly, Chapter six presents the overall summary of the study, and its limitations and policy implications.

CHAPTER TWO

OVERVIEW OF TRENDS OF FDI IN THE SADC REGION

2.1 Introduction

This chapter presents a brief history of the SADC and some of the policies and initiatives that SADC put in place to attract FDI. Trends of FDI in Africa and the SADC region are also presented.

2.2 A brief history of SADC

The SADC was originally founded in 1980. At that time, it was called the Southern African Development Co-operation Conference (SADCC). The SADCC laid an important foundation especially in the areas of transport, communication and identity. The roots of the organization date back to the 1960s, when the so called Front Line States (FLS) sought for the political liberation of the region from colonialism and minority white rule (Burgess, 2009). At that time the first five representatives for the FLS were Angola, Tanzania, Zambia, Botswana and Mozambique. They joined forces to pursue the single goal of helping African states in their fights for independence (Voght, 2007).

In 1979, South Africa created the constellation of South African states (CONSAS). The idea behind the CONSAS was for South Africa to gain more influence in the region and at that time South Africa was under the Apartheid regime. This prompted

the FLS, which opposed the Apartheid regime to establish the Southern African development co-operation conference in 1980. At that time SADCC was made up of Angola, Tanzania, Zambia, Botswana, Mozambique, Lesotho, Malawi, Swaziland and the newly independent Zimbabwe (Burgess, 2009).

The second reason for the creation of the SADCC was the economic aspect which prompted the Lusaka declaration, in the founding document of the SADCC to be titled "Southern Africa: towards economic liberation". By the early 1990s, independence in Namibia and the end of apartheid in South Africa ended the struggle against colonialism in the region and normalized the political landscape. In 1992 at Windhoek, Namibia, the SADC Heads of State and Government signed a Treaty transforming the SADCC from a coordination conference into the Southern African Development Community. They redefined the basis of cooperation among Member States from a loose association into a legally binding arrangement (SADC, 2005).

2.3 SADC Member states

The following is a concise description of the SADC member states. The information of the member states was all derived from the SADC website www.sadc.int.

Angola

The Republic of Angola covers 1,247,000 sq Km in the western region of Southern Africa. It is the second largest country south of the Sahara after the Democratic Republic of Congo. The country contains six major geomorphologic areas: Coastal area, marginal mountain chains, the old tableland, Zaire basin and the basins of the

Zambezi and Cubango. Angola was a member of the FLS and it was a founding member of SADCC in 1980 and was also a founding member of SADC in 1992.

The oil industry is presently the backbone of the economy. Oil and fishing are the main sectors that have attracted foreign investment in recent years. The upstream oil industry is the country's major source of foreign exchange, and oil production and its supporting activities contribute about half of Gross Domestic Product (GDP) and 90 percent of exports.

Botswana

Botswana is a landlocked country in the centre of Southern Africa. Botswana shares borders with South Africa, Namibia, Zambia and Zimbabwe. The country covers an area of about 582,000 sq Km and is relatively flat. The Kalahari Desert occupies more than 70 percent of the country, with valleys and pans etched across the landscape. Botswana was a member of the FLS and it was a founding member of SADCC in 1980 and was also a founding member of SADC in 1992.

The mining sector, and in particular diamond mining, is the major contributor to the export base. The livestock industry contributes about 80 percent of agriculture's share of GDP. Over 95 percent of beef production is exported. Tourism continues to play an increasingly significant role in the diversification of the economy. Botswana's impressive economic performance is mainly due to the success of its export sector.

Democratic Republic of Congo

The Democratic Republic of Congo (DRC), formerly known as the Republic of Zaire, is geographically the largest state in Southern and Central Africa. It is situated at the

heart of Africa, and lies on the Equator, covering an area of 2,345,095 sq km. The DRC has 37 kilometres of coastline and a geography characterised by a vast central basin low-lying plateau rising to volcanoes and mountains in the east. More than half the country is covered by a dense tropical rainforest. The country is traversed by numerous rivers with the Congo River being the largest. The DRC joined SADC in 1998.

The DRC's economy is primarily based on the mining sector. It has abundant mineral resources including copper, cobalt, cadmium, petroleum, industrial and gem diamonds, gold, silver, zinc, manganese, tin, germanium, uranium, radium, bauxite, iron ore and coal as well as timber, and vast hydropower potential. The DRC is potentially one of the richest mining countries in Africa. The oil industry, mainly from offshore fields, is another important contributor to the DRC's economy.

Lesotho

The Kingdom of Lesotho is situated in the south eastern region of Southern Africa, covering an area of 30,355 sq Km and is entirely surrounded by South Africa. Lesotho's geographical formation is characterised by high mountains and deep valleys, and it is the only country in the world to have all its entire territory located at more than 1,000 metres above sea level. Lesotho was a founding member of SADCC in 1980 and was also a founding member of SADC in 1992

The manufacturing subsector is mainly driven by textile and clothing industries and has since 2001, dominated Lesotho's exports destined mainly for the United States of America and South Africa.

Madagascar

The country of Madagascar is an island situated 400 km off the east coast of Africa, separated from the mainland by the Mozambique Channel. It is the fourth largest island, stretching 1,580 km from north to south and 600 km from east to west, with a coastline of about 5,000 km. Madagascar joined the SADC in 2006.

Agriculture is the key sector in Madagascar with crop production and fisheries making a big contribution to the economy.

Malawi

Malawi is a landlocked country located in southern central Africa along the western part of the Great Rift Valley of Africa. Covering a total area of 118,484 sq km, it stretches some 900 km north to south, and between 90 and 161 km east to west. Malawi is bordered by the United Republic of Tanzania to the north and north east, Mozambique to the east, south and south west, and Zambia to the west. Lake Malawi is the third largest lake in Africa, spanning a length of 568 km and a width of between 16 and 80 km. Malawi was a founding member of SADCC in 1980 and was a founding member of SADC in 1992.

Agriculture is the largest sector of the Malawian economy, contributing more than a third of Gross Domestic Product (GDP), and generating more than 90 percent of total export earnings. Malawi has long been dependent on the agricultural sector, both as the leading foreign exchange earner, and for subsistence farming in the rural areas. The major exports include tobacco, tea and sugar. The agricultural sector includes arable agriculture, forestry and fisheries.

Mauritius

The Republic of Mauritius is situated in the South West Indian Ocean, approximately 2,400 km from the south east coast of Africa, located just to the north of the Tropic of Capricorn. The island is only 67 km in length and 46 km at its widest point, with a total land area of 2,040 sq km, owing its origins to submarine volcanic activity. Although the volcanoes are long since dormant, they have left their mark on the profile and landscape of the island. As a political entity, the Republic includes not only the island of Mauritius but also the tiny island of Rodrigues some 563 km to the east, as well as the Cargados Carajos Archipelago (St. Brandon) and the two virtually uninhabited Agalega islands, 400 km to the north east and 1,000 km to the north of Mauritius respectively. Mauritius joined the SADC in 1995.

Mauritius is now heading towards a service-oriented and innovation-driven economy. Over 27,000 global business companies operate from Mauritius which is increasingly seen as a safe, trusted and secure International Financial Centre. Other sectors are rapidly developing namely knowledge, life sciences, healthcare, renewable energy, film-making, marinas and high-precision manufacturing.

Mozambique

Mozambique lies on the east coast of Southern Africa, measuring a total of some 799,380 sq km in area. The country borders the United Republic of Tanzania, Zambia, Malawi, Zimbabwe, South Africa and Swaziland. The country's extensive coastline stretches 2,515 km along the south east and east coast of Africa. The Zambezi and Limpopo rivers, two of Africa's major rivers, flow through Mozambique to the Indian Ocean. There are a number of islands on the coast including the Quirimba

Archipelago in the region of Cabo Delgado, Mozambique Island in Nampula province, Chiloane Island in Sofala, the Bazaruto Archipelago in Inhambane and Inhaca Island in Maputo province. Mozambique was a member of the FLS and it was a founding member of SADCC in 1980 and was also a founding member of SADC in 1992.

Agriculture is the backbone of the economy. The cash and export crops include sugarcane, cotton, tea and tobacco. The fisheries sector is also another major source of foreign exchange earnings. Mozambique's industrial sector has main manufacturing operations including light engineering, food industries, textiles, brewing, soft drinks, cement, oils, soaps and chemicals.

Namibia

Namibia is situated on Africa's south-western seaboard. Its neighbouring countries are Angola to the north, Botswana and Zimbabwe to the east and South Africa to the south. The country is bordered by the Atlantic Ocean in the west. The country covers 825,615 sq km. Namibia joined the SADCC in 1990 and was a founding member of SADC in 1992.

Second only to mining in terms of foreign revenue earned, tourism offers tremendous potential for growth. Different players are involved in tourism. They include investors, private owners, parastatals such as Namibia Wildlife Resorts, Government, represented by the Ministry of Environment and Tourism, and communities, mainly through Community-Based Natural Resource Management programmes are involved in tourism.

Seychelles

The cosmopolitan Seychellois are a colourful and harmonious blend of different races, which stem from African, European and Asian roots all of whom have brought something of their own customs and way of life to the islands. The result is a charming Creole culture enriched from the melting pot of many continents. The island covers 455 sq km. Seychelles joined SADC in 1997 and later left in 2004 and rejoined again in 2007.

South Africa

The Republic of South Africa occupies the southernmost part of the African continent stretching from the Limpopo River in the north to Cape Agulhas in the south. Covering an area of 1,219,090 sq km, the country shares borders with Namibia, Botswana and Zimbabwe in the north, and with Swaziland and Mozambique in the north east. To the west, south and east, South Africa borders the Atlantic and southern Indian oceans. The country's coastline covers some 2,968 km. South Africa joined the SADC in 1994.

The South African economy is the most advanced on the African continent. As an emerging market in the global economy, South Africa is a leader and a competitive producer of raw commodity exports and value-added goods, such as motor vehicles. Major contributors of the manufacturing sector include chemicals, food, transport equipment, and iron and steel.

Swaziland

The Kingdom of Swaziland is a small, landlocked country covering a total area of 17,364 sq km and is located in the southern part of Africa bordered by the Republic of Mozambique to the east and the rest by the Republic of South Africa. Swaziland was a founding member of SADCC in 1980 and was a founding member of SADC in 1992.

The country has one of the world's smallest economies, relying largely on agriculture. The sector also plays an important role in providing raw materials for the largely agro-based manufacturing industries. The main export products are sugar, coca-cola concentrate, cotton, citrus fruits and canned products and maize.

United Republic of Tanzania

The United Republic of Tanzania includes the Indian Ocean islands of Pemba and Zanzibar and the mainland territory, covering a total area of 1,021,909 sq km, and is located on the east coast of Africa between the great lakes of the African Rift Valley system in the central part of the continent and the Indian Ocean. Tanzania has a common border with Kenya and Uganda to the north; Rwanda, Burundi and the Democratic Republic of Congo to the west; and Zambia, Malawi and Mozambique to the south. Tanzania was a member of the FLS and it was a founding member of SADCC in 1980 and was also a founding member of SADC in 1992.

Agriculture is the backbone of the Tanzanian economy, with principal cash crops including cotton lint, cashew nuts, tobacco, coffee and tea. The country has diverse mineral deposits, including precious minerals such as gold, diamonds, tanzanite and

rubies as well as industrial minerals such as iron, tin, copper, nickel, cobalt, lead, limestone, titanium, vanadium, uranium, phosphate and gypsum. It also has deposits of coal and natural gas.

Zambia

Zambia is a landlocked country covering an area of 752,612 sq km. To the north it is bordered by the Democratic Republic of Congo and the United Republic of Tanzania, to the west by Angola, to the south west by Namibia, to the east by Malawi and Mozambique, and to the south by Zimbabwe and Botswana. Zambia was a member of the FLS and it was a founding member of SADCC in 1980 and was also a founding member of SADC in 1992.

Mining and quarrying account for a large proportion of Zambia's merchandise exports and have traditionally contributed the largest proportion of the country's total GDP. Zambia is presently the world's fourth largest producer of copper and has around 6 percent of the world's known reserves. Zambia is richly endowed with various minerals such as copper, cobalt, gold and various precious stones including amethyst, blue stones, emeralds, etc. Other contributors to the economy are industry, fishing and agriculture. Zambia's manufacturing sector's has continued to show signs of growth in recent years. Zambia's manufactured export products include engineering products, textiles, building materials, processed foods, animal products, and leather products.

Zimbabwe

Zimbabwe occupies 390,757 sq km of land in south central Africa, between the Limpopo and Zambezi rivers. The landlocked country is bounded by Mozambique to

the east, Zambia to the north and north west, South Africa to the south, and to the south west by Botswana. It lies wholly within the tropics and is part of the great plateau which traverses Africa. Zimbabwe was a founding member of SADCC in 1980 and was also a founding member of SADC in 1992.

Zimbabwe's economy is dependent on agricultural products including tobacco, cotton and sugar cane. Major export commodities are tobacco and horticulture. Smaller crops like sugar, tea, coffee, cotton, maize, small grains and oilseeds are also exported. Zimbabwe is richly endowed with mineral resources, over 40 different types of minerals are mined in the country, including the major minerals gold, chrome, asbestos, coal, iron ore, nickel, copper, diamonds and platinum.

2.4 Policies and initiatives to attract FDI in the SADC region

The SADC region has for many years advocated for good policies that can potentially attract FDI. The SADC block believes that "an individual member state can improve the investment climate in SADC by improving the investment climate in its own state" SADC (2010, p26).

SADC came up with instruments that provided the legal framework for member states to cooperate and work together towards attainment of common objectives aimed at cementing the social economic and political fabrics of the member states. (SADC, 2005). They called these instruments protocols. some of the notable protocols that have been put in place to attract FDI are the protocol on energy which was signed in 1996, the protocol on trade which was signed in 2000 and the protocol of mining was also signed in 2000.

The block has also made various initiatives such as the 2002 Memorandum of Understanding on Macroeconomic Convergence (SADC, 2002). In order to ensure that the convergence process happens, the block devised several policy measures such as bringing inflation to low levels (preferably single digit inflation); prudent government spending that ensures low budget deficits; high debt servicing ratios; and minimizing market distortions (SADC, 2002). The rationale is that the convergence process can generate economic development which can, in turn, attract FDI by leading to a conducive and predictable environment for investment and business (SADC, 2002).

2.5 Trends of FDI in Africa and the SADC region

The 2014 UNCTAD world investment report identified some of the sectors that are thriving and are receiving more FDI. For example, the report notes that the consumer-oriented sectors are beginning to drive FDI growth (UNCTAD, 2014). Similarly, the 2013 World Investment Report revealed that investors have taken an interest in consumer-oriented sectors and are targeting the rising middle-class population (UNCTAD, 2013). The middle-class group has expanded by 30 percent over the past decade and has reached 120 million people. Due to this fact FDI is starting to emigrate into consumer market-oriented industries which include consumer products such as foods, information technology (IT), tourism, finance, and retail.

Research and development in the agricultural sector has also become an attraction to foreign investors. Some foreign Transnational Corporations (TNCs) are investing in agricultural research and development following declining yields, global warming, concerns about supply shortages, and sectoral need for a higher level of technological

development (UNCTAD, 2014). Some major examples of such investments, as noted in the 2014 world investment report, are Dupont of the United States of America and Barry Callebaut of Switzerland. Dupont gained a major stake in the seed company Pannar and promised to invest $6.2 million by 2017 to establish a research and development hub in South Africa in an effort to develop new seed technology for the region. In the same vein, Barry Callebaut has invested $1.1 million in promoting advanced agricultural techniques in Cote d'Ivoire, the world's largest cocoa producing country.

Technology firms have also found their way to Africa. In November 2013, IBM, opened its first African research laboratory on the outskirts of Nairobi with an investment of more than $10 million in the first two years (UNCTAD, 2014). Similarly, the 2014 World Investment Report observes that, Microsoft announced a partnership with three African technology incubation hubs to develop businesses based on cloud-computing systems.

Table 1 below shows how SADC member states have been fairing in FDI inflow. The table does not show trends but it just paints a picture as to how SADC countries faired in attracting FDI in the year 2013. The statistics reveal that the major receivers of large investments in Africa are South Africa and Mozambique. Significantly, none of the countries is land locked and each one of them has amassed FDI above $3 billion.
South Africa also emerges as the biggest investor in Africa. With over $3 billion FDI outflows. According to Mhlanga et al (2009), the emergence of Multinational corporations (MNCs) from developing countries caused a change in the global landscape of FDI. This is not to mention an increase in South- South flows, which

were estimated in the magnitude of 30-36 percent of total FDI inflows to developing countries (World Bank, 2004; Aykut and Ratha, 2004; Mhlanga et al, 2009).

South-South flows have grown much faster than North-South flows and it is expected that this trend will persist to the future (Gelb, 2005; UNCTAD, 2006; Mhlanga et al, 2009). Investors from developing countries are less risk averse and are well aware with the governance structures, institutions and economic environment of developing countries, which makes it is easier for them to invest in other developing countries (Gelb, 2005; UNCTAD, 2006; Mhlanga et al, 2009). Thus, another significant observation is that most of the countries at the bottom of the list are landlocked.

Table 1: Distribution of FDI inflows among SADC member states by range 2013

Range	Inflows	Outflows
Above $3.0 billion	South Africa, Mozambique,	South Africa
$2.0 to $2.9 billion	Democratic Republic of Congo	Angola
$1.0 to $1.9 billion	Tanzania, Zambia,	
$0.5 to $0.9 billion	Madagascar, Namibia,	
$0.1 to $0.4 billion	Zimbabwe, Mauritius, Botswana, Seychelles, Malawi	Democratic Republic of the Congo, Zambia, and Mauritius
Below $0.1 billion	Swaziland, Lesotho, Angola	Malawi, Zimbabwe, Lesotho, Seychelles, Mauritania, Swaziland, Botswana, Mozambique, Namibia

Source: UNCTAD WIP report 2014

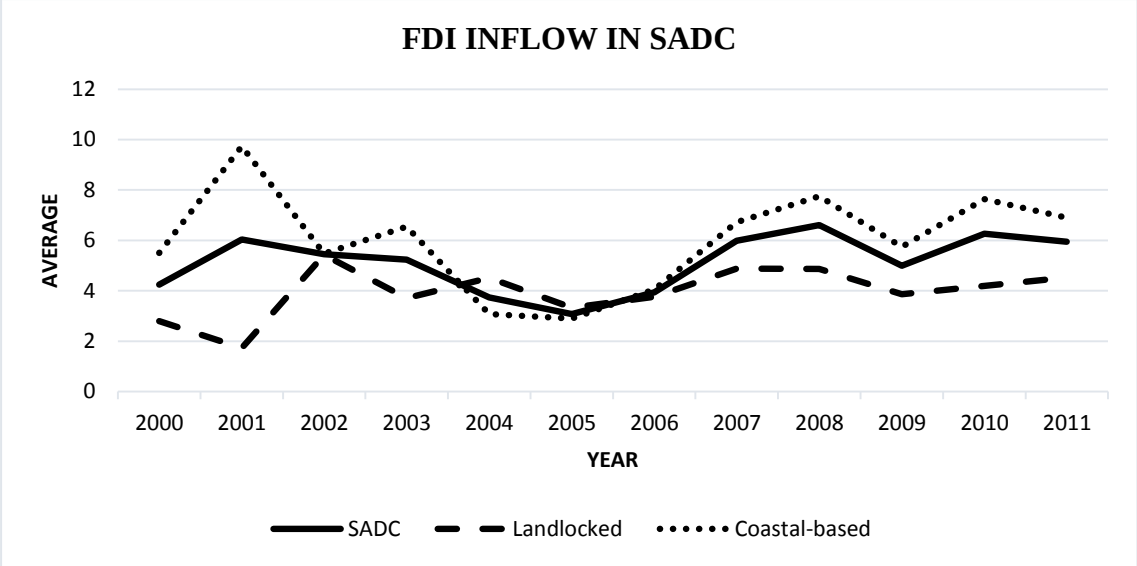

Figure 1: Coastal-based countries vs landlocked countries

Source: Author, using ADI data by World Bank.

Looking at the trend of FDI in the SADC region in figure 1 above, it can be observed that there was a sharp rise in FDI inflows in coastal countries from the year 2000 to 2001. The growth spurt may have been a result of the relaunching of SADC as a free trade area in the year 2000. Goldstein (2003), pointed out that increasing FDI flows have been associated to trade liberalization both multilateral and in the context of preferential trade arrangements. From the graph it is also observed that while the FDI of coastal-countries rose, the FDI for landlocked countries dropped in the same period of 2000 to 2001. The same pattern can be observed all the way to mid-2005, i.e. when FDI inflows to coastal-countries increased the FDI going to landlocked countries dropped all the way to mid-2005 where they intersected. From 2006, it is observed that FDI rose again in the coastal-countries while rose in a steady rate in the landlocked countries.

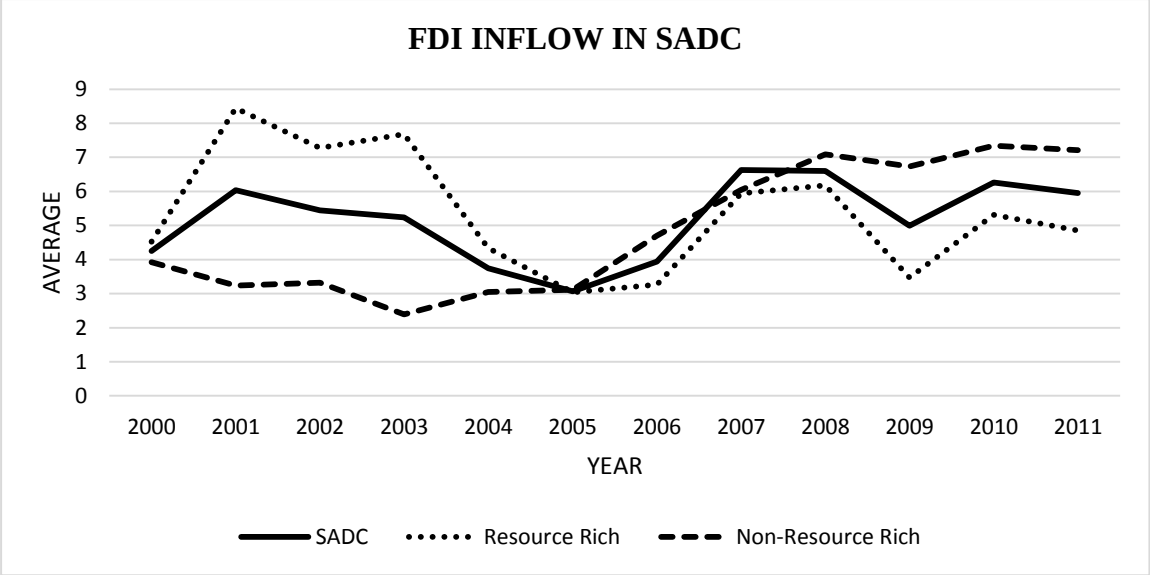

Figure 2: Resource rich vs Non-resource rich countries

Source: Author, using ADI data by World bank.

From figure 2 it can be observed that there was a sharp rise in FDI inflows going to resource rich countries from the year 2000 to 2001. As pointed out before, this may have been attributed to the relaunching of the SADC as a free trade area in the year 2000. However, for the non-resource rich countries, FDI inflows decreased up to the year 2005. In the year 2005 we see that there is an intersection between resource rich countries and non-resource rich countries. From the year 2005 to 2011, FDI inflows going to non-resource rich countries began to increase compared to the resource rich countries.

2.6 Conclusion

With all the various policies and initiatives put in place by the SADC, FDI inflow can indeed improve in the region. It has been noted on the trends that, resource rich countries and non-resource rich countries are competing fairly in attracting FDI. Thus, showing that some investors may not only be attracted to the natural resources a country has but also the country's investment climate. Therefore, SADC's encouragement of its member states to develop more refined policies that can encourage FDI locally and regionally cannot be taken for granted. However, it is also observed that landlocked countries are getting less FDI compared to the coastal-based countries. Hence the importance of carrying out a test to assess whether there are significant differences between the two groups.

CHAPTER 3

LITERATURE REVIEW

3.1 Introduction

The present chapter explores existing works on the determination of FDI in the world, Africa and the SADC region. The chapter is divided into two sections with the first concerning itself with exploring various theories and definitions of FDI and some of the types of FDI. This is followed by an empirical literature review that explores how various researchers carried out their analyses, and conclusions they drew from them. The chapter closes with a brief conclusion.

3.2 Theoretical review

3.3.1 The definition the FDI

The definition of FDI has been evolving. OECD (2008, p.236) define FDI as "a category of investment that reflects the objective of establishing a lasting interest by a resident enterprise in one economy (direct investor) in an enterprise (direct investment enterprise) that is resident in an economy other than that of the direct investor." They argue that the lasting interest implies the existence of a long term relationship between a direct investor and a direct investment enterprise, and a significant degree of influence on the management of the enterprise.

Other authors, such as Krugman and Obstfeld (2008, p163) define FDI simply as "international capital flows in which a firm in one country creates or expands a subsidiary in another country". However, in contrast, Fu (2000), is more elaborate; he clarifies that FDI does not include loan capital provided by international organizations, foreign governments, or private commercial banks. Similarly, it does not include, portfolio investments such as stocks and bonds purchased by foreigners. Likewise, he is of the view that, what makes investment 'direct' as opposed to other forms of foreign capital is the concept of managerial control over an enterprise that is characterised by foreign capital participation.

According to Krugman and Obstfeld (2008) MNCs or TNCs are the main vehicle for FDI, hence the need to know the motives behind the investments they make on foreign soils. There are four main motives that influence investment decisions by MNCs and these are, market seeking, efficiency seeking, resource seeking and created/strategic resource seeking (Mahembe, 2014). The first three are generally referred to as 'asset-exploiting strategies' and are expounded below based on definitions by Brouthers et al (2008) and Kavita and Sudhakara (2011) and Jones (1998).

In market seeking, the purpose of the investment is to ensure access to the market of the destination country. This type of FDI is influenced by factors such as market size, market growth, and structure of domestic market among others. As far as the concept of efficiency seeking is concerned, the goal of some MNCs is to reduce cost of production and to increase the production of their products. This need, therefore, leads them to invest in foreign operations to create the most cost effective and competitive

global production network. Efficiency seeking is influenced by such factors as competitiveness, economies of scale, specialisation, and low cost of production.

Under resource seeking, the investment is made to ensure more reliable supplies of natural resources. The investing MNC's intention is to have access to cheap raw materials and other resources such as skilled or cheap labour and infrastructure.

Under strategic/created-asset seeking, the concept of FDI involves investing in foreign countries to acquire assets of foreign companies thereby promoting long-term strategic objectives. The ultimate aim is to advance a company's global or regional strategy into foreign networks of created assets like technology, organisational abilities and markets (Faeth, 2009).

3.2.2 Theories of FDI

FDI theories are broadly classified into two categories; macro-and micro-levels.

Macro-level FDI theories

Woldemeskel (2008) noted some of the macro-level determinants that affect host country FDI flows and those are market size, economic growth, GDP, infrastructure, natural resources, political situation etc. However, Hansen (1998) noted that macroeconomic theories on FDI are dominated by the logic of international trade. The macro level theories listed here are Capital market theory, dynamic macroeconomic theory, FDI theory based on economic geography, gravity approach to FDI and FDI theory based on institutional analysis. They are explained in turn.

Capital market is one of the oldest FDI theories and it propounds the view that FDI is determined by interest rates, making the former part of portfolio investment (Iversen 1935, Aliber 1971). The theory is relevant to both Developed Countries and Less Developed Countries (LCDs) but in different ways. For example, capital market theorist Boddewyn (1985) observes that an undervalued exchange rate tends to attract FDI to LDCs, and, in turn, allow for lower production costs in the host countries. Hansen (1998) was correct in his observation here because if an MNC produces at lower costs that would mean that they would make profits after selling their products on the international market. Although Boddewyn (1985) goes further by arguing that LDCs have unorganised security markets which imply that long term investment in LDCs will be in the form of FDI. What this means is that investors will not list their companies on the local stock market and they will therefore be the sole owners of their investments. This, however, raises the question that where will the investors get extra funds for their investments. The stock market is an easier way of getting funds therefore, unorganised securities could also deter FDI rather than facilitate it. This theory does not, in any way, support the objectives of this study.

This Dynamic Macroeconomic FDI theory advances the view that investment timing depends upon changes in the macroeconomic environment (Sanjaya Lall, 1997) the theory states that macroeconomic factors such as GDP, domestic investments, real exchange rate, productivity and openness are greatly considered by the investor. For example, high domestic investments could mean that the investment climate is economically sound and that the acquisition of funds to start an investment is relatively easy. The theory does not in any way support the objectives of the study.

The FDI theory based on economic geography explains why some countries have internationally successful industries while others do not. (Porter 1990; Nachum 1999). This is done by considering availability of natural resources, nature of the labour force, local demand, infrastructure etc. This theory supports the objectives of the study. The theory is simply showing that there are more than what meets the eye. Attracting FDI is not just a matter of having a sound macroeconomic environment but it can also be a matter of being at a physically advantaged position or having the right natural resources. This theory explains that geography plays a role in attracting FDI and that is what this study seeks to prove.

This gravity approach to FDI explains that the closest countries are in terms of geography, economic environment and cultural practices, the higher the FDI flows between them (Pagano and Volpin, 2004 and La Porta et al 1998). This theory does not support the objectives of the study. The FDI theory based on institutional analysis highlights the important role institutions play in attracting FDI inflows. The theory was developed by Saskia Wilhelms (1998), whose main argument is that, FDI inflows are contributed by four institutions, namely governments, markets, education, and social culture. The theory does not support the objectives of the study even though the study has used some institutional variables in the analysis.

Micro level FDI theories

Micro level FDI theories concern themselves with how MNCs decide to open subsidiaries in other countries, particularly how they choose their investment locations (Woldemeskel, 2008). The micro level theories listed below are theory of

internalization, existence of firm-specific advantage theory of FDI, Eclectic theory and oligopolistic markets they are discussed in turn.

The theory of internalization argues that market imperfections cause firms to utilise their monopolistic advantages. The theory was initially developed by Coase (1937) and Hymer (1976). On the one hand, Coase gave the theory a local context and identified two major determinants of FDI, namely removal of competition and advantages which some firms possess in a particular activity (Denisia, 2010). Later, the theory was adapted by Buckley and Casson (1976) and Hennart (1982). The former explains that firms can overcome market imperfections by internalizing their own markets. The theory however does not support the objectives of the study.

The Existence of Firm-Specific Advantage theory of FDI was developed by Stephen Hymer (1976). The theory advances the view that firms invest abroad because of certain firm specific advantages such as, access to raw materials, economies of scale, and intangible assets, e.g. trade names, patents, superior management, low transaction costs etc. every firm has its own set of advantages. This theory is therefore limited in the sense that it cannot be applied on a macro level such as this study which is focusing on a whole economic block. The theory does not support the objectives of the study.

Eclectic theory, developed by Dunning (1980, 1988)., acknowledges the importance of internalization but goes a step further to argue that the internalization theory offers only a partial explanation of FDI flows. Thus, according to eclectic theory, locally, countries have economic, institutional, and political factors, which make them

attractive to FDI (Mhlanga et al, 2009). This theory is similar to the dynamic macroeconomic theory and the FDI theory based on institutional analysis but it has no bearing on the objectives of this study

According to the theory of FDI and oligopolistic markets two investors may decide independently to enter a host country nevertheless both incur some fixed costs, generate technological spill over for the local firms of the same sector, and reduce the marginal cost of production (Lin and Saggi, 2010). According, to Hoenenand and Hansen (2009) in oligopolistic markets, FDI is a defensive move. When one firm in the market moves, the other firms react with countermoves at both domestic and international levels (Schenk, 1996). The theory however does not support the objectives of the study because the study has gone beyond looking at a group of firms as it is on a macroeconomic level.

3.3 Empirical Literature Review

Several studies have been done on the determinants of FDI. The present section discusses existing works on the determinants of FDI, and their respective methodologies, and conclusions.

Asiedu (2002), explored whether factors that affect FDI in developing countries affect countries in sub-Saharan African countries differently. The study used ordinary least squares (OLS) for all the estimations. The results indicate that a higher return on investment and better infrastructure have a positive impact on FDI to non-Sub-Saharan countries but have no significance on Sub-Saharan countries. Openness of trade promotes FDI to Sub-Saharan countries but not to non-Sub-Saharan countries.

The results show that the dynamic macroeconomic theory best supports FDI determination in Sub-Saharan Africa. Asiedu (2002), then concluded that Africa is different, then went on to say that policies that have been successful in other regions may not be equally successful in Africa.

Naude and Krugel (2007) made a wide exploration of geographical and institutional determinants of FDI of several African countries. In this study they used the FDI theory based on economic geography to support their objectives as they were investigating whether geographical factors play a role in attracting FDI. Their work criticizes some of the previous FDI determination studies such as Asiedu (2000) of mainly using single equation OLS cross country regressions at the expense of considering the dynamic nature of FDI. The study notes that OLS was limited in the sense that it did not account for the endogenitey of some of the regressors, hence biased and inconsistent results. In contrast, Naude and Krugel (2007) used a dynamic one-step generalized method of moments estimator (GMM) based on Arellano and Bond (1991). From their estimation, they identified a number of robust FDI determinants such as government consumption, inflation rate, investment, political stability, accountability, regulatory burden, rule of law, and initial literacy. However, none of the geographical variables were significant, hence their conclusion that institutions, as opposed to geography, have a direct influence on FDI flows. From what started as a paper that was supported by the theory of FDI based on economic geography, the results of the study were in support of the FDI theory based on institutional analysis perhaps showing that FDI determination in most African countries could be a factor in institutions.

Selhausen (2009), studied geographical and institutional determinants in an effort to understand factors that determine FDI in sub-Saharan Africa, relative to non-sub-Saharan African countries. The study used a panel dataset of annual economic data from 1997 to 2006 and it covered 72 Developing Countries i.e. 37 from Africa, including 33 from sub-Saharan region; 22 from Latin American; and 13 from Asia. Using the Hausman test, the study rejected the fixed effects model in favour of the random effects model. Findings of the study show that institutions and infrastructure development promoted FDI to non-sub-Saharan countries but did not promote FDI to sub-Saharan Africa. Thus, the paper showed that FDI theories based on institutional analysis best supported how FDI could be determined in the non-sub-Saharan countries. This, however, was in contrast to Anyanwu (2012) who noted that institutions have a positive bearing on the attraction of FDI to sub-Saharan countries. Furthermore, geography played a modest but indirect role in the determination of FDI. It was noted that, except for land area, none of the geographical variables in the study were significant in sub-Saharan Africa although it could not be ruled out that geography might have an indirect role on FDI determination via infrastructure, transport costs and GDP per capita growth.

Anyanwu (2012) studied determinants of FDI of sub-Saharan and North African countries. In an effort to strengthen empirical results, the study performed four different empirical techniques, namely robust pooled Ordinary Least Squares (OLS), Feasible Generalized Least Squares (FGLS), consideration of FDI decisions as a product of historical data, and two-step efficient generalized method of moments (GMM). Consideration of whether FDI decisions may be made based on historical data assumed that all the independent variables that are supposed to have an effect on

FDI inflow would materialize their effect the next period onward. Consequently, the study lagged all the independent variables by one period and re-estimated them using OLS/FGLS methods. The GMM was applied on the lagged specifications. In the final analysis, the study established a positive relationship between market size, openness to trade, rule of law, foreign aid, agglomeration, natural resource endowment and FDI inflows. From the results it is noted that the dynamic macroeconomic theory, FDI theory on economic geography and the theory based on institutional analysis support the paper and that these theories could best explain FDI determination in Africa. It is also noted that eastern and southern African sub-regions appear positively disposed to receive higher levels of FDI. However, there was noted a negative relationship between higher financial development and FDI.

Several similarities can be noted from the previous works. The studies have shown that there are two main theories that best describe FDI determination in Africa and these are the dynamic macroeconomic FDI theory and the FDI theory based on institutional analysis. This bears a significant meaning. Although, the present study is trying to prove otherwise. The present study will show and prove whether there is a significant difference between the geographically advantaged and the geographically disadvantaged in the SADC region. This will not only be a motivation for the study but it will set the present study apart from the previous studies in the sense that it will be clearer as to why FDI goes where it goes. Furthermore, the study will use the system GMM as opposed to the difference GMM that was used by Naude and Krugell (2007) for reasons what will be explained in the next chapter.

3.4 Conclusion

Ironically, while FDI has been theorized extensively researchers are yet to establish a theory that best explains FDI. This study, however, is biased towards Macro level theories, particularly institutional analysis, and economic geography theories. What is clear, however, is that FDI has mainly been analysed by using panel or time series data, with panel data, albeit, enjoying greater preference.

CHAPTER FOUR

METHODOLOGY

4.1 Introduction

This chapter shows how the data was analysed and all the tests that were carried out in the paper. The chapter is divided into three sections. Section one shows the model specification, section 2 shows the tests and section three has some concluding remarks.

4.2 The model

The study sought to determine whether geographical factors play a significant role in the determination of FDI in the SADC region. Several studies have been done on FDI determination in the SADC region mostly using panel data models and OLS estimator. Handy examples are Selhausen (2009), Asiedu (2002), Asiedu (2006), Mhlanga et al, (2009). However, the present study resolved to employ a generalized method of moments estimator (GMM). The present study will use the system GMM other than the difference GMM as which was used by Naude and Krugell (2007). It has been noted that the use of single-equation OLS cross country regression models has a number of flaws and limitations, which necessitate the use of a dynamic panel data estimator (Naude and Krugell).

Dynamic relationships are characterized by the presence of a lagged dependent variable among the regressors.

Generally, a dynamic panel model may be specified as follows:

$$y_{it} = \alpha y_{it-\rho} + x'_{it}\beta + u_{it} \qquad i=1,\ldots,N \quad t=1,\ldots,T \qquad (4.1)$$

In the above specification, the indices *i* and *t* represent the individual in the cross-section dimension and the time period in the time series dimension respectively. y_{it} is a vector of the dependent variable, x'_{it} is a vector of the independent variables, α and β are the vectors of parameters. u_{it} is under the assumption that it follows a one-way error term component model and is decomposed as follows:

$$u_{it} = \mu_i + v_{it} \qquad (4.2)$$

In (4.2) above, μ_i represents the unobserved, time-invariant country effects and v_{it} is the error term that captures all other omitted factors. These are expected to be identically independent and normally distributed in this fashion, $\mu_i \sim$ *IIDNormal* $(0,\sigma_\mu^2)$ and $v_{it}\sim$*IIDNormal* $(0,\sigma_v^2)$ respectively and independent of each other (Green, 2012).

It is now easy to observe how OLS estimation of this model is inconsistent and biased. Since y_{it} is dependent on the time invariant individual effects μ_i, also $y_{it-\rho}$ will be dependent on μ_i. This means that $y_{it-\rho}$ is endogenous and will face dynamic panel bias when estimating the model with OLS. The coefficient estimate of α is upward $-$ biased, because the lagged dependent variable $y_{it-\rho}$ is positively correlated with the error term $u_{it} = \mu_i + v_{it}$. This means that the introduction of a lagged dependent variable among the regressors makes OLS estimation inconsistent and biased. To further clarify the use of the GMM over OLS Efendic et at, (2010)

listed the reasons why the dynamic system-GMM panel model is advantageous over OLS and static panel estimates.

Firstly, static panel estimates, as do the OLS models, omit dynamics that cause the problem of dynamic panel bias (Bond, 2002; Baum, 2006) consequently preventing the study of dynamics of adjustment (Baltagi, 2008). This is a significant observation in light of the fact that omitted dynamics mean that such models are misspecified because they omit the entire history of the right-hand-side variables (Greene, 2008; Bond, 2002). Secondly, in this panel there are 15 countries (N) that are analysed over a period of 11 years (T), implying that the number of countries (N) is greater than that of years (T). A number of researchers, e.g. Bond, (2002); Baum (2006); Roodman (2006); Sarafidis et al. (2006); Roodman (2007); and Baltagi (2008) argue that the dynamic panel model is specially designed for a situation where "T" is smaller than "N" in order to control for dynamic panel bias. Thirdly, the problem of potential endogeneity is much easier to address in the dynamic panel models than in the static and OLS models; the latter do not allow the use of internally generating instruments. An underlying advantage of the dynamic GMM estimation is that all variables from the regression that are not correlated with the error term, including lagged and differenced variables, can be potentially used as valid instruments (Greene, 2008).

There are also several reasons why the study preferred system GMM (SGMM) to differenced GMM (DGMM), especially in light of Efendic et al, (2010). Firstly, the SGMM estimate has an advantage over DGMM in variables that are "random walk" or close to be random-walk variables (Bond, 2002; Roodman 2006; Baum, 2006; and Roodman, 2007). Considering that the chosen model specification includes

macroeconomic variables which are widely acclaimed by economists for the presence of random walk statistical generating mechanisms, the SGMM approach turns out to make greater appeal than its counterpart does. Secondly, the SGMM approach generally produces more efficient and precise estimates compared to DGMM by improving precision and by reducing the finite sample bias (Baltagi, 2008).

4.2.1 Model specification

The present study will adopt the Blundell and Bond (1998) system GMM to investigate whether geography plays a significant role in determining where FDI goes in the SADC region. The empirical model is specified as follows:

$$y_{it} = \alpha y_{it-\rho} + x'_{it}\beta + z'_{it}\gamma + u_{it} \qquad (4.3)$$

In the model above the y_{it} represents the dependent variable FDI as a percentage of GDP in line with Naude and Krugell (2007), Selhausen (2009) and Anyanwu (2012). The lagged dependent variable is denoted as $y_{it-\rho}$. The inclusion of the lagged dependent signifies the dynamic relationship. The vector of geographic variables is x'_{it} it includes Agglomeration, urban population, land area, per capita GDP, landlocked and natural resource endowment. The vector of control variables is z'_{it} and it has institutional variables and infrastructural variables. γ is a vector of parameters and α and β are as defined before.

To eliminate the country fixed effects (μ_i) we first difference equation (4.3).

$$y_{it} - y_{it-1} = \alpha(y_{it-\rho} - y_{it-\rho-1}) + (x_{it} - x_{it-1})'\beta + (z_{it} - z_{it-1})'\gamma + (\mu_i - \mu_i) + (v_{it} - v_{it-1}) \qquad (4.4)$$

$$\Delta y_{it} = \alpha \Delta y_{it-\rho} + \Delta x'_{it}\beta + \Delta z'_{it}\gamma + \Delta v_{it} \quad (4.5)$$

The system GMM uses the differences $\Delta y_{it-\rho}$ as a set of new instruments for the levels $y_{it-\rho}$ of the lagged dependent variable. It therefore takes advantage of a new set of instruments from within the system and this is not available for the difference GMM estimator. The study applies system GMM to both equations (4.3) and (4.5). It is assumed that the error terms are serially uncorrelated and the lagged first differences on the right hand side are assumed to be orthogonal to country specific effects i.e. E($\Delta y_{it-\rho}$, μ_i)=0 to obtain consistent system GMM estimates.

4.2.2 Description of the variables

The following section bears the description of the variables. The discussion will start with the dependent variable, the Geographical variables and control variables which are institutional variables and infrastructural variables.

Dependent variable

The dependent variable is FDI inflows as a percentage of GDP. The variable was sourced from the African development indicators data by World Bank. The adoption of this variable is justified by the fact that it has been used in similar studies by Naude and Krugell (2007), Selhausen (2009) and Anyanwu (2012)

Independent variables

Agglomeration economies may exist given that foreign investors may be attracted to countries with more existing foreign investment (Anyanwu 2012). Investors may be more comfortable to investing in a country that has more already existing foreign investment other than in a country with little or no foreign investment. Foreign

investors may view other investors' positive decisions as a signal of favorable investment conditions and may, consequently, decide to invest there too, to reduce uncertainty. In this scenario, the first lag of the dependent variable is used as a proxy. Urban population signals the availability of services in a country. Foreign firms located in new countries need financial, educational, and market services to carry out their daily operations (Trkulja 2005). As a result, the greater the urban population, the greater the availability of services, and the greater the expected inflow of foreign capital. Therefore, the anticipated sign of the coefficient is positive.

It is expected that the larger the land, the greater the prevalence of natural resources. In other words, FDI inflow increases with increase in land size. Land size is measured in square kilometers. Therefore, the anticipated sign of the coefficient is positive. A higher GDP per capita may act as a disincentive to foreign investors. Because it may imply relatively high wages and salaries, and negative inflow of foreign investment. The per capita GDP is measured in current US dollar values. Therefore, the anticipated sign of the coefficient is negative.

Physical geographic locations regarding coastal trade, distance to core markets, and consequent high transportation costs have a negative impact on FDI inflows in concerned countries (Felix 2009). This is represented by a dummy for landlocked countries. Therefore, the anticipated sigh of the coefficient is negative. According to Anyanwu (2011), the works of Dupasquier and Osakwe (2006); Aseidu, 2002; and Deichmann et al., 2003), among others, show that the availability of natural resources has a positive and significant effect on FDI inflows. This is represented by a dummy variable. The anticipated sign for the coefficient is positive.

Control variables

Institutions can be broadly defined as arrangements between people to facilitate cooperative activity (Naude and Krugell, 2007). Institutions are often seen as providing the 'rules of the game', needed to establish baseline conditions for human interaction resulting in greater predictability and less uncertainty and discouraging actions that, if widely practiced, would be economically costly (Nelson and Sampat, 2001). According to Kaufmann et al. (1999) quoted in Naude and Krugel (2007) institutional variables can be categorized under six main headings which can be seen to encapsulate three broad roles of institutions as described by Rodrik and Subramanian (2003). These six headings are voice and accountability, political stability/lack of violence, government effectiveness, regulatory framework, rule of law, and corruption and graft.

The rule of law variable is an estimate of the level of the rule of law and the extent to which the law is enforced. The greater the rule of law, the positive the FDI inflow. Thus, the expected sign for the coefficient is positive.

The corruption variable measures the degree to which corruption is controlled. It covers all aspects of corruption such as bribery, contract rights, corruption in government and quality of bureaucracy just to name a few. The higher the control of corruption, the positive the inflow of FDI. Thus, anticipated sign for the coefficient is positive.

The number of days it takes to register a business variable shows just how much red tape investors have to go through to register a business in a foreign country. In other words, the smaller the number of days to register a business in a foreign country, the

more positive the FDI inflow. Thus, the anticipated sign for the coefficient is negative.

Mobile phone subscribers and telephone line signify the level of communication and transfer of information throughout a country. The assumption is that the more the mobile subscribers in a country the better the country's communication telecommunications infrastructure. Thus, the more phone subscribers a country has, the positive its FDI inflow. Therefore, the anticipated sign for the coefficient is positive.

4.3 Data

This study uses a macro panel of 15 SADC countries for the period 2002 to 2011. Some of the data were downloaded from the World Bank development indicators while the other data was downloaded from the SADC website. A full list of the variables and where they were derived appears in the appendix 1.

4.4 Tests for statistical difference

4.4.1 Two sample t-test

Morgan et al, (2004) states that, a two-sample t-test helps determine whether two population means are different. For comparing the two means the, the basic hypothesis is that the means are equal

$$H_o: \mu_1 = \mu_2 \qquad (4.6)$$

The null hypothesis has three common alternative hypotheses

$$H_a: \mu_1 \neq \mu_2 \qquad (4.7)$$

$$H_a: \mu_1 < \mu_2 \quad (4.8)$$

$$H_a: \mu_1 > \mu_2 \quad (4.9)$$

One of which is chosen according to the nature of the study.

4.4.2 Analysis of Variance (ANOVA)

Conducting a series of t tests creates the problem of inflating the type1 Error rate. Running more than one t test at a specified level of significance (e.g. α=0.05), increases the probability of making one or more type I errors in the series of t tests greater than α (Morgan et al,2004).

The ANOVA developed by Sir Ronald. A. Fisher allows us to test the hypothesis of equality of K population means while maintaining the type I error rate the pre-established (a priori) α level for the entire set of comparisons

The study uses the one-way ANOVA. The one-way ANOVA is used to analyse only one variable.

Hypotheses for the one-way ANOVA

In the one-way ANOVA the null hypothesis tested in that the population means from which the *k* samples are selected are equal (Morgan et al, 2004).

$$H_o: \mu_1 = \mu_2 = \ldots \mu_k \quad (4.10)$$

Where *k* is the number of levels of the independent variable

The alternative hypothesis is that at least one group mean significantly differs from the other group means

$$H_a: \mu_i \neq \mu_k \quad (4.11)$$

Where *i* and *k* indicate unique groups

4.5 Conclusion

The nature of the data prompted the use of a one-step system GMM for the main regression results. The t-test was used to test for the significant differences between resource rich and non-resource rich and landlocked and coastal-based countries in the SADC region. However due to the problem of inflating the type I error rate the study uses ANOVA as well to test for the significant differences.

CHAPTER FIVE

PRESENTATION AND INTERPRETATION OF RESULTS

5.1 Introduction

This chapter presents the results of the study, and its organisation reflects estimation procedures used in the study. The first section of the chapter presents descriptive statistics; the second, the t-test and the ANOVA results for the statistical differences, the third, the system GMM regression results; and lastly, the conclusion.

5.2 Descriptive statistics

Table 2: Descriptive statistics of main regression variables, 2000-2011

Variable	Mean	Standard Deviation	Minimum	Maximum	Observations
FDI	5.13	6.00	-4.26	47.38	170
Land	641220.7	604738.1	460	2300000	180
Urban population	6221539	8196322	40663	3.20	180
Mobile subscriptions	4376889	9658639	15000	6.40	180
Telephone lines	6.05	8.86	0.01	32.46	180
Per capita GDP	2537.92	3018.45	86.75	12320.9	180
Rule of law	-0.30	0.75	-1.95	1.06	165
Control of corruption	-0.30	0.69	-1.57	1.25	165
Days to register business	59.98	40.29	6	174	130

Source: Author, using ADI data by World Bank.

From table 2 above, it is observed that in 2000-2011 FDI reached as high as 47.38% percent of GDP in the SADC region. Similarly, it can be observed that the highest and lowest GDP per capita in the region during the period were $12, 320.9 and $86.75 respectively. The land size is another outstanding variable. From the table we observe that the maximum amount of land is 2,300,000 sq Km and the minimum is 460 sq km.

5.3 Tests for Significant differences

5.3.1 T test results

Table 3: Two sample t-test resource rich and non-resource rich

Group	Observations	Mean	Standard Deviation	Standard Error
Non-resource rich	79	4.95	4.22	0.47
Resource rich	91	5.30	7.21	0.76
Combined	170	5.14		5.99
Difference		-0.35		0.92
t(168)= -0.3766				
p: 0.7070				

Source: Author, using ADI data by World Bank.

Table 3 shows that there is no statistical difference between FDI from resource rich countries and that from non-resource rich countries in the SADC region. Although the difference is not statistically significant it is clear that resource rich countries have a bigger mean compared to the non-resource rich counterparts.

Table 4: Two sample t-test landlocked and coastal-based

Group	Observations	Mean	Standard Deviation	Standard Error
Non land locked	98	5.99	7.34	0.74
Landlocked	72	3.97	3.11	0.37
Combined	170	5.14	5.99	0.46
Difference	2.03	0.92		0.92
t(168)= 2.2063				
p: 0.0287				

Source: Author, using ADI data by World Bank.

Table 4 reveals FDI inflows between landlocked and coastal-based countries is significantly significant. The p-value shows that the level of significance is at 5 percent. What this means is that there is a significant difference between FDI inflows going to landlocked countries and FDI inflows going to coastal-based countries in the SADC region.

5.3.2 ANOVA Results

Table 5: One-way ANOVA analysis for landlocked and coastal-based countries

Source	Sum of Squares	Degrees of freedom	Mean Sum of Squares
Between groups	171.09	1	171.09
Within groups	5905.22	168	35.15
Total	6076.31	169	35.95
F-statistic	4.87		
Prob>F	0.0287		

Source: Author, using ADI data by World Bank.

From the ANOVA analysis above, it is observed that there is a significant difference between FDI inflows going to landlocked countries and coastal-based countries. An F statistic greater than 1 means that we have to reject the null hypothesis and conclude

with the alternate hypothesis. This means that the two means are different and therefore there is a significant difference in FDI inflows going to landlocked countries and coastal-based countries in the SADC region. This result is consistent with the results from the t test where we found that there is a significant difference in FDI inflows between landlocked and coastal-based countries in the SADC region.

Table 6: One-way ANOVA for resource rich and non-resource rich countries

Source	Sum of Squares	Degrees of freedom	Mean Sum of Squares
Between groups	5.12	1	5.12
Within groups	6071.19	168	36.14
Total	6076.31	169	35.95
F-statistic	0.14		
Prob>F	0.7070		

Source: Author, using ADI data by World Bank.

From table 6 it can be noted that there is no significant difference in FDI inflows between resource rich countries and non-resource rich countries. The F statistic is less than 1 therefore we fail to reject the null hypothesis. This result is also consistent with the t test where it was also discovered that there is no significant difference between FDI inflows going to resource rich countries and FDI going to non-resource rich countries in the SADC region.

5.4 Presentation and interpretation of System GMM results

The table below shows the results of the regression. Four regressions were conducted beginning with FDI on infrastructure followed by FDI on institutional factors. Then FDI on geographical factors was conducted before eventually combining all the factors.

Table 7: System GMM regression results

Variable	Infrastructure (1)	Institutions (2)	Geography (3)	Combined (4)
Intercept	0.63 (1.07)	3.79 (1.90)*	0.17 (0.97)	3.69 (1.39)***
Agglomeration	0.63 (0.08)***	0.59 (0.11)***	0.60 (0.09)***	0.47 (0.14)***
Telephones	0.01 (0.05)			0.18 (0.16)
Mobile subscriptions	-3.72 (1.10)***			8.90 (8.77)
Rule of law		-1.26 (0.90)		-3.00 (1.93)*
Control of corruption		1.34 (1.11)		3.41 (2.01)*
Days to register business		-0.01 (0.01)		-0.04 (0.02)**
Urban population			-1.15 (2.73)***	-3.49 (1.93)*
Per capita GDP			0.00 (0.00)	-0.00 (0.00)
Land area (sq. Km)			2.57 (5.05)***	7.45 (3.40)**
Landlocked			-0.05 (0.54)	2.18 (1.59)
Resource Rich			-1.27 (0.56)**	-3.20 (1.25)*
chi2				7610.77
chi2p				0.00
ar2				-1.51
ar2p				0.13
Hansen	0.00	0.00	0.00	0.00
Hansenp	1.00	1.00	1.00	1.00
N	155	124	155	124

Notes: the robust standard errors are shown in brackets

****significance at 1%, ** at 5% and * at 10%*

Table 5 shows that under column (1) on infrastructure, although mobile subscription registered a significant score at 1 percent it bears a negative relationship to FDI inflow

and the infrastructure variables bear no significant score on the combined model in column (4). The interpretation is as follows, an increase in the number of mobile subscribers by 10 percent can reduce FDI inflows by 3.72 percent in the SADC region. The negative relationship is rather surprising. The study expected that the relationship would be positive. This is because if the number of mobile subscribers is increasing that means communication and the sharing of information is becoming easy and widely available to many. This could also mean that it could be easy for foreign investors to get information about the country they want to invest in. Therefore, rather than reducing FDI inflow it can promote FDI inflow. This result is not consistent with findings of previous studies such as Musila and Sigue (2006) and Dupasquier and Osakwe (2006) which showed that, in Africa, FDI is dependent on the development of infrastructure and another study by Nnadozie and Osili (2004) which established less robust evidence on the role of infrastructure on US FDI inflow to Africa.

Column (2) shows that all the institutional factors are not significant. However, on the combined column all the institutional factors are significant. Starting with the rule of law, it is significant at 10 percent and bears a negative relationship with FDI inflow in the SADC region. What this means is that, an upturn in the rule of law can reduce FDI inflow by 3 percent in the SADC region. This is not in line with what was expected. If properly enforced, the law provides protection for the investor, their property and their products. Therefore, naturally, it is expected that there be a positive relationship between the rule of law and FDI inflow. The result of the present study is not consistent with previous studies that mostly found positive relationships Naude and Krugel (2007); Selhausen, (2009); Campos and Kinoshita (2003); Asiedu (2006).

Thus, an argument can still be made that the rule of law can have so many regulations with regards to, for example, the acquisition of land or paying large sums of money to register a business. That may deter FDI inflows. Nevertheless, rule of law is seen as a very important determinant of FDI and having a negative relationship would be very unlikely.

Control of corruption is not significant in column (2). However, it is significant in column (4). As expected in the study, the sign for this variable is positive and it is significant at 10 percent. What this means is that, an increase in the control of corruption by 10 percent can increase FDI inflows by 3.41 percent in the SADC region. Previous studies, identified corruption as having a negative impact on FDI inflows. For example, Asiedu (2002) found a negative relationship because she used a corruption variable that measured the degree of corruption within the political system. In contrast, the variable used in the present study measures the extent to which corruption is controlled with the assumption that the greater the control of corruption the positive the FDI inflow.

As explained earlier in the present thesis, investors are concerned with the number of days they have to wait before having their business registered. As expected, the sign of the coefficient is negative and the variable is significant at 5 percent. What this means is that an increase in the number of days to register a business could decrease FDI inflows by 0.04 percent. Although the result is significant it has very little impact (0.04) on investors decisions on where to invest. This contradicts Selhausen's (2009) finding that no relationship exists between the number of days to register a business and FDI inflows.

Regarding geographical factors, it can be observed that agglomeration economies, urban population, land area and being resource rich affect FDI significantly. On the agglomeration economies, it can be observed that this variable is significant at 1 percent on all four models (columns (1) to (4)). As expected all the coefficients are positive. Starting with the results in column (4). What the result means is that a 10 percent increase in agglomeration economies increase FDI inflows by 0.47 percent in the SADC region. In column (3) what the results mean is that a 10 percent increase in agglomeration economies can lead to an increase in FDI inflow by 0.6 percent in the SADC region. The results are consistent with previous studies such as those by Naude and Krugel (2007) and Anyanwu (2012) The latter, for example, observes that agglomeration economies may exist when foreign investors are attracted to countries with more existing foreign investment. This development may be attributed to the fact that an investor may find it easy to invest in a country that is already enjoying much foreign investment, because it signifies the existence of a favourable investment climate (Campos and Kinoshita, 2003). In other words, the positive relationship between FDI and agglomeration economies should be considered normal.

Foreign firms require various types of services to run their daily operations. Urban population could be a signal for the availability of such services in a country (Trkulja, 2005) Furthermore, Urban population can also be considered as the market size. However, the present study found a negative relationship between urban population and FDI inflow on both the third column and the forth column that bear the geographical variables and the combined variables respectively. Starting with the result in the combined column urban population is seen to be significant at 10 percent. The interpretation could follow that an increase in the urban population by 10 percent

can reduce FDI inflow by 3.49 percent in the SADC region. In the third column however, the variable is significant at 1 percent and coefficient is interpreted as follows; a 10 percent increase in the urban population can reduce FDI inflows by 1.15 percent in the SADC region. The results are not consistent with previous studies such as Trkulja (2005), and Naude and Krugel (2007) which noted positive relationships. The present finding is also inconsistent with that of Mohamed and Sidiropouos (2010) who found no relationship between market size and FDI inflow. However, just like the present study has done, Botric and Skuflic (2006) found a significant negative effect.

Land area does not only emerge as a significant variable but it also has a positive relationship with FDI inflow. It can be observed that land area is both significant and positive on both column (3) and column (4). Starting with the results in column (4), land size is observed to be significant at 5 percent. What the result means is that a 10 percent increase in the land area (square Kilometer) can increase FDI inflow by 7.45 percent in the SADC region. in the third column however, land size is seen to be significant at 1 percent and it can be seen that a 10 percent increase in the land size can lead to a 2.57 percent increase in FDI inflow in the SADC region. land area alone has the greatest potential of improving FDI inflow (by 7.47 percent) compared to the other geographical variables. The observation is consistent with the findings of Selhausen (2009) namely that, by virtue of its magnitude, a larger country will have a greater likelihood of being resource rich within its borders, which is actually a positive effect.

Various researchers, e.g. Aseidu (2002), Dupasquier and Osakwe (2006), and Deichmann, et al., (2003) have observed that being resource rich has a significant positive effect on FDI inflows. However, the results above show a completely different picture. A negative relationship between being a resource rich country and FDI inflow is noted from the geographic variables in column 3 and to the combined variables in the last column. Looking at the results in the column (4) the variable is significant at 10 percent. What these results mean is that a 10 percent increase in natural resource endowments can lead to a decrease in FDI in flows by 3.2 percent in the SADC region. in the third column the variable is significant at 5 percent and it is seen that a 10 percent increase in natural resource endowments can lead to a 1.27 percent decrease in FDI inflows in the SADC region. These results are contrary to what was expected. Nevertheless, this is not a unique phenomenon and it may be explained by the "resource curse" or "paradox of plenty" (Selhausen, 2009), terms which are used to describe the failure of resource endowed countries to benefit from their wealth. Auty (1993) explains that, paradoxically, natural resources may become an economic curse instead of an economic blessing, which may explain why many resource rich countries are in deep political conflict and economic setback than resource poor countries.

Humphreys et al. (2007), give a clear description of the resource curse. They state that three processes representing a negative relationship between being resource rich and FDI inflow come into play from the resource curse. The first one is the currency appreciation caused by resource revenues, and its negative effect on competitive industries in the countries. The latter is termed "Dutch Disease". The second process is the fluctuation in commodity prices (boom and bust cycles), which has a negative

effect on revenue inflows. Last but not least is the effect on political and institutional conditions whose impact is far greater than the previous economic processes. These processes would therefore deter FDI inflow other than promote it, thus the negative relationship between FDI inflow and being resource rich.

5.6 Conclusion

The results of the present study show that geographic factors play a role in the determination of FDI, with. agglomeration, urban population, land area, and being resource rich emerging as the most outstanding factors when compared to institutions and infrastructure. The study has also shown that there is a significant difference in FDI inflow between landlocked countries and coastal-based countries. However, being landlocked did not bear a significant result in the regression.

CHAPTER 6

CONCLUSION AND POLICY RECOMMENDATIONS

6.1 Conclusion

The main objective of the present study was to determine if geographic factors play a significant role in the determination of FDI inflow in SADC countries. Specifically, the study investigated whether there were significant differences in FDI inflows between resource rich countries and non-resource rich countries and between landlocked countries and coastal-based countries. In order to meet these objectives, the study used a one-step system GMM by employing a dynamic panel data model. A two sample t-test and a one-way ANOVA was used to assess the significant differences between landlocked and coastal-based countries and between resource rich and non-resource rich countries in the SADC region.

The results have shown that geography does indeed play a role in determining where FDI goes in the SADC region. The study has shown that geographical factors such as Agglomeration, urban population, land area and resource endowments determine FDI inflows in the SADC region. The most outstanding of the geographical variables is the land size. Just as the study has shown that the bigger the land size the more the FDI inflow. Other outstanding variables are the urban population and being resource rich as it was found that these two variables had negative relationships with FDI inflows and were contrary to what was expected from the study and from previous works.

The study has also shown that institutions still play a major role in determining where FDI goes. As the study has shown all the institutional variables were significant, thus, showing the important role that institutions can play in investors decisions on where to invest.

6.2 Policy implications

Several policy implications may be drawn from the study. First of all, SADC has to move quickly on its regional integration process. The regional integration can increase the market size of the SADC region because investors will not only be looking at the individual countries but will consider SADC as a whole, which has the potential to positively influence FDI inflow into the region.

Secondly, countries that are geographically challenged in terms of land area and availability of abundant natural resources should focus on their institutions to attract FDI inflow. As observed, apart from the geographic variables institutions are very important for FDI attraction.

Thirdly, resource rich countries need to come up with sound policies and they need to regulate the mining works so as to avoid a situation where a surge in the mined resources can lead to high resource revenues which will appreciate the currency. If that happens, it will be cheaper for consumers to import goods or services and this will cripple the domestic industries.

6.3 Limitations of the study

The study encountered several limitations. Firstly, in its methodology it only considered the system GMM model. Future studies could consider running the data on several models. Secondly, the present study was done at a regional level. Future studies could test whether geographic factors determine FDI at individual country level; they may generate different results. Actually, the country-specific studies could consider going as deep as determining if geographic factors affect particular sectors in a country.

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APPENDICES

Appendix 1: List of SADC countries

No	Country
1	Democratic Republic of Congo
2	Angola
3	Namibia
4	South Africa
5	Botswana
6	Zambia
7	Zimbabwe
8	Swaziland
9	Lesotho
10	Mozambique
11	Tanzania
12	Seychelles
13	Mauritius
14	Malawi
15	Madagascar

List of variables

Variable	Definition	Source
FDI	Foreign direct investment, net inflows (% of GDP)	World Bank, African development indicators, 2016
Urban Population	Urban population refers to people living in urban areas as defined by national statistical offices	World Bank, African development indicators, 2016
Mobile subscription	Mobile cellular telephone subscription	SADC statistics, 2016
Telephone line	Telephone lines per 100 people	World Bank, African development indicators, 2016
GDP	GDP (current US$)	World Bank, African development indicators, 2016
Per capita GDP	GDP per capita (current US$)	World Bank, African development indicators, 2016
Rule of Law	Rule of Law (estimate)	World Bank, African development indicators, 2016
Control of corruption	Control of corruption (estimates)	World Bank, African development indicators, 2016
Days to register business	Number of days it takes to register business	World Bank, African development indicators, 2016
FDI (lagged)	First lag of FDI (%GDP) proxy for agglomeration	Authors transformation based on World bank ADI data
Locked	Dummy variable for landlocked countries	Authors transformation
Rich	Dummy variable for resource rich countries	Authors transformation

Appendix 2: Main regression output

Dynamic panel-data estimation, one-step system GMM

Group variable: id				Number of obs	=	124
Time variable : year				Number of groups	=	15
Number of instruments = 99				Obs per group: min	=	6
Wald chi2(18) = 3713.17				avg	=	8.27
Prob > chi2 = 0.000				max	=	9

fdi	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
fdi						
L1.	.4744957	.1419279	3.34	0.001	.196322	.7526693
land	7.45e-06	3.40e-06	2.19	0.028	7.92e-07	.0000141
urban	-3.49e-07	1.93e-07	-1.80	0.071	-7.28e-07	3.00e-08
pgdp	-.0001324	.0004029	-0.33	0.742	-.0009222	.0006574
law	-3.397214	1.932803	-1.76	0.079	-7.185439	.3910108
corrupt	3.413391	2.013656	1.70	0.090	-.5333016	7.360084
days	-.0365667	.0181056	-2.02	0.043	-.072053	-.0010805
mobile	8.90e-08	8.77e-08	1.01	0.310	-8.29e-08	2.61e-07
lines	.1793925	.1617628	1.11	0.267	-.1376567	.4964417
locked	2.184054	1.598166	1.37	0.172	-.9482937	5.316402
rich	-3.20656	1.248631	-2.57	0.010	-5.653832	-.759288
yrdummy5	-2.8348	1.992892	-1.42	0.155	-6.740797	1.071197
yrdummy6	-3.402541	2.257731	-1.51	0.132	-7.827613	1.022531
yrdummy7	-1.949615	1.642568	-1.19	0.235	-5.16899	1.269759
yrdummy8	-.7321249	1.754712	-0.42	0.677	-4.171298	2.707048
yrdummy9	-1.468851	1.677221	-0.88	0.381	-4.756145	1.818442
yrdummy10	-3.493382	1.957705	-1.78	0.074	-7.330414	.3436502
yrdummy11	-1.573066	1.961397	-0.80	0.423	-5.417334	2.271202
yrdummy12	-2.707674	2.025528	-1.34	0.181	-6.677636	1.262288
_cons	3.691248	1.394232	2.65	0.008	.9586044	6.423892

Instruments for first differences equation
  Standard
    D.(L.fdi land urban pgdp law corrupt days mobile lines locked rich
    yrdummy1 yrdummy2 yrdummy3 yrdummy4 yrdummy5 yrdummy6 yrdummy7 yrdummy8
    yrdummy9 yrdummy10 yrdummy11 yrdummy12)
  GMM-type (missing=0, separate instruments for each period unless collapsed)
    L(1/.).(fdi L.fdi)
Instruments for levels equation
  Standard
    _cons
    L.fdi land urban pgdp law corrupt days mobile lines locked rich yrdummy1
    yrdummy2 yrdummy3 yrdummy4 yrdummy5 yrdummy6 yrdummy7 yrdummy8 yrdummy9
    yrdummy10 yrdummy11 yrdummy12
  GMM-type (missing=0, separate instruments for each period unless collapsed)
    D.(fdi L.fdi)

Arellano-Bond test for AR(1) in first differences: z = -1.91 Pr > z = 0.056
Arellano-Bond test for AR(2) in first differences: z = -1.51 Pr > z = 0.130

Sargan test of overid. restrictions: chi2(79) = 124.51 Prob > chi2 = 0.001
  (Not robust, but not weakened by many instruments.)
Hansen test of overid. restrictions: chi2(79) = 0.00 Prob > chi2 = 1.000
  (Robust, but weakened by many instruments.)