THE DETERMINANTS OF FOREIGN DIRECT INVESTMENT IN SADC COUNTRIES: THE ROLE OF BILATERAL INVESTMENT TREATIES (1990-2013)

UNIVERSITY OF ZIMBABWE

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A DISSERTATION SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS OF THE MASTER OF SCIENCE DEGREE IN ECONOMICS

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30 April 2015
DECLARATION

I declare that this work is mine and has not been submitted for a degree at any other University.
DEDICATION

This dissertation is dedicated to my late wife Sibongile.
ACKNOWLEDGMENT

I value the support and effort provided by numerous individuals and institutions for this study to come to fruition. Firstly, I express my sincere appreciation to my supervisors, Dr. H. Zhou and Dr. P. G. Kadenge for their precious direction and assistance given during the course of this study. Secondly, I wish to express my gratitude to all members of the University of Zimbabwe Economics Department teaching staff, in particular my Supervisors, Dr. A. Makoche Kanwa, Ms Maphosa and Mr. C. Pindiriri for imparting the knowledge of the study’s theoretical foundation and methodology in me. Also my thanks go to my brothers, Dr. N. Mahonye, Mr. B. Dzawanda and Mr. L. Mandishara for their invaluable comments in some parts of the dissertation in spite of their busy schedules.

Many thanks go to ZEPARU and SERA for funding the entire programme. Without their financial support this study would have remained a dream. I express my sincere gratitude to this support for the study to be a success.

Finally, I wish to express my sincere gratitude to my family and The Apostles Church (TAC) International for the encouragement and support they rendered throughout my study. To them, I say, “I will continuously treasure your compassionate and tender attitudes and your love will stay as my utmost source of inspiration and encouragement.” I thank you all and above all, I glorify the Almighty God for being my creator and the final decision maker for the success of this work. May the dear Lord bless you all?
ABSTRACT

The study empirically examines the determinants of foreign direct investment (FDI) in the Southern African Development Community (SADC) countries with special focus on the impact of Bilateral Investment Treaties (BITs) using annual data from 1990-2013. The study uses panel data for fourteen SADC countries and applies fixed effects panel methodology to examine the impact of both signing and ratifying BITs on FDI inflows into the region. Arguably, developing countries conclude these agreements in order to attract the much-needed capital to their economies. Econometric results reveal that ratified BITs have positive impact on FDI inflows into the SADC region. Only signing BITs without operationalizing them does not promote FDI inflows into the region. The study recommends that policy makers in the SADC region should ratify the signed BITs within reasonable timeframe to show their commitment in promoting FDI inflows in their respective countries. The results also suggest that policy makers should adhere to the provisions of these BITs to increase confidence in them among foreign investors and in the process minimize litigation in case of investor-state disputes arising.

Key words: Foreign direct investment, bilateral investment treaties, ratified and signed BITs, SADC
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<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>AfDB</td>
<td>African Development Bank</td>
</tr>
<tr>
<td>ASEAN</td>
<td>Association of South-Eastern Asian Countries</td>
</tr>
<tr>
<td>BITs</td>
<td>Bilateral Investment Treaties</td>
</tr>
<tr>
<td>RBIT</td>
<td>Ratified Bilateral Investment Treaties</td>
</tr>
<tr>
<td>BIPPAs</td>
<td>Bilateral Investment Promotion and Protection Agreements</td>
</tr>
<tr>
<td>COMESA</td>
<td>Common Market for Eastern and Southern Africa</td>
</tr>
<tr>
<td>ECO</td>
<td>Economic Cooperation Organization</td>
</tr>
<tr>
<td>GLS</td>
<td>Generalized Least Squares</td>
</tr>
<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
</tr>
<tr>
<td>GDPG</td>
<td>Gross Domestic Product Growth rate</td>
</tr>
<tr>
<td>GFCF</td>
<td>Gross Fixed Capital Formation</td>
</tr>
<tr>
<td>INFN</td>
<td>Inflation</td>
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<tr>
<td>LSDV</td>
<td>Least Squares Dummy Variable</td>
</tr>
<tr>
<td>MFN</td>
<td>Most Favoured Nation</td>
</tr>
<tr>
<td>MNEs</td>
<td>Multinational Enterprises</td>
</tr>
<tr>
<td>NT</td>
<td>National Treatment</td>
</tr>
<tr>
<td>OECD</td>
<td>Organisation of Economic Cooperation and Development</td>
</tr>
<tr>
<td>OLS</td>
<td>Ordinary Least Squares</td>
</tr>
<tr>
<td>POLCON</td>
<td>Political Constraint index</td>
</tr>
<tr>
<td>POP</td>
<td>Population</td>
</tr>
<tr>
<td>TNCs</td>
<td>Transnational Corporations</td>
</tr>
<tr>
<td>TOP</td>
<td>Trade Openness</td>
</tr>
<tr>
<td>UNCTAD</td>
<td>United Nations Conference on Trade and Development</td>
</tr>
<tr>
<td>UNECA</td>
<td>United Nations Economic Commission for Africa</td>
</tr>
<tr>
<td>USA</td>
<td>United States of America</td>
</tr>
<tr>
<td>RIDMP</td>
<td>Regional Infrastructure Development Master Plan</td>
</tr>
<tr>
<td>Acronym</td>
<td>Description</td>
</tr>
<tr>
<td>-----------</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td>RBITPOLCON</td>
<td>Interaction term (RBIT multiplied by POLCON)</td>
</tr>
<tr>
<td>SADC</td>
<td>Southern African Development Community</td>
</tr>
<tr>
<td>SBIT</td>
<td>Signed Bilateral Investment Treaties</td>
</tr>
<tr>
<td>SSA</td>
<td>Sub-Saharan Africa</td>
</tr>
<tr>
<td>WDI</td>
<td>World Development Indicators</td>
</tr>
<tr>
<td>ZIMSTAT</td>
<td>Zimbabwe Statistical Agency</td>
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</table>
1.0. **Introduction**

International capital inflows, mainly in the form of Foreign Direct Investment (FDI) has emerged as the most important source of external resource flows to developing countries for economic development since the 1990s (UNECA, 2002). Southern African Development Community\(^1\) (SADC) countries, like most developing countries, are actively seeking FDI to enhance their economic growth and promote their integration into the world economy (Mhlanga, *et al.*, 2009). FDI entails an investor acquiring substantial controlling interest in a foreign firm or setting up a subsidiary in a foreign country (Markusen, *et al.*, 1995). Such investments could take many forms. They could involve foreign multinational acquiring equity in a domestically owned business, a multinational expanding an existing subsidiary, or foreign investors setting up a completely new enterprise in a developing country (Pilbeam, 2013).

SADC is experiencing low levels of domestic savings, investment expenditure and declining official development assistance, and FDI inflows would be the most important channel to foster economic development (Vickers, 2002). FDI would increase productivity, technological transfer, managerial skills, create employment opportunities, exports, international production networks and increase pace of transfer of and help integrate the domestic economies with the global economy (Anyanwu (2011) and Rutaihwa and Simwela (2012)). FDI also has the potential of bringing environmental benefits to host countries through dissemination of good practices and technologies within multinational enterprises, and through their subsequent spill-overs to domestic enterprises (OECD, 2002).

Evidence amply shows that total FDI inflows into the Sub Saharan Africa (SSA) have been very small as it averaged around $4,821 billion annually from 1990 to 1999; $18,383 billion from 2000 to 2008; and $36,639 billion from 2009 to 2013 (UNCTAD, 2013). These SSA

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\(^1\) SADC countries include: Angola, Botswana, Democratic Republic of Congo, Lesotho, Malawi, Madagascar, Mauritius, Mozambique, Namibia, Seychelles, South Africa, United Republic of Tanzania, Swaziland, Zambia, and Zimbabwe
FDI inflows represented only 1.2%, 1.6% and 2.6%, respectively of the region`s share of global FDI inflows over those periods. On a comparative perspective, SADC region`s share in SSA total FDI inflows stood at 47%, 43.3% and 35.3% between 1990 to 1999, 2000 to 2008, and 2009 to 2013, respectively (UNCTAD, 2013). However, SADC`s share of the global FDI inflows was very small and stood at 0.6%, 0.7% and 1% from 1990-1999, 2000-2008 and 2009-2013, respectively.

Economic factors such as market size, openness, economic growth and political institutions are major determinants of FDI (Colen and Guariso (2012), Tobin and Rose-Ackerman (2006) and Kusluvan (1998)). However, it takes time for policy to affect these dimensions. This has led to policy makers to increasingly turn to short run alternative solutions to improve their attractiveness. These solutions include reduced tax regimes, investment promotions initiatives and Bilateral Investment Promotion and Protection Agreements (BIPPAs). The BIPPAs are referred to in empirical literature as Bilateral Investment Treaties (BITs) (Colen & Guariso, 2012). This study is interested in finding the effect of these BITs on FDI inflows into the SADC region.

BITs are legal instruments under international law between two countries. These treaties establish clear, simple and enforceable rules for the reciprocal encouragement, promotion and protection of investments in each other's territories by companies based in either country (UNCTAD, 1998b). These treaties typically cover a wide range of areas. They cover scope and definition of investment, admission and establishment, National Treatment (NT), Most Favoured Nation Treatment (MFN), fair and equitable treatment, compensation in the event of expropriation or damage to the investment (Salacuse & Sullivan, 2005). They also cover guarantees of free transfers of funds, and dispute settlement mechanisms, both state-state and investor-state dispute resolution (UNCTAD, 1998b, Mina, 2010) and Salacuse & Sullivan (2005). Some BITs now include additional provisions on transparency, performance requirements, entry and sojourn of foreign personnel, general exceptions, and extension of NT and MFN to the entry and establishment of investment.

According to Salacuse and Sullivan (2005) and Mina (2010), countries enter into BITs, firstly, to protect foreign investors against discriminatory or unfair treatment by host governments. Secondly, to promote foreign direct investment by helping to guarantee a stable, consistent and fair legal regime in host states and to encourage investment.
liberalization in host country regimes. Thirdly, to prevent host governments from retreating from the existing level of liberalization therefore externally commits contracting countries to honouring property rights of the partner country’s investors and reduce host country’s political risk. Finally, BITs give investors from both parties the right to submit an investment dispute with the international arbitration and therefore, there is no requirement to use domestic courts for dispute resolution. International Centre for Settlement of Investment Disputes (ICSID) and United Nations Convention on International Trade Law (UNCITRAL) are two international arbitration institutions that deal with these investment disputes.

However, there are limitations associated with BITs. They are a significant interference with a country’s sovereignty, as any public policy regulation can be challenged in a binding investor-to-state settlement in an international arbitration court as long as it negatively affects investors (Neumayer and Spess (2005). The ratification of BITs is essentially trading sovereignty for credibility. The countries that ratify BITs become vulnerable to million-dollar and billion-dollar legal suits by foreign investors. There are huge costs of engaging international courts for dispute resolution usually in excess of $8 million per case (DTI, 2013). The third-party arbitration clause in BITs holds nations accountable for negative policies, with both reputational and financial consequences at stake (Salacuse & Sullivan, 2005).

BITs negotiated by SADC countries increased in the 1990s from eleven to reach sixty five and around 49% of them were ratified. Out of those that were ratified, twenty BITs were in force with developed countries and thirteen were ratified with developing countries (UNCTAD, 2013 & 2014). The BITs proliferation in the SADC region continued to grow in the 2000s up to 2013. A total of 98 and 70 BITs were signed and ratified, respectively between 2000 and 2013 by different SADC countries (UNCTAD, 2013). Of the total number of signed BITs, around 72% were signed with developing nations. Between 2000 and 2013, a total 41 BITs were ratified with developed countries and 29 BITs were ratified with developing countries by SADC countries.

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2 International Centre of Settlement of Investment Disputes (ICSID) is an autonomous international institution under the World Bank Group established under the convention on the Settlement of Investment Disputes between States and nationals of other states. The primary purpose of ICSID is to provide the facilities for conciliation and arbitration of international investment disputes. ICSID is considered to be the leading international arbitration institution devoted to Investor-State dispute settlement. http://icsid.worldbank.org.
Admittedly, the existing empirical literature on impact of BITs on attracting FDI into developing countries is somewhat mixed. Some studies have found BITs to have a positive effect on FDI inflows to developing countries (Haftel, 2010; Neumayer & Spess, 2005; Salacuse & Sullivan, 2005; and UNCTAD, 1998b). Other empirical studies have found BITs to have little or no explanatory power. For example, Tobin and Rose-Ackerman (2006) found no evidence to suggest that BITs stimulate FDI and UNCTAD (1998b) found BITs to have minimal impact on FDI inflows to developing countries. With regards to the impact of BITs on FDI inflows into the SADC region, few studies have been done. These include studies by Haftel (2010); Egger and Pfaffermayr (2004); and Neumayer and Spess (2005) which have incorporated some of the SADC countries in their sample of developing countries. Given these mixed empirical results, this research seeks to shed more light by empirically examining the impact of BITs on FDI in the SADC region.

This study focuses on the Southern African Developing Community (SADC), a multilateral trade initiative from 1990 to 2013. The reasons for choosing SADC region are that, firstly, SADC represents the most developed region in SSA and is economically the largest contributor to the African economy (SADC, 2006). Secondly, its relatively large (in the African context) internal market can be seen as offering a growing market for foreign investors (Bezuidenhout & Naude, 2008). Finally, the proliferation of BITs in the 1990s exploded with the number of these international treaties quintupling world over (Peterson, 2006), with SADC countries participating extensively in negotiation of these treaties.

1.1. Problem Statement

Developing countries face low domestic capital formation and therefore expect FDI to significantly contribute to domestic investment and thereby enhance economic growth (Rutaihwa & Simwela, 2012). FDI inflows into the SADC economies have been small and this has constrained long-term growth and job creation compared to other regions in the world, namely Asia (AfDB, 2013). Policy makers in SADC are continually implementing policies to manage FDI inflows to complement economic conditions. They have negotiated and ratified BITs in order to promote FDI inflows. The impact of these treaties on FDI are important in economics, business, and policy making in the region and hence the call for further analysis in case of the SADC region.
1.2. Objectives of the Study

The study examines the determinants of FDI inflows in SADC countries with special focus on the impact of Bilateral Investment Treaties (BITs) on FDI inflows. The objectives of the study are two-fold:

i. To examine the impact of signing and ratifying BITs on FDI inflows on SADC countries.

ii. To identify other determinants of FDI inflows on SADC countries.

iii. Proffer policy advice to policy makers on the impact of BITs on FDI.

1.3. Research Questions

The research tries to answer the following questions:

i. What is the impact of signing and ratifying BITs on FDI inflows into SADC countries?

ii. What is the impact of other determinants of FDI inflows into the SADC countries?

iii. What policy options can be deduced from the study?

1.4. Statement of Hypothesis

The hypothesis of this study is that Bilateral Investment Treaties (BITs) positively stimulate FDI inflows into SADC countries.

1.5. Justification of the Study

FDI inflows have recently been the most persistent source of capital inflows in developing countries. In 2010 alone, 46.29% of total world FDI inflows investment went to developing countries (UNCTAD 2011). This extensive growth of FDI has, consequently, given rise to the competition among policy makers in developing countries that adopt higher investment incentives and make ex-ante commitments to foreign investors about the continuity of policies. SADC region is not an exception and BITs are one of the investment initiatives at its disposal to improve FDI inflows.
The results of the study will be very useful in proffering policy advice to national policy makers on the effects of BITs on FDI inflows in the SADC region. The motivation of this paper stems from the fact that FDI is critical for economic growth, employment creation, and new technology which are essential to move the developing countries forward. The role of FDI is quite critical in the SADC region given the fact that poverty levels are generally high while domestic savings and income remain extremely low as income is mainly channelled to consumption expenditure (Sichei & Kinyondo, 2012).

Despite the fact that many studies have been done in this area in other developing countries, there is no known study to date that has been published relating to the impact of BITs on FDI inflows in the SADC region. The study, therefore, seeks to fill this gap on the impact of BITs on FDI inflows in the SADC region.

1.6. **Brief Summary of Methodology**

The study is going to employ panel data methodology to investigate the impact of BITs on FDI inflows for fourteen SADC countries. Fixed effect panel data modeling technique will be used based on the Hausman tests. The study will investigate the impact of both signing and ratification of BITs on FDI inflows for SADC countries.

1.7. **Outline of the rest of the Study**

This dissertation is structured as follows: Chapter 2 gives a background of BITs and FDI inflows in the SADC region. Chapter 3 discusses the theoretical and empirical literature on the relationship between FDI and BITs. Chapter 4 presents the research methodology. Chapter 5 discusses empirical results. Chapter 6 discusses the policy recommendations and conclusion of the study and suggestions for further research.
CHAPTER 2

BACKGROUND OF THE STUDY

2.0. Introduction

This Chapter is divided into three sections. The first section presents a brief history of BITs formation and their proliferation in the SADC region. The second section gives a brief comparison of FDI inflows into the Sub-Saharan Africa, SADC and other economic regions in the world. The final section provides a brief overview on FDI inflows into selected SADC countries.

2.1. BITs history

BITs are binding international agreements between two states that establish the terms and conditions for private investment by nationals of either state in the territory of the other. The first BIT was signed in the late 1950s between Germany and Pakistan on 25 November 1959 and entered into force on 28 April 1962 (UNCTAD, 2006). The number has risen steadily through the 1980s. The world experienced a surge in BITs in the 1990s, witnessing an increase from 470 BITs in 1990 to close to 2000 BITs by the year 2000 (Hallward-Driemeier, 2003). In signing and ratifying of BITs, the countries followed the precedent that was set by Germany and Pakistan of operationalizing the agreement within the first three years after signing. By the end of 2005, around 81.5% of the 1,891 signed BITs were ratified within the first three years after signing (UNCTAD, 2006). As of 2014, almost 2800 BITs had been concluded, of which approximately 2100 were in force (Woolfrey, 2014).

Since the dawn of BITs era in the 1950s, SADC countries have negotiated and signed a total of 250 BITs until 2013 and over 113 BITs are currently in force (ratified) (Woolfrey, 2014). BITs proliferation in the SADC region from 1950s to 1989 were very small as witnessed by only thirteen BITs being signed and ratified prior to 1990. Twelve BITs out of thirteen were signed and ratified with European developed countries³ (see the footnote below for the

³France, Germany, Switzerland, and USA ratified BITs with DRC in 1975, 1971, 1973, and 1989, respectively;
countries). The thirteenth BIT that was signed and ratified between South Africa and Paraguay, a developing country in 1974 (UNCTAD, 2013). Countries in the SADC region, with the highest number of BITs are South Africa and Mauritius with a total of 46 and 43, respectively. Countries with the lowest number of BITs are Lesotho, Swaziland and Malawi, with each having signed three, five, six, respectively. Table 1 below illustrates the breakdown of signed and ratified BITs of SADC countries disaggregated by income level of contracting partner countries.

Table 1: SADC countries BITs statistics

<table>
<thead>
<tr>
<th>SADC Country</th>
<th>Total BITs</th>
<th>Ratified (in force) BITs</th>
<th>Advanced contracting partner countries</th>
<th>Developing contracting partner countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angola</td>
<td>8</td>
<td>4</td>
<td>Germany, Italy, Portugal, Spain, and United Kingdom</td>
<td>Cape Verde, Russia Federation and South Africa</td>
</tr>
<tr>
<td>Botswana</td>
<td>8</td>
<td>2</td>
<td>Germany, Switzerland, Belgium and Luxembourg</td>
<td>China, Ghana, Malaysia, Mauritius and Zimbabwe</td>
</tr>
<tr>
<td>Democratic Rep of Congo</td>
<td>16</td>
<td>4</td>
<td>Belgium and Luxembourg, France, Germany, Greece, Israel, Italy, Portugal, South Korea, Switzerland, and United States</td>
<td>China, Egypt, India, Jordan, South Africa, and Ukraine</td>
</tr>
<tr>
<td>Lesotho</td>
<td>3</td>
<td>3</td>
<td>Germany, Switzerland and United Kingdom</td>
<td>China, Mauritius, and South Africa</td>
</tr>
<tr>
<td>Madagascar</td>
<td>9</td>
<td>6</td>
<td>Germany, Switzerland, Belgium and Luxembourg, France, Norway and Sweden</td>
<td>China, Mauritius, and South Africa</td>
</tr>
<tr>
<td>Malawi</td>
<td>6</td>
<td>2</td>
<td>Italy, Netherlands, and Taiwan</td>
<td>Egypt, Malaysia and Zimbabwe</td>
</tr>
<tr>
<td>Mauritius</td>
<td>43</td>
<td>21</td>
<td>Belgium and Luxembourg, Czech Republic, Finland, France, Germany, South Korea, Portugal, Singapore, Romania, Sweden, Switzerland and United Kingdom</td>
<td>Barbados, Benin, Botswana, Burundi, Cameroon, Chad, China, Comoros, Congo, Ghana, Gabon, Guinea, India, Nepal, Rwanda, Senegal, Indonesia, Kenya, Kuwait, Madagascar, Nepal, Turkey, Mauritania, Mozambique, Pakistan</td>
</tr>
</tbody>
</table>

Germany and United Kingdom ratified BITs with Lesotho in 1985 and 1981, respectively;
Norway and Sweden ratified BITs with Madagascar in 1967; Germany and United Kingdom ratified BITs with Mauritius in 1973 and 1986 respectively; Germany with Tanzania in 1968; and finally, Germany with Zambia in 1972.
<table>
<thead>
<tr>
<th>Country</th>
<th>Column 1</th>
<th>Column 2</th>
<th>Trade Partners</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mozambique</td>
<td>24</td>
<td>19</td>
<td>France, Belgium and Luxembourg, Denmark, Finland, Italy, Germany, Netherlands, Portugal, Spain, Sweden, USA, Switzerland, and United Kingdom, South Africa, Swaziland, Tanzania, Gabon, Kuwait, Kenya, and Zimbabwe</td>
</tr>
<tr>
<td>Namibia</td>
<td>13</td>
<td>7</td>
<td>Austria, Finland, Italy, France, Spain, Germany, Netherlands, and Switzerland, China, Cuba, Malaysia, Russia Federation, and Vietnam</td>
</tr>
<tr>
<td>Seychelles</td>
<td>7</td>
<td>1</td>
<td>Monaco, Bahrain, China, Cyprus, Egypt, India, and Zambia</td>
</tr>
<tr>
<td>South Africa</td>
<td>46</td>
<td>24</td>
<td>Austria, Canada, Belgium and Luxembourg, Czech Republic, Italy, Denmark, Finland, Greece, France, Germany, Israel, South Korea, Netherlands, Spain, Sweden, Switzerland, and United Kingdom, Algeria, Angola, Argentina, Brunei Darussalam, Chile, China, Congo, DRC, Cuba, Egypt, Mozambique, Equatorial Guinea, Iran, Ethiopia, Ghana, Yemen, Rwanda, Libya, Madagascar, Mauritius, Paraguay, Qatar, Russia Federation, Senegal, Tanzania, Tunisia, Turkey, Uganda, and Zimbabwe</td>
</tr>
<tr>
<td>Swaziland</td>
<td>5</td>
<td>2</td>
<td>Germany, Taiwan, and United Kingdom, Egypt and Mauritius, Angola, Argentina, Brunei Darussalam, Chile, China, Congo, DRC, Cuba, Egypt, Mozambique, Equatorial Guinea, Iran, Ethiopia, Ghana, Yemen, Rwanda, Libya, Madagascar, Mauritius, Paraguay, Qatar, Russia Federation, Senegal, Tanzania, Tunisia, Turkey, Uganda, and Zimbabwe</td>
</tr>
<tr>
<td>Tanzania</td>
<td>17</td>
<td>8</td>
<td>Canada, Denmark, Finland, Germany, Italy, South Korea, Sweden, Netherlands, United Kingdom, and Switzerland, Egypt, Jordan, Mauritius, Oman, South Africa, Turkey, and Zimbabwe</td>
</tr>
<tr>
<td>Zambia</td>
<td>12</td>
<td>2</td>
<td>Finland, Belgium and Luxembourg, France, Germany, Netherlands, Italy, and Switzerland, China, Cuba, Egypt, Ghana, and Seychelles</td>
</tr>
<tr>
<td>Zimbabwe</td>
<td>33</td>
<td>12</td>
<td>Austria, Czech Republic, Denmark, Italy, France, Germany, Netherlands, Portugal, Singapore, Sweden, Switzerland, and United Kingdom, Botswana, China, Croatia, Egypt, Ghana, India, Indonesia, Iran, Jamaica, Kuwait, Malawi, Serbia, Malaysia, Mauritius, Mozambique, South Africa, Tanzania, Thailand, Uganda, Russia, and OPEC Fund</td>
</tr>
</tbody>
</table>

Source: UNCTAD database on IIAs ([http://unctad.org/iia](http://unctad.org/iia))
Table 1 above shows the number of BITs that were signed and ratified by SADC countries with developed and developing nations. Countries that are highlighted in bold represent the countries that have ratified their BITs with a SADC country. Consequently, countries that are not highlighted are the ones that have only signed the BITs with the SADC counterpart. This implies that the treaties are waiting to be ratified. It is clearly shown that most of the SADC BITs that were signed with developing countries have not been ratified. This could be the fact that developing countries are not FDI sending countries. SADC BITs statistics from Table 1 above also amply show Germany as the leading developed country with most BITs within the SADC region. It has ratified BITs with twelve SADC countries with the exception of Malawi, Madagascar and Seychelles. On the developing countries perspective, China tops the list. It holds ten SADC BITs with 50% of them having been ratified.

2.2. SADC FDI inflows trends

Evidence from UNCTAD FDI statistics shows that FDI inflows into SADC have been growing by almost fifty percent from a mere US$ 51.8 million in 1990 to US$ 18 billion in 2008 before declining to US$ 10.7 billion in 2010. The fall was mainly due to global financial crisis that was experienced in 2008. FDI inflows have been growing again from 2011 to reach US$ 18.2 billion in 2013 (UNCTAD, 2013). From a comparison perspective, the above FDI figures indicates that SADC’s FDI inflows improved but the region is still lagging behind other regions as an FDI destination. FDI inflows into Economic Cooperation Organization (ECO) region increased from US$ 600 million in 1990 and reached US$ 34.7 billion in 2013 (UNCTAD, 2013). In the Union of South American Nations (UNASUR) region FDI inflows increased from US$ 5.042 billion in 1990 to reach a staggering US$ 133.4 billion in 2013 compared to SADC’s US$ 51.8 million and US$ 18 billion during the same periods. The Association of South-East Asian Countries (ASEAN) region witnessed FDI growth of more than nine times from US$ 12.6 billion in 1990 to reach US$ 125.4 billion by 2013, a remarkably huge amount as compared to the SADC region (UNCTAD, 2013). A graphical comparison of SADC and above economic regions is illustrated on Figure 1 below:

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4 ECO countries include Afghanistan, Azerbaijan, Iran, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan.
5 UNASUR countries include; Argentina, Brazil, Bolivia, Peru, Venezuela, Chile, Colombia, Ecuador, Guyana, Paraguay, Uruguay, Suriname.
6 ASEAN countries include; Indonesia, Malaysia, Philippines, Myanmar, Thailand, Lao Peoples’ Democratic Republic, and Vietnam.
2.3. FDI inflows into selected SADC countries

Over the period of 1990-2013, South Africa, Mozambique, Tanzania, Democratic Republic of Congo and Zambia received more FDI inflows (UNCTAD, 2014). On average, South Africa has been the major FDI inflows destination in the SADC region as depicted in Figure 2 below. A total of 11 source countries were each responsible for at least 2% of total FDI activity in SADC and these includes United States, United Kingdom, Malaysia, Australia, Germany, Portugal, Canada, Japan, France, Sweden and South Africa (DPRU, 2000).

South Africa witnessed a phenomenal growth in FDI inflows from $3.5 million in 1992 to reach $1.5 billion in 1999. From the year 2000 up to 2013 FDI inflows averaged around $4.3 billion annually. South Africa recorded the highest FDI inflows in 2008 when it received $9.2 billion. United States of America has remained the largest investor in South Africa, with Australia, Germany, Japan, Malaysia, Switzerland, China and Canada following in that order.
FDI inflows into Zimbabwe surged from an average US$50 million per year between 1990 and 1997 to reach a record high of US$ 444 million in 1998 (Gwenhamo, 2009). This sharp surge in FDI inflows attributed to the privatization and liberalization wave in the Zimbabwean economy. However, the momentum did not persist into the 2000s due the fact that the country began to experience political instability and macroeconomic imbalances coupled with compulsory farm acquisitions. These led to sudden reversal of FDI inflows which averaged $39 million annually between 2000 and 2008. The stable macroeconomic environments experienced starting 2009, led to a rise in the FDI inflows from US$105 million in 2009 to
reach a record high of $400 million in 2013. The major source markets for Zimbabwe`s FDI are China, Mauritius, South Africa and United States of America into the mining, energy, tourism, manufacturing and construction sectors (ZIMSTAT, 2013).

FDI inflows into Mozambique in the 1990s averaged around US$92.3 million and in the early 2000s were fairly low but surged from US$427 million in 2007 to a staggering US$5.9 billion in 2013 (UNCTAD, 2013). According to World Bank (2014), the mining and manufacturing sectors were the major recipients of FDI inflows in Mozambique. FDI inflows into Angola in the 1990s averaged around US$570 million per year from 1990 to 1999 (UNCTAD, 2005). The country experienced its worst disinvestment between 2010 and 2013 when its FDI inflows averaged staggering negative US$4.36 billion (UNCTAD, 2013). These were due to declining oil prices, the global financial crisis, bureaucratic and legal complexities and high cost of doing business. The mining sector attracted most of the FDI inflows into Angola as there are large reserves of oil, gas, diamonds, iron ore, phosphates, copper, and uranium.

FDI inflows into Zambia averaged around US$139 million from 1990 to 1999 annually. Zambia`s FDI inflows surged in the 2000s to reach US$1.8 billion in 2013 (UNCTAD, 2013). United States of America, South Africa and recently China are major investors into the Zambia`s mining, agriculture, telecommunication and tourism sectors. Botswana has not been a major recipient of FDI inflows in the region in the 1990s as it averaged around US$15 million per year (UNCTAD, 2013). There were significant improvements from 2000 to 2013 when FDI inflows averaged around US$341 million per year. South Africa has been the major source of FDI into Botswana accounting to almost 60 percent of FDI inflows in mining, agriculture, insurance and banking sectors.

Tanzania has ranked among the top dozen FDI recipients in Africa excluding oil producing countries and South Africa (Rutaihwa & Simwela, 2012). From 1990 to 1995, FDI inflows totaled US$232 million, compared to US$1.3 billion from 1996 to 2000. Subsequently from 2000 onwards, FDI inflows accelerated, growing at an annual average of 28 percent between 2003 and 2008 when it reached a total of US$1.4 billion (UNCTAD, 2013). The major FDI inflows contributions into the country came from OECD countries towards mining, communication and manufacturing sectors.
Madagascar was not a major FDI inflows destination in the 1990s, as it rose from US$5.7 million in 1994 to reach US$58.4 million in 1999. However, the tide changed in 2006 when it surged from US$294.5 million to reach high levels of US$1.07 billion in 2009 before slightly declining to US$837.5 million in 2013 (UNCTAD, 2013). France, Mauritius, China and United States of America were the main investor countries in Madagascar’s the mining, construction, transport, storage and communication sectors.

Foreign direct investment continues to play an important role in some of the most dynamic sectors (fishing, mining, manufacturing, construction, tourism, telecommunications and financial services) of the Namibian economy with mining being the major beneficiary of FDI from South Africa, Canada, Australia, Germany and United Kingdom (AfDB/OECD, 2008). FDI inflows into the country in the 1990s averaged around US$88 million annually. It increased substantially between 2000 and 2013 when it averaged around $500 million annually (UNCTAD, 2014).

The Democratic Republic of Congo (DRC) is home to the world’s largest reserves of untapped natural resources, including copper, cobalt, diamonds, platinum, gold and oil and gas (Mahembe and Odhiambo, 2013). In the 1990s, the country received very little FDI inflows which averaged around US$3.3 million per year due to political instability (Mahembe & Odhiambo, 2013). There were improvements starting in the year 2000 when it rose phenomenally from a mere US$72 million to reach US$1.73 billion by 2008. Between 2009 and 2013 FDI inflows averaged around US$2.14 billion (UNCTAD, 2014).

2.4. Conclusion

This chapter has presented BITs proliferation in the SADC region and trends in FDI inflows. What has come out clearly is that BITs have been increasing phenomenally over time. These treaties have grown by about 21 times from a mere 11 BITs prior to 1990 to reach a total of 250 BITs cumulatively by 2013. FDI inflows into SADC countries were generally on the upward trend on average. Some countries received significant inflows on average, for example, South Africa, Mozambique, Democratic Republic of Congo, Tanzania and Zambia in that order, respectively. Other countries did not fare well on average as FDI destination, for example, Angola, Malawi and Swaziland and Zimbabwe. From the above discussion, it appears to suggest that there exists a relationship between FDI inflows and BITs. The next chapter focuses on literature review.
CHAPTER 3

LITERATURE REVIEW

3.0. Introduction
This chapter presents a review of both theoretical and empirical literature on the impact of Bilateral Investment Treaties (BITs) on Foreign Direct Investment. The chapter has two sections. The first section discusses the review of theoretical literature on FDI. The second section discusses the empirical literature on the BITs FDI nexus.

3.1. Theoretical Literature Review

Initially, the theories of capital market and portfolio investments were used to describe the initiation of FDI (Kusluvan, (1998) and Nayakand Choudhury, (2014)). Prior to 1950, FDI was regarded as a sub-set of portfolio investment and therefore interest rates differential was the important reason for capital to flow to regions where it gained the highest return. However, interest rate theory in this context failed to incorporate the fundamental difference between portfolio and FDI in which the latter entails control (Nayakand Choudhury, 2014).

The theoretical shortcomings of the interest rate theory to explain FDI, has led to formulation of a host of theories which attempt to explain the rationale of Multinational Enterprises (MNEs) in undertaking FDI. These theories try to answer three fundamental questions: (1) what motivates national firms to go and produce abroad,(2) what enables them to do so, and 3) why do MNEs undertake different forms of investments (equity and contractual) abroad (Kusluvan, 1998). Some of the theories are overlapping whereas otheremphasize particular characteristics of MNEs. The OLI, Aliber, Capital flow, Hymer-Kindleberger and Internalization theories of FDI will be discussed in the next sections.

3.1.1. Ownership-Location-Internalisation (OLI) or the Eclectic Paradigm to FDI

Ownership-Location-Internalization (OLI) or The Eclectic Paradigm is one of the most robust and comprehensive theories of FDI developed in the 1970s. The theory was developed by Dunning in a series of publications (Dunning 1980, 1981, 1988, 1992). The theory postulates
that there are three factors that determine the international activities of multinational enterprises (MNEs). These are ownership advantages, location advantages, and internalization advantages (Rugman, 2010). The OLI paradigm postulates that, countries have economic, institutional, and political factors, which make them attractive to FDI. The OLI paradigm asserts that in order to produce abroad a firm utilizes ownership, location, and internalization advantages it has. The ownership advantage stems from the firm’s ownership of intangible assets, such as technology, patents, and skilled management (Kusluvan, 1998).

The location advantage arises from the assets that foreign markets supply, such as abundant natural resources, large market size, cheap factors of production, and friendly business environment (Kusluvan, 1998). These assets attract firms to produce abroad. The internalization advantage emanates from the firm’s engagement in production abroad itself rather than relying on the market, in the form of licensing or subcontracting for example, because of the higher transaction costs of the latter. From the OLI postulation, we can derive that FDI is a function of the following variables:

\[
    FDI = f(\text{market size, institutional and political factors, macroeconomic stability and economic growth potential})
\]

In the SADC region, locational advantages include abundance of natural resources (gold, diamond, aluminium, coal, copper, platinum, and oil among others) and a combined large market of approximately 208 million people (World Bank, 2011a). Seven of the fifteen SADC member countries are considered to be highly mineral dependent. For example, the mining sector constitutes 70% of GDP in Angola, 29% of GDP in Botswana, 11% of GDP in Namibia and 9% of GDP in South Africa in 2011 (World Bank, 2011a). While both ownership and internalization advantages are firm specific, location advantages are host country-specific (Kusluvan, 1998).

The OLI theory illustrates what should be present in order for firms to participate in international production, and what route will be chosen for serving the international markets. According to the OLI paradigm, a firm that has ownership advantages, but has no internalization or location-specific advantages will be better-off contracting (licensing) its international production (Dunning, 1980). Consequently, a firm that has both ownership and internalization advantages should not find it profitable to establish a new affiliate or
subsidiary abroad if there are no advantages from being located in the particular country (Cleeve, 2009). In this instance it would be better to serve the foreign market by exporting. Only those firms that can show ownership, internalization and location-specific advantages should serve the foreign market through FDI. Although this approach has provided valuable insights as to geographical distributions of MNEs, it has shortcomings due to failure to explain how foreign owned firms could outcompete domestic firms in supplying their own markets and also failed to give a hint about the origin of countries of MNEs (Cleeve, 2009).

3.1.2. The Aliber Theory

Aliber (1970), explained the existence of MNEs through financial market relations, namely exchange risk and market’s preferences for holding assets denominated in selected currencies. He hypothesized that it is the financial market which enables firms to have advantages over host country firms and this is applicable to all firms whose assets and borrowing are based in selected currencies (Kusluvan, 1998). According to this theory, MNEs tend to flow from strong currency areas to weak currency areas.

However, critics of Aliber, argued that the view is compatible with the early post-Second World War American MNEs domination, but it failed to explain the rise of European and Japanese MNEs. Aliber attributed this to decline of market values of American firms relative to the market value of firms headquartered abroad (Aliber, 1983). Also many MNEs raise much of their funds for investment in host countries and currencies where the investment take place and financial capital is not an important component on MNEs.

3.1.3. Capital Flow Theory

Until 1960, FDI by MNEs was regarded as a form of international capital flows (Kusluvan, 1998). The capital flow theory suggests that capital moves between countries due to interest rates differential. It also highlights that interest rates would vary depending on the factor endowment ratios of labour and capital and the risk premium. Using the same analogy, it is believed that MNEs would be located in countries where the returns on investments are higher. The theory makes no distinction between portfolio investment and equity involvement of MNEs (Kusluvan, 1998). The most important distinction is that portfolio investment can be much volatile. Changes in the investment conditions in a country or region can lead to
dramatic swings in portfolio investments. By contrast, equity implies controlling stake in a business and often signifies ownership of physical assets such as equipment and real estate, FDI is more difficult to pull out or sell. On the other hand, portfolio investment represents passive holdings of securities such as foreign stocks, bonds, or other financial assets, none of which entails active management or control so it is very fairly easy to sell off and pull out.

This explanation on existence of MNEs failed due to the following reasons: MNEs were not only responsible for the transfer of capital but also technology, management and organizational skills and these were transferred within a firm retaining control over their use. The United States was attracting portfolio investment but exporting FDI (Caves, 1982) as cited in Kusluvan (1998), and finally some countries were home and host of MNEs. Due to these unexplained contradictions, this hypothesis was abandoned.

3.1.4. Hymer-Kindleberger Theory

The Hymer-Kindleberger theory is also known as the market imperfection paradigm, monopolist and oligopolistic power, market power or industrial organization theory (Hymer, 1960). The theory addressed the fundamental questions of why a foreign multinational company is able to compete with indigenous companies in the host economy, given the innate advantages of an indigenous company?, why do firms go abroad?, and why do they want to retain control and ownership? (Hymer, (1960) and Kusluvan, (1998)). The indigenous firm has knowledge of the indigenous market, consumer tastes, the legal and institutional framework of business and local business customs. In doing business abroad, the foreign firm has not only the burden of operating at a distance, communication costs and time lost in communicating information and decisions, but also cost of misunderstandings that lead to errors.

The other element of the Hymer-Kindleberger theory is why firms should choose to exploit their ownership advantages through foreign direct investment rather exporting, licensing, or any other forms of international market servicing (Hymer, 1960). In order for these firm-specific advantages to be exploitable in foreign countries, firms must possess some kinds of potential advantages specific to their ownership in order to compete with indigenous firms on level terms. Potential monopolistic advantages in Kindleberger’s terms include innovative, cost, ownership of a brand name, the possession of special marketing skills, access to
patented or generally unavailable technology. They also encompass favored access to sources of finance, team-specific managerial skills, plant economies of scale and economies of vertical integration (Nayak & Choudhury, 2014). Hymer (1960) regarded FDI very much as a way of defending and reinforcing market power in oligopolistic industries.

3.1.5. Internalization Theory of FDI

Buckely and Casson (1976) also provided another explanation of FDI by putting emphasis on intermediate inputs and technology. They focused on industry-level and firm level determinants of FDI (Buckely & Casson, 1976). The theory is based on three postulates. Firstly, firms maximize profits in a market that is imperfect. Secondly, when markets in intermediate products are imperfect, there is an incentive to bypass them by creating internal markets (known as the internalization of firms’ activities) and finally, internalization of markets across the world leads to Multinational Enterprises (MNCs).

A firm that is engaged in research and development may develop a new technology or process, or inputs. However, it may be difficult to transfer technology or sell the inputs to other unrelated firms because those other firms may find the transaction costs to be very high (Nayak and Choudhury, 2014). Faced with this nightmare, a firm may choose to internalize by using backward and forward integration, that is, the output of one subsidiary can be used as input of other subsidiary, or technology developed by one subsidiary may be used in other subsidiaries. If internalization involves operations in different countries then it necessarily means FDI (Nayak and Choudhury, 2014).

Buckely and Casson (1976) identified five types of market imperfections that result in internalization which are: firstly, the coordination of resources requires a long time lag and secondly, the efficient exploitation of market power requires discriminatory pricing. Thirdly, a bilateral monopoly produces unstable bargaining situations; fourthly, a buyer cannot correctly estimate the price of the goods on sale; and finally, government interventions in international markets create an incentive for transfer pricing.

Although the authors acknowledge the risk of government intervention, they failed to consider the difference in the magnitude of this risk across various industries. For example, industries such as power generation and telecommunications which may face greater risk
of government intervention due to societal considerations which require the balancing of private objectives with social objectives according to Nayak and Choudhury (2014).

3.2. EMPIRICAL LITERATURE REVIEW

The empirical literature on the impact of BITs on FDI inflows is mixed. Some empirical studies have found BITs to have positive affect on FDI inflows and other studies found little or no significant impact of BITs on FDI inflows.

Salacuse and Sullivan (2005) studied the effects of United States of America (USA) BITs on aggregate FDI inflows to thirty one developing countries\(^9\) using fixed effects estimation technique. The other explanatory variables they included are host country GDP, GDP per capita, inflation, real effective exchange rate, population, and rule of law. Results indicated that the presence of a USA BIT triggers higher FDI inflows to that developing country. Since FDI inflows were aggregate and not bilateral with the United States of America (USA), it was not clear from their regressions whether the correlation is due to increased USA inflows, or because a USA BIT induced inflows from other countries. But it was clear that a USA BIT is more highly correlated with FDI inflows than other BITs.

Another study on the impact of USA BITs on FDI inflows to developing countries was done by Haftel (2010). The study investigated the impact of both signed and ratified BITs on bilateral FDI flows from USA to hundred and twenty developing countries using the fixed effects estimation technique. Out of hundred and twenty developing countries in the sample, forty were from Africa with thirteen from the SADC region. The results of the study revealed that ratified BITs have positive effect on FDI inflows into developing countries from USA. Ratifying a BIT with USA leads to an increase in USA investment in the host country from 0.07% to 0.24% of the domestic GDP (Haftel, 2010). SADC countries that have ratified BITs with USA witnessed increased FDI inflows from the USA for example Mozambique and Democratic Republic of Congo. On signed BITs, the impact was positive but not statistically significant. The study concludes that, it is only ratified BITs that stimulate FDI inflows as

\(^9\)Some of the developing countries included are Argentina, Bulgaria, Egypt, Morocco, Czech Republic, Panama, Poland, Romania, Slovakia, Turkey and Ukraine among others.
they function as costly signal of a pro-investment and a credible commitment from the host country to the protection of FDI (Haftel, 2010) as cited by UNCTAD (2014).

Neumayer and Spess, (2005) investigated whether BITs increase foreign direct investment in hundred and twenty developing countries. In their sample, there were forty six African countries including all SADC countries. The BIT variable used in the study was a cumulative number of BITs the developing country has signed with the OECD countries, weighted by its share of FDI outflow from the source country as a share of all OECD FDI outflows. The study found positive effect of BITs on FDI inflows reflecting that developing countries that sign BITs with developed countries receive more FDI inflows. The positive effect was found to be robust in various sample sizes; model specifications and whether or not FDI inflows are normalized by the total FDI going to developing countries (Neumayer & Spess, 2005). They concluded that BITs provided their stated objectives of promoting FDI inflows.

Egger and Pfaffermayr (2004) investigated the impact of BITs on FDI stock on nineteen home OECD countries and fifty seven host OECD and non OECD countries using fixed effects panel analysis. Four African countries were included in their sample of host countries among them; Algeria, Egypt, Morocco and South Africa. They found that ratified BITs exert a positive and significant effect on outward FDI. The estimated effect of BITs on real outward FDI stocks amount to 30% in the preferred specifications. They additionally tested whether simply signing a BIT will have any effect on outward FDI flows. The results revealed that signed BITs have positive effect on FDI outflows, although its magnitude was smaller than that associated with the ratified BITs. However, the estimated anticipation effect was insignificant, in all specifications, leading to the conclusion that the advantages of simply signing BITs are negligible (Egger & Pfaffermayr, 2004).

Tortian(2012) who looked at the impact of BIT existence on bilateral outward FDI stock from twenty OECD countries into twenty Southeast European and Central Asian countries using fixed effects panel estimation. The econometric results revealed that the BIT variable to be highly significant in all specifications. The study concluded that the ratification of BITs between OECD countries and Southeast European and Central Asian (EURASIA)countries exert a highly significant positive effect on bilateral FDI inflows (Tortian, 2012).
In contrast to the studies mentioned above, Tobin and Rose-Ackerman, (2006), found that BITs have negative effect on FDI inflows. The study used panel data methodology to analyse the impact of BITs on FDI outflows from twenty OECD countries to thirty three developing countries. The BIT variable they used was cumulative number of BITs signed by the host country. They used aggregate political risk as an explanatory variable which combines more than just institutional quality. The results were counterintuitive, with a negative sign on BITs indicating that countries with significantly lower FDI flows from OECD are likely to sign BITs with it, but the treaties do not improve the overall investment flows(Tobin & Rose-Ackerman, 2006). Another earlier study by the same authors on bilateral FDI flows between the United States and fifty four developing countries revealed that the number of BITs has little impact on the country’s ability to attract FDI(Tobin & Rose-Ackerman, 2003). The same conclusions were supported by Gallagher and Birch (2006).

Hallward-Driemeier (2003) estimated the impact of pair-wise BITs on bilateral FDI outflows from twenty OECD countries to thirty one developing countries from data aggregated into five year intervals for 20 years. The study used FDI outflows normalised by the host country’s GDP as the dependent variable and the explanatory variables included were relative GDP and GDP per capita, existence of BITs and the share of trade in GDP. The study found no evidence to support the assertion that BITs stimulate FDI inflows. The results suggest that BITs do not substitute for effective institutions in attracting FDI, but the estimates on the interaction between BITs and institutional quality variables suggest that BITs complement relatively strong institutions.

A study by UNCTAD (1998b) found that the impact of ratified BITs on bilateral FDI inflows into seventy two host developing countries and fourteen OECD countries to be weak implying that BITs could cause small increase in FDI from a home country. However, the results were not robust leading to the conclusion that BITs play a minor and secondary role in influencing FDI flows.

Aisbett, (2007) tested whether BITs stimulate investment in twenty eight low and middle income countries, using data on bilateral investment outflows from OECD countries. The study explicitly modelled and empirically accounted for the endogeneity of BIT adoption and signaling effect from BITs. The results revealed initially a strong correlation between BITs and FDI flows but not robust when controlling for selection into BIT participation.
Furthermore, there was no evidence for the claim that BITs signal a safe investment climate. Aisbett (2007) noted that papers that ignore the problem of reverse causality (endogeneity) find, in general, greater effects of BITs on FDI.

Busse et al (2010) employed a gravity-type methodology and various model specifications, including an instrumental variable approach, covering a much larger sample of host and source countries by drawing on an extensive dataset on bilateral FDI flows. They accounted for unilateral FDI liberalization, in order not to overestimate the effect of BITs, as well as for the potential endogeneity of BITs. They found that BITs do promote FDI flows to developing countries. BITs may even substitute for weak domestic institutions, though not for unilateral capital account liberalization (Busse et al, 2010).

Egger and Merlo (2012) used firm level data on the international activity of Germany Transnational Companies (TNCs) in eighty six host countries to investigate the effects of ratified and signed BITs on FDI. They found out that both ratified and signed BITs increase the activity of TNCs in the host country. Econometric results reveal that BITs have a positive effect on the number of plants per firm as well as on FDI stocks and fixed assets per firm (Egger & Merlo, 2012).

Mina (2010) empirically examined the short and long run impact of BITs on FDI inflows into Gulf Cooperation Countries using Generalized Methods of Moments (GMM) panel data methodology. The study found that domestic property rights protection institutions matter more for OECD investors as opposed to investment treaties. The study also found that ratified BITs with high income non-OECD countries to have strong positive short and long term impact on FDI (Mina, 2010). With middle income countries, ratified BITs were found to have negative, relatively weak impact on FDI.

Desbordes and Vicard (2009) investigated the impact of entry into force of BITS on bilateral FDI stock for thirty OECD home countries to thirty two non-OECD host countries over twenty years using the gravity model, Poisson quasi maximum likelihood estimator technique. They found out that BITs have greater effect when implemented between countries with political tensions while they have no significant effect between friendly countries. This led the researchers to conclude that BITs and good domestic institutions are complementary in influencing FDI (Debordes & Vicard, 2009)
3.3. Conclusion

Given the competing theories discussed above on the determinants of FDI, the Capital flow theory postulates that FDI is attracted to countries where the return on investment is higher, but failed to explain other factors which influence FDI. FDI is not only responsible for transfer of capital but technology, management and organisational skills. The Aliber theory says that FDI is attracted to countries with weak currencies as investors have preferences for holding assets denominated in selected currencies. The theory is criticized for failure to explain the dynamics of FDI flows in developing countries with undeveloped financial markets for which many SADC countries falls in. On the other hand, Internalisation theory best explains FDI flows between developed countries which have strong backward and forward integration where output of one subsidiary will be used as input of another subsidiary or technology of one subsidiary is being used by another subsidiary.

Developing countries in aggregate differ significantly in their economies and political environment, organisations and institutions. The OLI theory incorporates these significant differences into perspective when analysing factors that attracts FDI to a particular location. The OLI theory is comprehensive in explaining the determinants of FDI. Empirical findings discussed above have buttressed the explaining power of the OLI theory in the determinants of FDI debate. From the empirical perspectives, FDI inflows has been found to be a function market size (proxied by GDP and population), trade openness, economic growth and stability and political institutions. Each of these variables has been found to have different impact on FDI.

This study is going to follow OLI Paradigm to examine the determinants of FDI in the SADC region. FDI inflows are being attracted by locational factors such as natural resources and a combined market size. Most of the case studies reviewed used panel estimation methodology (pooled OLS, Least Squares dummy variable, fixed effects and random effects models) to examine the impact of BITs on FDI. This theoretical and empirical literature provided insights in building the model to be used in this study and variables to be included. The next chapter discusses the research methodology.
CHAPTER 4

RESEARCH METHODOLOGY

4.0. Introduction

This chapter discusses the research methodology adopted in this study in analysing the impact of BITs on FDI on SADC countries. The first section looks at the theoretical and empirical model to be estimated. The second section discusses justification and definitions of variables included in the model. The last section discusses the estimation techniques in panel data methodology.

4.1. Theoretical and Empirical Model Specification

The theoretical framework for this paper builds on the location advantage hypothesis of Dunning’s (1981) ownership-location-internalization (OLI) paradigm discussed in the theoretical literature review in Chapter 3. This study uses an empirical model often used in FDI location studies and follow that of Neumayer and Spess (2005), Tobin and Ross-Ackerman (2005), Egger and Merlo (2007) and Mina (2010) of the form:

\[
\ln FDI_{it} = \beta_0 + \beta_1 BIT_{it} + \beta_2 \ln POP_{it} + \beta_3 \ln GFCF_{it} + \beta_4 \ln INFN_{it} + \beta_5 \ln GDPG_{it} + \\
\beta_6 \ln TOP_{it} + \beta_7 POLCON_{it} + \beta_8 BIT_{it} \times POLCON_{it} + \mu_i + \lambda_t + \epsilon_{it} \tag{2}
\]

where;

FDI is Foreign Direct Investment inflows to country \(i\) where \(i\) = specific country in the sample in period \(t\); BITs represent the Bilateral Investment Treaties (mainly Signed BITs and Ratified BITs); POP is population; GDPG is the GDP growth rates; GFCF is gross fixed capital formation; IFLN represent inflation rates; TOP represents trade openness; POLCON represents political constraints and BITs*POLCON represents the interaction of BITs and political constraints; \(\mu_i\) is a country fixed effects; \(\lambda_t\) is a time fixed effects; \(\epsilon\) is the error term, and \(i\) and \(t\) are country and time subscripts, respectively; \(\beta_1; \ldots; \beta_8\) are parameters to be estimated.
4.2. Definitions and Justification of Variables

4.2.1. Foreign Direct Investment (FDI)

This is the dependent variable. It is the total net inflows of FDI annually into a country. FDI flows are defined as investments that acquire a lasting management interest (10% or more of voting stock) in a local enterprise by an investor operating in another country. FDI flows falls under three components which are equity capital, reinvested earnings and intra company loans. Equity capital comprises of the shares of companies in countries foreign to that of the investor. Reinvested earnings include the earnings not distributed to shareholders but reinvested into the company. Intra-company loans relate to financial transactions between a parent company and its affiliates (UNCTAD, 2007). Hence, FDI inflows with a negative sign indicate that at least one of the three components of FDI is negative and is not offset by positive amounts of the other components. These are instances of reverse investment or disinvestment. Data for this variable is available on a yearly basis from UNCTAD or World Bank`s World Development Indicators online data bases.

Preferably one would like to disaggregate FDI inflows according to bilateral or economic sectors, but unfortunately, there is no comprehensive information available for large panel of countries (Neumayer & Spess, 2005). Egger and Merlo, (2007); Busse et al, (2010) and Berger et al, (2010) are some of the studies that have used aggregate bilateral FDI flows in analysing the impact of BITs on FDI. There are strong valid arguments for not differentiating FDI by the countries of origin. Firstly, even though not protected by the BIT themselves, foreign investors may consider a BIT as an easily observable and credible signal that the host country is serious about attracting and protecting FDI (Kerner, 2009). A BIT might thus not only encourage investment from the signatory partner, but there may also be a positive indirect effect on investments from other countries. Secondly, the more BITs a country engages in, the stronger this signal is (Kerner, 2009). It can therefore be argued that focusing only on signatory countries may underestimate the effects of BITs on FDI, because it ignores this indirect “signaling effect” or spillovers that might have on FDI from other source countries (Neumayer and Spess, 2005; Tobin and Rose-Ackerman, 2011).
4.2.2. Bilateral Investment Treaties (BITs)

This is the main explanatory variable of interest to this study. The study employs the cumulative number of signed Bilateral Investment Treaties (SBIT) and the cumulative number of ratified Bilateral Investment Treaties (RBIT) by the host country in the SADC region as the variable of BITs. The use of cumulative number of signed or ratified BITs will enable this study to examine the impact of BITs on FDI inflows into the SADC countries. However, the response of FDI to BITs signing and ratification is sluggish (Colen & Guariso, 2012). BITs ratified in the previous period will have an impact on FDI inflows for the current period.

Signed BITs do not offer protection to foreign investors but have signaling effects. As the BIT remains not in force, the signal effect falls. On the other, hand ratified BITs are treaties that have been operationalized and are in force. They offer protection to foreign investors and act as credible commitment devices. The study will examine separately the impact of both signing and ratifying of BITs on FDI for the SADC countries. The data for signed and ratified BITs is available from UNCTAD (Investment Instruments online).

4.2.3. Population size (POP)

Total population is based on the *de facto* definition of population by United Nations Population Division (2013), which counts all residents regardless of legal status or citizenship—except for refugees not permanently settled in the country of asylum, who are generally considered part of the population of their country of origin. Population size is used as a proxy for market size (Neumayer & Spess, 2005). The success of Multinational Corporations investing in manufacturing of consumer durables depends on the size of the market and the purchasing power of its potential consumers that may be offered by large populations (Aziz & Makkawi, 2012). The variable is expected to have a positive significant effect on FDI. Data for these variables was obtained from World Bank, World Development Indicators online databases 10 and are midyear estimates.

4.2.4. Gross Domestic Product growth rate (GDPG)

This variable measures the growth potential of the host country. It is the growth rate of GDP over time. It assesses a country’s current economic strengths and weaknesses (Kariuki, 2015).

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10World Development indicators: www.worldbank.org
A higher growth is expected to attract more FDI since a rapidly growing economy offers better opportunities for making profits. Countries that experience slow economic growth and development might receive low share of FDI inflows as there are less incentives for foreign investors.

4.2.5. Trade Openness (TOP)

Trade openness measures the degree to which countries allow or have trade with other countries. It is measured as the ratio of the sum of exports and imports to a country’s GDP (Neumayer & Spess, 2005), and is given by:

\[ \text{TOP} = \frac{\text{Exports} + \text{Imports}}{\text{GDP}} \times 100\% \]

The impact of openness on FDI depends on the type of investments. When investments are market seeking, trade openness can have positive effect on FDI (Asiedu, 2002). This is due to tariff jumping hypothesis which argues that foreign enterprises that seek to serve the local market may set up subsidiaries in the host country if it is difficult to import their products to that country as a result of trade restrictions (Asiedu, 2002). On the other hand, foreign firms engaged in export oriented investment may prefer to locate in a more open economy to reduce higher transaction costs associated with exporting countries with trade restrictions.

4.2.6. Inflation (IFLN)

Inflation is measured by the consumer price index, which reflects the annual percentage change in the cost to the average consumer of acquiring a fixed basket of goods and services that may be set or changed at specified intervals, such as yearly (ZIMSTAT, 2014). Inflation is the proxy for macroeconomic distortions or instability (Haftel, 2010). Low inflation is taken to be a sign of internal economic stability in the host country. Macroeconomic instability discourages FDI as it introduces a form of uncertainty that distort investor perception of the future profitability in the country (Haftel, 2010). Therefore, the study expects inflation to have a negative effect on FDI inflows in the SADC region.

4.2.7. Gross Fixed Capital Formation (GFCF)

Gross fixed capital formation includes land improvements, plant, machinery and equipment purchases, the construction of roads and railways, schools, offices, hospitals, private residential dwellings as well as commercial and industrial buildings. This variable is used as a proxy for infrastructure (Kariuki, 2015). Good infrastructure increases the productivity of
investments and therefore stimulates FDI inflows (Asiedu, 2002). Expenditure on infrastructure will attract more FDI as it reduces the cost of doing business as it become efficient to transport goods from one place to another, communicate with people involved in business through the use of technology, uninterrupted power and water supplies (Kariuki, 2015). Therefore this variable is expected to positively and significantly affect FDI into the SADC region. Data for this variable was obtained from World Bank’s World Development Indicators online data bases.

4.2.8. Political Constraints (POLCON)

Henisz (2000) designed the political constraints index as an indicator of the ability of political institutions to make credible commitments to an existing policy regime. He argued that the index is the most relevant political variable of interest to investors (Neumayer & Spess, 2005). It measures the extent to which political actors are constrained in their choice of future policies by the existence of other political actors with veto power who will have to consent (Henisz, 2000). The index synthesizes a number of variables characterizing the structures and ideological alignments of countries’ political system, including the number and types of veto points and the party control (and fractionalization) of different government bodies and the extent of preference heterogeneity within each legislative branch impacts the feasibility of policy change (Neumayer & Spess, 2005).

The derivation of this index employs spatial modelling techniques of positive political theory to quantify the extent of the limitations imposed by the structure of a nation’s political institutions and the preferences of the actors that inhibit them of the feasibility of policy change (Henisz, 2000). Political actors will be denoted by E (for executive), L1 (for lower house of legislature), L2 (for upper house of legislature). Each political actor has a preference, denoted by XI where I ∈ [E, L1, L2]. Assume, for the time being, that the status quo policy (X0) and the preferences of all actors are independently and identically drawn from a uniformly distributed unidimensional policy space [0,1]. Data on actual preference distributions of political actors will subsequently be incorporated into the analysis loosening this assumption. The utility of political actor I from a policy outcome X is assumed equal to - |X - XI| and thus ranges from a maximum of 0 (when X = XI) to a minimum of -1 (when X = 0 and XI = 1 or vice versa). Further assume that each actor has veto power over final policy decisions.
The variable of interest to investors in this model is the extent to which a given political actor is constrained in his or her choice of future policies. This variable is calculated as (1 - the level of political discretion). Discretion is operationalized as the expected range of policies for which all political actors with veto power can agree upon a change in the status quo. For example, regardless of the status quo policy, an unchecked executive can always obtain policy XE and is guaranteed their maximum possible utility of 0. Investors face a high degree of uncertainty since the executive’s preferences may change or the executive may be replaced by another executive with vastly different preferences. Therefore this is categorized as a polar case in which political discretion = 1 and political constraints equals 0.

As the number of actors with independent veto power increases, the level of political constraints increases. For example, in a country with an effective one legislature chamber (L1), the executive must obtain the approval of a majority of the legislature in order to implement policy changes. The Executive is no longer guaranteed the policy XE as the legislature may veto a change from the status quo policy. The Executive can, at best, achieve the outcomes closest to XE that is preferred by the legislature to the status quo. Political constraints index ranges from zero, which indicates complete executive discretion to reverse policies at any point in time, to one, which indicates that a change to existing policies is completely infeasible. Of course, in practice agreement is always feasible, so the maximum score is less than one. The POLCON index is computed annually and covers more than 157 countries from 1960. All of the SADC countries are also covered.

FDI inflows to developing countries are negatively affected by institutional and political instability and BITs are designed to offset this impact (Nziramasanga et al, 2011). The larger POLCON index, the more constraints exist and thus, the more difficult it becomes to change policies making the business environment more predictable for the firm. Thus, host countries with high political instability are likely to receive smaller inflows of FDI, all else being equal. Political constraint index variable was obtained from Henisz Foundation online databases.

4.2.9. Interaction Terms

The interaction of Political Constraints (POLCON) and ratified BITs (RBIT) allows the study to examine whether BITs may act as a complement or substitute for institutional quality (Aisbett (2003) and Neumayer and Spess (2005)). If BITs are complements to institutional
quality then we expect the effect to be negative and significant. When they are substitutes we expect the results to be positive and significant.

4.3. Econometric Estimation Techniques

This research utilizes panel data methodology to investigate the determinants of FDI into SADC countries: The role of Bilateral Investment Treaties. The choice of this method is based on the weight of its advantages relative to pure time series and pure cross-sectional data procedure. FDI inflows and BITs proliferation vary across SADC countries and also over time. Countries in the region exhibit individual-specific variables such as policies, managerial capabilities, corruption levels, political ideologies among others of which panel data takes into account the heterogeneity in these units. Period-specific variables such as economic depressions and booms also affect SADC countries differently and thus panel data takes into account these effects. By combining time series and cross-sectional observations, panel data gives more informative data, more variability, less collinearity among variables, more degrees of freedom and more efficiency (Gujarati, 2004). Pure cross-sectional data contain no information on the effects of time-specific variables whilst pure time series data contain no information on individual differences or on effects of individual-specific variables.

4.3.1. Pooled Ordinary Least Squares (OLS)

Here we pool all panel observations together and run the simple OLS regression model, neglecting the panel structure of the data (cross-sectional and time series nature). The pooled specification may be written as:

\[ y_{it} = X_{it} \beta + \alpha_i + \mu_{it} \]

where; \( y_{it} \) is the observation on the dependent variable for cross-sectional unit (country) \( i \) in period \( t \), \( X_{it} \) is a 1*K vector of explanatory variables observed for country \( i \) in period \( t \), \( \beta \) is the K *1 vector of parameters for the explanatory variables, \( \alpha \) is the intercept for each country, and \( \mu_{it} \) is the disturbance term specific to country \( i \). The model assumes that the intercept and parameters are identical for all countries across time and space and that the observations are serially uncorrelated and disturbances are homogeneous across individuals and time.

The major problem with this model is that it does not distinguish between various countries that we have therefore denying the heterogeneity or individuality of each country that may
exist within the countries (Gujarati, 2004). This distorts the true picture on the relationship between the dependent and explanatory variables.

4.3.2. Fixed Effects Model

The fixed effects model allows heterogeneity or individuality among countries in the sample by allowing them to have their own intercept values (Gujarati, 2004). Although the intercept may differ across countries it does not vary over time, that is, time invariant. In fixed effects approach we decompose the error term \( \mu_i \) into \( \mu_i = \alpha_i + \epsilon_i \) where \( \alpha_i \) is the individual country effects which is specific to the individual cross sectional country \( i \), and \( \epsilon_i \) is the country time-invariant effects. The fixed effects may be specified as follows:

\[
y_{it} = X_{it} \beta + \alpha_i + \epsilon_{it} \quad \text{.................(4)} \quad \epsilon_{it} \sim iid(0, \sigma_{\epsilon}^2)
\]

where \( y_{it} \) is the dependent variable and \( i \) is country and \( t \) is time;

\( X_{it} \) represents a vector of independent variables; \( \alpha_i \) (i=1…n) is the unknown intercept for each country (n country-specific intercepts); \( \beta \) is the vector of coefficients for explanatory variables; and \( \epsilon_{it} \) is the error term.

The fixed effects model assumes that \( y_{it} \) are independent terms and, in particular, that is, no serial correlation (correlation over time) and no cross-sectional dependence (correlation across subjects). On the other hand, the fixed effects model has some problems. Gujarati (2004) noted that the fixed effects model fails to identify the impact of time-invariant variables on the dependent variable and also the possibility of multicollinearity as some of the problems.

4.3.3. Random Effects Model

The rationale behind random effects model is that, unlike the fixed effects model, the variation across entities is assumed to be random and uncorrelated with the predictor or independent variables included in the model. The random effects model takes the following specification:

\[
y_{it} = X_{it} \beta + \alpha + \mu_i + \epsilon_{it} \quad \text{.................(5)} \quad \mu_i \sim iid(0, \sigma_{\mu}^2) \quad \epsilon_{it} \sim iid(0, \sigma_{\epsilon}^2)
\]

This random effects approach specifies that \( \mu_i \) is a group specific random element, similar to \( \epsilon_{it} \) except that for each group, there is but a single draw that enters the regression identically in each period (Green, 2003). Again, the crucial distinction between these two cases is whether the unobserved individual effects embody elements that are correlated with the regressors in the model, not whether these effects are stochastic or not (Green, 2003). The
random effects approach assumes that the entity’s error term is not correlated with the predictors which allows for time-invariant variables to play a role as explanatory variables. The problem with this is that some variables may not be available therefore leading to omitted variable bias in the model. Random effects approach allows generalization of the inferences beyond the sample used in the model.

4.4. Regression Diagnostics

4.4.1. Multicollinearity Test
When there is perfect linear relationship among predictors, the estimates of the regression model cannot be uniquely computed. Collinearity implies that two variables are a near perfect linear combination of one another. When more than two variables are involved it is often called multicollinearity. If the degree of multicollinearity increases, the regression model estimates of the coefficients become unstable and the standard errors for the coefficients can get wildly inflated (Chen et al, 2003). Variance Inflation Factor (VIF) is used to check for multicollinearity. As the rule of thumb, a variable whose VIF value is greater than 10 depicts multicollinearity and may merit further investigation (Chen et al, 2003). Tolerance, defined as $1/VIF$, is used to check the degree of collinearity (Chen et al, 2003). Tolerance values lower than 0.1 imply that the variable could be considered as a linear combination of other independent variables.

4.4.2. Normality Test
Normality of residuals is required for valid hypothesis testing, that is, the normality assumption assures that the p-values for the t-tests F-test will be valid (Chen, et al, 2003). There are several tests for normality and Jarque-Bera test, Shapiro-Wilk W test and Kernel density (histogram of residuals) are some of the tests (Gujarati, 2004 and Chen et al, 2003). Shapiro-Wilk W test is used to test for normality in this dissertation. Shapiro-Wilk W test is the standard test for normality and is recommended for small and medium samples up to n=2000 (Garson, 2012) which suits my data sample.

4.4.3. Model Specification Test
A specification error arises due to omitted variables, inclusion of an irrelevant variable and incorrect functional form. A good econometric model should be parsimonious, have predictive power, theoretical consistency, identifiability and goodness of fit attributes
The Ramsey RESET test will be used to check whether the model is correctly specified in this study.

4.4.4. Hausman Test

The Hausman test is a specification test used to test the orthogonality of the random effects of regressors (Hausman, 1978). The test is based on the idea that under the null hypothesis of no correlation, both the Ordinary Least Squares (OLS) in the Least Squares Dummy Variable (LSDV) model and the Generalized Least Squares (GLS) are consistent, but OLS is inefficient, whereas under the alternative, OLS is consistent, but the GLS is not (Green, 2003). Therefore, under the null hypothesis, the two estimates ($\hat{\beta}_{\text{Within}}$ and $\hat{\beta}_{\text{GLS}}$) should not differ systematically, and a test be based on the differences. If the Hausman statistic is significant, that is null hypothesis is rejected, the Fixed effects model will be more appropriate. Otherwise, the Random effectswill be more appropriate.

4.4.5. Serial Correlation Test

Serial correlation tests apply to macro panels with long time series (over 20-30 years). It is not a problem in micro panels (with very few years). Serial correlation causes the standard errors of the coefficients to be smaller than they actually are and to be biased, higher R-squared and the results to be less efficient (Torres-Reyna, 2007). Serial correlation arises due to omitted relevant variables in the panel series regression. The Wooldridge Lagrange-Multiplier test is used to test for serial correlation in macro panels. The Null hypothesis is that there is no serial correlation and the alternative hypothesis is that there serial correlation.

4.4.6. Cross Sectional Dependence Test

The crosssectional dependence is a problem in macro panels with long timeseries (over 20-30 years) than in micro panels (Torres-Reyna, 2007). Pesaran CD (cross-sectional dependence) or the Bruesch-Pagan LM tests are used to test whether the residuals are correlated across entities. This study is going to employ Pesaran CD test to check for cross sectional dependence across SADC countries. The reasons being that the Pesaran CD test does not require an a priori specification of a connection matrix and is applicable to variety of panel data models, including stationary dynamic and unit-root heterogeneous panel with short time series (T) and large cross dimension (N). Cross-sectional dependence can lead to bias in tests results (also called contemporaneous correlation). The null hypothesis is that residuals are not correlated across countries in the sample.
4.4.7. Heteroscedasticity Test

Heteroscedasticity arises in numerous applications in both cross-sectional and time series data due to disturbances whose variances are not constant across observation (Green, 2003). Wald test or Breusch- Pagan LM test can be used to for testing heteroscedasticity. Here the Null hypothesis is that the residuals are homoscedastic and the alternative hypothesis is that the residuals are heteroscedastic.

4.5. Data sources

The study uses secondary data obtained from World Development Indicators, United Nations Conference for trade and Development and Henisz Foundation. The variables include FDI inflows as the dependent variable, signed and ratified Bilateral Investment Treaties, GDP growth rates, population, gross fixed capital formation, trade openness, inflation, and political constraints as independent variables for the period of 1990-2013. The data sources for foreign direct investment, inflation, gross fixed capital formation, population and GDP growth rates were obtained from World Bank’s World Development Indicators\textsuperscript{11} online database. Data for bilateral investment treaties was obtained from United Nations Conference for Trade and Development (UNCTAD). Political constraints data was obtained from Henisz Foundation\textsuperscript{12} online database.

\textsuperscript{11}www.wdi.worldbank.org/tables

\textsuperscript{12}http://mgmt5.wharton.upenn.edu/henisz/_vti_bin/shtml.dll/POLCON/ContactInfo.html
CHAPTER 5

ESTIMATION, PRESENTATION AND INTERPRETATION OF RESULTS

5.0. Introduction
The main concerns of this chapter are to present and analyze the estimated results of the panel model on impact of BITs on FDI inflows for SADC countries. This chapter firstly, explores the panel data by looking at descriptive statistics, multicollinearity tests and correlation tests. Secondly, diagnostics checks which included normality, Hausman tests, model specification test, serial correlation, cross-sectional dependency and heteroscedasticity were done to check the performance of the model. Finally, we present and discuss the estimated results of the impact of both signing and ratifying BITs on FDI inflows for SADC countries.

5.1. Descriptive Statistics
Table 2: Descriptive Statistics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Observations</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>LFDI</td>
<td>310</td>
<td>18.768</td>
<td>1.896555</td>
<td>9.21034</td>
<td>23.01428</td>
</tr>
<tr>
<td>RBIT</td>
<td>336</td>
<td>4.61011</td>
<td>5.782094</td>
<td>0</td>
<td>23</td>
</tr>
<tr>
<td>LPOP</td>
<td>336</td>
<td>15.892</td>
<td>1.34122</td>
<td>13.66785</td>
<td>18.02784</td>
</tr>
<tr>
<td>LGFCF</td>
<td>336</td>
<td>20.953</td>
<td>1.325927</td>
<td>18.44048</td>
<td>25.05136</td>
</tr>
<tr>
<td>LINFN</td>
<td>325</td>
<td>2.95021</td>
<td>1.521844</td>
<td>-0.46537</td>
<td>10.19474</td>
</tr>
<tr>
<td>GDPG</td>
<td>336</td>
<td>3.54523</td>
<td>5.149869</td>
<td>-24.7</td>
<td>22.59311</td>
</tr>
<tr>
<td>LPOP</td>
<td>336</td>
<td>4.20644</td>
<td>0.540683</td>
<td>2.829831</td>
<td>5.64216</td>
</tr>
<tr>
<td>POLCON</td>
<td>336</td>
<td>0.22438</td>
<td>0.172921</td>
<td>0</td>
<td>0.660611</td>
</tr>
</tbody>
</table>

The above Table 2 shows the descriptive statistics for variables in the model. The data for foreign direct investment inflows (FDI), population (POP), gross fixed capital formation (GFCF), inflation (IFLN), and trade openness (TOP) were transformed into natural logarithms for ease of comparison. Some data for FDI and INFN were lost during log
transformation due to their negative values. To keep the zero and negative observations, we use the following logarithmic transformation used by Berger et al (2010):

\[ y = \ln(x + \sqrt{x^2 + 1}) \]

where; \( y \) is the new transformed variable and \( x \) original variable.

The observed maximum and minimum values suggest the absence of outliers in the data. Population and political constraint variables do not vary much over time as indicated by very small standard deviations. Other independent variables vary over time as indicated by standard deviations that are greater than one.

### 5.2. Correlation Tests

**Table 3: Correlation Matrix**

<table>
<thead>
<tr>
<th></th>
<th>LnFDI</th>
<th>RBIT</th>
<th>LnPOP</th>
<th>LnGFCF</th>
<th>LnINFN</th>
<th>GDPG</th>
<th>LnTOP</th>
<th>POLCON</th>
<th>RBITPOLCON</th>
</tr>
</thead>
<tbody>
<tr>
<td>LnFDI</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RBIT</td>
<td>0.443</td>
<td>1</td>
<td></td>
<td>0.251</td>
<td>0.524</td>
<td>0.285</td>
<td>0.407</td>
<td>0.030</td>
<td>0.479</td>
</tr>
<tr>
<td>LnPOP</td>
<td>0.285</td>
<td>0.524</td>
<td>1</td>
<td>0.407</td>
<td>0.035</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LnGFCF</td>
<td>0.621</td>
<td>0.524</td>
<td>0.407</td>
<td>1</td>
<td>-0.338</td>
<td>-0.035</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LnINFN</td>
<td>-0.206</td>
<td>-0.338</td>
<td>0.035</td>
<td>-0.397</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GDPG</td>
<td>0.243</td>
<td>0.033</td>
<td>-0.013</td>
<td>0.234</td>
<td>-0.258</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LnTOP</td>
<td>0.165</td>
<td>0.046</td>
<td>-0.622</td>
<td>0.095</td>
<td>0.193</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>POLCON</td>
<td>0.305</td>
<td>0.262</td>
<td>0.179</td>
<td>0.365</td>
<td>-0.257</td>
<td>0.283</td>
<td>0.030</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>RBITPOLCON</td>
<td>0.462</td>
<td>0.925</td>
<td>0.255</td>
<td>0.598</td>
<td>-0.332</td>
<td>0.111</td>
<td>0.053</td>
<td>0.479</td>
<td>1</td>
</tr>
</tbody>
</table>

The Pearson correlation matrix above indicates correlation between pairs of variables. The results showed that FDI is positively correlated to RBIT, POP, GFCF, GDPG, TOP, POLCON and RBIT*POLCON for the SADC countries. There is negative correlation between FDI and INFN. There is multicollinearity between RBIT and its interaction with POLCON as there is higher correlation of 0.9295 which is above the 0.8 benchmark for multicollinearity.
5.3. Regression Diagnostic Tests

5.3.1. Multicollinearity tests

Table 4: Multicollinearity tests results

<table>
<thead>
<tr>
<th>Variable</th>
<th>VIF</th>
<th>1/VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>RBITPOLCON</td>
<td>14.39</td>
<td>0.069</td>
</tr>
<tr>
<td>RBIT</td>
<td>12.22</td>
<td>0.082</td>
</tr>
<tr>
<td>LnTOP</td>
<td>2.51</td>
<td>0.398</td>
</tr>
<tr>
<td>LnGFCF</td>
<td>2.21</td>
<td>0.452</td>
</tr>
<tr>
<td>LnTOP</td>
<td>2.16</td>
<td>0.462</td>
</tr>
<tr>
<td>POLCON</td>
<td>2.02</td>
<td>0.494</td>
</tr>
<tr>
<td>LnINFN</td>
<td>1.58</td>
<td>0.633</td>
</tr>
<tr>
<td>GDPG</td>
<td>1.18</td>
<td>0.849</td>
</tr>
<tr>
<td>Mean VIF</td>
<td>4.79</td>
<td></td>
</tr>
</tbody>
</table>

The above Table 4 shows that there exists multicollinearity between RBIT and RBITPOLCON since the variance inflation factor (VIF) is greater than 10 the benchmark for multicollinearity. The results support the results from the correlation matrix above. Tolerance, defined as 1/VIF, is used to check the degree of collinearity between variables in the model. The Table 4 above amply shows that RBIT and RBITPOLCON are linear combinations of other independent variables as their tolerance values are lower than 0.1, a benchmark for collinearity. To solve the problem of multicollinearity, RBITPOLCON variable was dropped from the model, see results in table 4.1 in the Appendix A.

Table 5: Regression Diagnostic Test results

<table>
<thead>
<tr>
<th>Regression diagnostic Test</th>
<th>Test</th>
<th>Statistic</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model Specification</td>
<td>Ramsey RESET test</td>
<td>1.07</td>
<td>0.3618</td>
</tr>
<tr>
<td>Normality test</td>
<td>Shapiro-Wilk test</td>
<td>0.8274</td>
<td>0.0000</td>
</tr>
<tr>
<td>Heteroscedasticity</td>
<td>Breusch-Pagan / Cook-Weisberg test</td>
<td>2.56</td>
<td>0.1095</td>
</tr>
</tbody>
</table>
The diagnostic tests from the Table 5 above indicate that the model is correctly specified as indicated by the probability value of 0.361 from the Ramsey RESET test. This implies that we have not omitted important variables in the model. Shapiro-Wilk tests for normality indicate that the residuals are not normally distributed as shown by smaller p-value of less than 5%. However, there is no assumption or requirement that the predictor variables be normally distributed (Chen, et al. 2003). The variance of residuals are homogenous as indicated by the Breusch-Pagan /Cook-Weisberg test with a p-value of 0.18 which greater than 5%.

5.3.2. Hausman Tests
To decide between fixed or random effects model, a Hausman test was done under the null hypothesis that the preferred model would be random effects against the alternative hypothesis that the fixed effects model would be appropriate (Green (2003) and Torres-Reyna (2007)). It basically tests whether the unique errors (u) are correlated with the regressors or not. If the calculated probability value is less than 5% then the fixed effects model would be appropriate.

Table 6: Hausman Test results of RBIT

<table>
<thead>
<tr>
<th>Model</th>
<th>Chi-Square</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1: Ratified BITs</td>
<td>37.62</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

The result of the Hausman tests in the Table 6 above reveals that the Fixed Effects model (FEM) is more appropriate, since the calculated probability value is less than 5%. Given these results from the Hausman tests, it implies that Fixed Effects model will be used to analyse the impact of BITs on FDI on the SADC countries. Regression results for the fixed effects and random effects models in the calculation of the Hausman statistic are shown in Table 6.1a and 6.1b, respectively in the Appendix A.

5.4. Diagnostic Tests for Fixed Effects Model
5.4.1. Testing for Time-Fixed Effects
This is a test done to see if time-fixed effects are needed when running a fixed effects model. It is a joint test to see if the dummies for all years are equal to 0, if they are then no time-fixed effects are needed.
Table 7: Time-fixed effect results

<table>
<thead>
<tr>
<th>Model</th>
<th>F-test</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1: Ratified BITs</td>
<td>0.65</td>
<td>0.8923</td>
</tr>
<tr>
<td>Model 2: Signed BITs</td>
<td>0.74</td>
<td>0.7975</td>
</tr>
</tbody>
</table>

The table above shows the F-test for time-fixed effects for the two models. The p-values above indicate that we failed to reject the null hypothesis that all year coefficients are jointly equal to zero. Therefore, no time-effects are needed in the model.

5.4.2. Testing for cross-sectional dependence/contemporaneous correlation

Pesaran cross-sectional (CD) test is used to test for cross-sectional dependence or contemporaneous correlation. The results of the Pesaran CD test for the two models are shown on Table 8 below.

Table 8: Pesaran CD Test results

<table>
<thead>
<tr>
<th>Models</th>
<th>Pesaran CD statistic</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1: Ratified BITs</td>
<td>-1.057</td>
<td>0.291</td>
</tr>
<tr>
<td>Model 2: Signed BITs</td>
<td>-0.595</td>
<td>0.552</td>
</tr>
</tbody>
</table>

Pesaran cross-sectional dependence tests on both models indicates that residuals are not correlated across entities since the probability values of 0.291 and 0.552 are greater than 5% respectively. This implies that there is no cross sectional dependence between SADC countries in the sample.

5.4.3. Serial Correlation

Table 9: Serial Correlation results

<table>
<thead>
<tr>
<th>Models</th>
<th>Woodridge F test statistic</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1: Ratified BITs</td>
<td>13.804</td>
<td>0.003</td>
</tr>
<tr>
<td>Model 2: Signed BITs</td>
<td>14.211</td>
<td>0.002</td>
</tr>
</tbody>
</table>

Wooldridge Lagrange-Multiplier test for serial correlation above reveals that there is presence of serial correlation for both models as indicated p-values of 0.0026 and 0.0023, respectively. We failed to reject the null hypothesis that there is no serial correlation, and
conclude that there is first-order autocorrelation in the panel data. Correction for serial correlation is jointly done below after testing for heteroscedasticity.

5.4.4. Heteroskedasticity tests

Table 10: Heteroscedasticity test results

<table>
<thead>
<tr>
<th>Models</th>
<th>Modified Wald chi-squared test statistic</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1: Ratified BITs</td>
<td>380.77</td>
<td>0.000</td>
</tr>
<tr>
<td>Model 2: Signed BITs</td>
<td>399.48</td>
<td>0.000</td>
</tr>
</tbody>
</table>

Modified Wald test is employed to test for group wise heteroskedasticity in Fixed Effects Model (FEM). The results from Table 10 above reveal that there is presence of heteroskedasticity in both fixed effects models as the probability values were less than 5%. To solve the problem of autocorrelation within panels and heteroscedasticity across panels we fit the models by using feasible generalized least squares. The results obtained for the two fixed effects models with robust standard errors are presented in Table 11 below. STATA 12 regression results for the two models are displayed in the Appendix A, see Table 11.1a and 11.1b, respectively.
5.5. Regression results
Table 11: Regression results

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient (Model 1 Ratified BITs)</th>
<th>z-statistic</th>
<th>p-value</th>
<th>Variable</th>
<th>Coefficient (Model 2 Signed BITs)</th>
<th>z-statistic</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>RBIT</td>
<td>0.0455* (0.0242)</td>
<td>1.88</td>
<td>0.060</td>
<td>SBIT</td>
<td>0.0063 (0.0131)</td>
<td>0.48</td>
<td>0.633</td>
</tr>
<tr>
<td>LnPOP</td>
<td>0.3843*** (0.0985)</td>
<td>3.90</td>
<td>0.000</td>
<td>LnPOP</td>
<td>0.4317*** (0.1011)</td>
<td>4.27</td>
<td>0.000</td>
</tr>
<tr>
<td>LnGFCF</td>
<td>0.5912*** (0.0933)</td>
<td>6.34</td>
<td>0.000</td>
<td>LnGFCF</td>
<td>0.6392*** (0.0906)</td>
<td>7.06</td>
<td>0.000</td>
</tr>
<tr>
<td>GDPG</td>
<td>0.0275*** (0.0100)</td>
<td>2.75</td>
<td>0.006</td>
<td>GDPG</td>
<td>0.0248** (0.0101)</td>
<td>2.46</td>
<td>0.014</td>
</tr>
<tr>
<td>LnTOP</td>
<td>1.3705*** (0.2323)</td>
<td>5.90</td>
<td>0.000</td>
<td>LnTOP</td>
<td>1.4034*** (0.2352)</td>
<td>5.97</td>
<td>0.000</td>
</tr>
<tr>
<td>Ln IFLN</td>
<td>-0.0692 (0.0535)</td>
<td>-1.29</td>
<td>0.196</td>
<td>Ln IFLN</td>
<td>-0.0794 (0.0569)</td>
<td>-1.40</td>
<td>0.163</td>
</tr>
<tr>
<td>POLCON</td>
<td>0.4598 (0.4733)</td>
<td>0.97</td>
<td>0.331</td>
<td>POLCON</td>
<td>0.3811 (0.2352)</td>
<td>0.81</td>
<td>0.419</td>
</tr>
<tr>
<td>Constant</td>
<td>-5.599** (2.6979)</td>
<td>-2.08</td>
<td>0.038</td>
<td>Constant</td>
<td>-7.3047*** (2.6801)</td>
<td>-2.73</td>
<td>0.006</td>
</tr>
<tr>
<td>Obs</td>
<td>299</td>
<td></td>
<td></td>
<td></td>
<td>299</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No of countries</td>
<td>14</td>
<td></td>
<td></td>
<td></td>
<td>14</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes: robust standard errors are in parentheses (); *, **and *** indicate statistical significance at 10%, 5% and 1% levels, respectively.

5.6. Discussion and Interpretation of Results

We present the results of Fixed Effects Model (FEM) for the two variables of interest that is signed BITs and ratified BITs and their impact on FDI inflows for the SADC countries from 1990 to 2013. Both models will incorporate all SADC countries in the sample. The model for signed BITs will investigate the impact of only signing BITs for all SADC countries in the sample. The treaty is not yet in force and is waiting to be ratified by the parliament. The model on ratified BITs investigates the impact of the bilateral treaties that are in force. These treaties offer protection to foreign investors.
Table 11 above illustrates the results of the two models after controlling for autocorrelation within panels and heteroskedasticity across panels to obtain heteroskedasticity-robust standard errors (Torres-Reyna, 2007). The following results were obtained:

5.6.1. Model 1: Ratified BITs
The results show that Ratified BITs (RBIT) have a positive impact on FDI inflows. The coefficient of this variable is statistically significant at 10% level. This implies that ratifying BITs triggers FDI inflows into the host country. They act as costly credible commitment devices to foreign investors that the host country will honour its obligations of protecting foreign investments. The results reveal that ratifying an additional BIT would increase FDI inflows by 0.0455% into the host country. These results are supported by Egger and Merlo (2012), Tortian (2012), Hatfel (2010) and Egger and Pfaffermayr (2004).

Population (proxy for market size) positively affects FDI inflows and is statistically significant at 1% significance level. These results imply that FDI is attracted to countries which offer greater market for their products. Inflation (IFLN) negatively affects FDI inflows and the coefficient is negative but statistically insignificant.

Trade Openness (TOP) has a positive impact of FDI. Its coefficient is 1.3705 and is statistically significant at 1% level. According to the results, a 1% change in trade openness will lead to 1.3705% change in FDI inflows into SADC region. This implies FDI inflows into the SADC region are market seeking (Asiedu, 2002). This is due to the fact that foreign enterprises seek to serve of a more open economy’s local market to reduce higher transaction costs associated with exporting to countries with trade restrictions (Asiedu, 2002). The results are also consistent with empirical studies by Haftel, (2010) and Asiedu, (2002).

Gross fixed capital formation (a proxy for infrastructure) has a positive effect on FDI inflows into the SADC region. Its coefficient is 0.5912, implying a 1% change in gross fixed capital formation will lead to 0.5912% change in FDI inflows. FDI inflows are attracted to countries with efficient transport, communication, energy and water infrastructure. The results are supported by empirical studies by Kariuki(2015).
Gross Domestic Product growth rates (GDPG) positively affect FDI inflows into the SADC region. Its coefficient is 0.028 and statistically significant at 1% level. These results imply that growth potential of a country proxied by GDPG is considered as one of the determinants of FDI inflows in the region. These results also imply that FDI is attracted to countries with high growth potential as there are better opportunities to make profits.

The political constraint (POLCON) (proxy for institutional quality) has a positive impact on FDI inflows into the SADC region. The coefficient of this variable is 0.460 but is not statistically significant. The results are in contrast to many empirical findings which have found the political risk variable to have a negative effect on FDI inflows. For example, Haftel, (2011), Neumayer and Spess, (2005). The reason for this anomaly could have been caused by interaction term (RBITPOLCON) we dropped from the model due to multicollinearity.

5.6.2. Model 2: Signed BITs
Table 5.6 above provides the results of analysing the impact of signed BITs on FDI on the SADC countries. Signed BITs (SBIT) has a positive impact on FDI inflows. The coefficient of 0.006 for this variable is not statistically significant. These results are supported by Neumayer and Spess (2005), who used cumulative number of signed BITs weighted by the share of outward FDI flow. Egger and Merlo (2012) and Hatfel (2010) also found a positive effect of signing BITs on FDI but not statistically significant. Kerner (2009) again found evidence of `signaling effect` of signed BITs on FDI, that is, they act as signal to investors of other countries by showing that the host country is serious about protecting and promoting foreign investment although the effect is larger for ratified BITs. Therefore, signing a BIT does not add believable information to foreign investors due to lack of protection. It is not surprising, then, that signed treaties fail to boost FDI inflows into the SADC countries. Concerning other independent variables in the model, similar results to those in the first model of ratified BITs were also obtained.
CHAPTER 6

SUMMARY, CONCLUSION AND POLICY RECOMMENDATIONS

6.0. Introduction
The main purpose of this final chapter is to present the empirical findings of the study and provide policy recommendations on the impact of BITs on FDI inflows for SADC region. The first section presents the summary of the findings. Second section presents policy implications and recommendations. The last section provides the limitations of the study and suggestions for further research.

6.1. Summary of Main Findings
The major objectives of this study were to examine the impact of both signing and ratifying of BITs on FDI inflows for SADC countries, identify other determinants of FDI inflows in the SADC region and to proffer policy based of the findings. The study analysed panel data for fourteen SADC countries over the period 1990-2013. Two models were used to examine the impact of BITs on FDI inflows. Model one was used to estimate the impact of ratifying BITs on FDI inflows, whilst model two, examined the impact of only signing BITs without operationalizing them on FDI inflows. These models were estimated using fixed effects procedure. The control variables included in both models were economic growth (GDPG), market size (POP), trade openness (TOP), macroeconomic stability (INFN) and political risk (POLCON).

The results of the study show that ratified BITs have positive and significant impact on FDI inflows for the SADC countries. Signed BITs have positive but statistically insignificant effect on FDI inflows in the second model. The study also finds that infrastructure (GFCG), economic growth (GDPG), market size (POP), and trade openness (TOP) are important variables that explain FDI inflows in the SADC region. On the other hand, macroeconomic instability (INFN) and political risk (POLCON) had no impact on FDI inflows.
6.2. Policy Implications and Recommendations

The results from the study indicate that ratified bilateral investment treaties (RBITs) have positive and significant effect on foreign direct investment (FDI) inflows into the SADC countries. The study therefore, recommends that policy makers in the SADC region should adhere to these BITs to increase the confidence in them among foreign investors. This will also reduce litigation cost at the international court in case of investor-state disputes arising. The policy makers should strive to operationalize the signed BITs within reasonable timeframes to show their seriousness in promoting FDI in their respective countries.

Policy makers should evaluate mutual benefits of signing and ratifying BITs. They should also encourage local companies to invest in countries they have BITs with. The trend obtaining is where the companies from developed countries are only investing in developing countries. There is no need to negotiate BITs that are not mutually beneficial to both parties as it entails resources that could be used for other pressing issues in the economy. Brazil and Japan are some of the countries that do not have many BITs but are huge FDI inflow destinations. For example, Brazil signed 14 BITs in the 1990s, but none of them were ratified. The policy makers in Brazil felt that these treaties will restrain the public sector’s ability to implement economic, social and environmental policies, as well as, discriminate against domestic investments.

Recommendations can also be drawn from the effect of other explanatory variables included in the study. Trade openness, gross fixed capital formation, economic growth, and market size had positive impacts on FDI inflows into the region. The problem of infrastructure has been correctly identified and therefore receiving political attention in Africa. The SADC region has adopted its Regional Infrastructure Development Master Plan (RIDMP) in August 2012 for development of integrated regional infrastructure to meet projected demand by 2027. More effort needs to be expended in meeting the targets of the RIDMP as good infrastructure attracts FDI. SADC countries should capitalize on its market size to attract market seeking FDI.

6.3. Limitations of the Study and Suggestions for Further Research

The BITs – FDI nexus is likely to suffer from endogeneity problems due to reverse causality (direction of causality) and omitted variables. The problem of reverse causality means that not only may BITS attract FDI, but countries may also sign and ratify BITs with other
countries with which they already have strong FDI relationship. The challenge of omitted variables arises as the other variables act simultaneously on FDI and BITs, making their relationship spurious: for an example, positive change in host country’s investment climate may at the same time stimulate more investment inflows and lead to a higher propensity to conclude BITs to ensure a safer legal framework for foreign investors (UNCTAD, 2014). Future studies could incorporate the problem of reverse causality in analysing the impact of BITs on FDI inflows for the SADC countries.

There is a problem of data limitation on bilateral investment flows. FDI inflows statistics from UNCTAD are based on aggregate figures that do not offer a complete picture on the structure and composition of FDI flows in the region, hence are limited in their ability to inform policy. Future studies can look at impact of BITs on bilateral FDI to different sectors of the economy.
REFERENCES


Neumayer, E., & Spess, L. (2005). *Do bilateral investment treaties increase foreign direct investment to developing countries? (online).* Retrieved September 22, 2014, from London School of Economics Research Online: http://eprints.ise.ac.uk/archive/00000627


### APPENDIX A

#### Table 3.1: Correlation Matrix for SBIT

<table>
<thead>
<tr>
<th></th>
<th>lfdi</th>
<th>sbit</th>
<th>lpop</th>
<th>lgfcf</th>
<th>linfn</th>
<th>gdpg</th>
<th>ltop</th>
<th>polcon</th>
<th>sbitpolcon</th>
</tr>
</thead>
<tbody>
<tr>
<td>lfdi</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>sbit</td>
<td>0.4655</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>lpop</td>
<td>0.2994</td>
<td>0.3235</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>lgfcf</td>
<td>0.6332</td>
<td>0.5884</td>
<td>0.4202</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>linfn</td>
<td>-0.2062</td>
<td>-0.4840</td>
<td>-0.0875</td>
<td>-0.3993</td>
<td>-0.3875</td>
<td>-0.1763</td>
<td>0.0703</td>
<td>0.5069</td>
<td>1.0000</td>
</tr>
<tr>
<td>gdpg</td>
<td>0.2465</td>
<td>0.0252</td>
<td>-0.0017</td>
<td>0.2049</td>
<td>-0.2174</td>
<td>0.0703</td>
<td>0.5069</td>
<td>1.0000</td>
<td></td>
</tr>
<tr>
<td>ltop</td>
<td>0.1523</td>
<td>0.0669</td>
<td>-0.6290</td>
<td>-0.0760</td>
<td>0.1546</td>
<td>0.1462</td>
<td>1.0000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>polcon</td>
<td>0.3042</td>
<td>0.1963</td>
<td>0.1935</td>
<td>0.3656</td>
<td>-0.2328</td>
<td>0.2438</td>
<td>-0.0005</td>
<td>1.0000</td>
<td></td>
</tr>
<tr>
<td>sbitpolcon</td>
<td>0.5261</td>
<td>0.8473</td>
<td>0.3240</td>
<td>0.6756</td>
<td>-0.3875</td>
<td>0.1763</td>
<td>0.0703</td>
<td>0.5069</td>
<td>1.0000</td>
</tr>
</tbody>
</table>

#### Table 4.1: Multicollinearity tests after removing RBITPOLCON

<table>
<thead>
<tr>
<th>Variable</th>
<th>VIF</th>
<th>1/VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>lpop</td>
<td>2.45</td>
<td>0.40798</td>
</tr>
<tr>
<td>ltop</td>
<td>2.14</td>
<td>0.46779</td>
</tr>
<tr>
<td>lgfcf</td>
<td>2.01</td>
<td>0.49643</td>
</tr>
<tr>
<td>sbit</td>
<td>1.72</td>
<td>0.58252</td>
</tr>
<tr>
<td>linfn</td>
<td>1.47</td>
<td>0.67892</td>
</tr>
<tr>
<td>polcon</td>
<td>1.22</td>
<td>0.82075</td>
</tr>
<tr>
<td>gdpg</td>
<td>1.18</td>
<td>0.850352</td>
</tr>
</tbody>
</table>

Mean VIF 1.74

#### Table 6.1a: Fixed Effects Model regression results

```
. xtrreg lfdi rbit lpop lgfcf linfn gdpg ltop polcon, fe
```

**Fixed-effects (within) regression**

- Number of obs = 299
- Number of groups = 14

**R-sq: within = 0.5676**
- Obs per group: min = 15
- avg = 21.4
- max = 24

**corr(u_i, Xb) = -0.9734**

<table>
<thead>
<tr>
<th>lfdi</th>
<th>Coef.</th>
<th>Std. Err.</th>
<th>t</th>
<th>P&gt;</th>
<th>[95% Conf. Interval]</th>
</tr>
</thead>
<tbody>
<tr>
<td>rbit</td>
<td>0.0652494</td>
<td>0.0197283</td>
<td>3.31</td>
<td>0.001</td>
<td>0.0264136 - 0.1040851</td>
</tr>
<tr>
<td>lpop</td>
<td>4.530041</td>
<td>0.8438504</td>
<td>5.37</td>
<td>0.000</td>
<td>2.868893 - 6.19119</td>
</tr>
<tr>
<td>lgfcf</td>
<td>0.3798063</td>
<td>0.1579914</td>
<td>2.40</td>
<td>0.017</td>
<td>0.087949 - 0.660816</td>
</tr>
<tr>
<td>linfn</td>
<td>-0.1614075</td>
<td>0.0827175</td>
<td>-1.95</td>
<td>0.052</td>
<td>-0.324297 - 0.001247</td>
</tr>
<tr>
<td>gdpg</td>
<td>0.0171176</td>
<td>0.0153666</td>
<td>1.11</td>
<td>0.268</td>
<td>-0.0138935 - 0.048188</td>
</tr>
<tr>
<td>ltop</td>
<td>0.041555</td>
<td>0.3206477</td>
<td>0.01</td>
<td>0.990</td>
<td>-0.6270504 - 0.605365</td>
</tr>
<tr>
<td>polcon</td>
<td>1.016517</td>
<td>0.5084879</td>
<td>2.00</td>
<td>0.047</td>
<td>0.0155413 2.017493</td>
</tr>
<tr>
<td>_cons</td>
<td>-61.23504</td>
<td>11.28696</td>
<td>-5.43</td>
<td>0.000</td>
<td>-83.4538 - -39.01628</td>
</tr>
</tbody>
</table>

**sigma_u** 6.1773621
**sigma_e** 1.1111254
**rho** 0.9486053 (fraction of variance due to _u_i)

**F test that all u_i=0:**
- F(13, 278) = 52.13
- Prob > F = 0.0000

**F test that all u_i=0:**
- F(13, 278) = 11.27
- Prob > F = 0.0000
### Table 6.1b: Random Effects Model regression results

```
xtreg lfdi rbit lpop lgfcf linfn gdpg ltop polcon rbitpolcon, re
Random-effects GLS regression     Number of obs = 299
Group variable: countrycode         Number of groups = 14
R-sq: within = 0.5254               Obs per group: min = 15
between = 0.5080                   avg = 21.4
overall = 0.4780                   max = 24
corr(u_i, X) = 0 (assumed)          Wald chi2(8) = 299.99
                           Prob > chi2 = 0.0000

|          | Coef.   | Std. Err. | z     | P>|z|     | [95% Conf. Interval] |
|----------|---------|-----------|-------|---------|---------------------|
| lfdi     | .1649647| .0483099  | 3.41  | 0.001   | .070279 - .2596503  |
| rbit     | .3737204| .182698   | 2.09  | 0.022   | .044461 - .692994   |
| lpop     | .7356262| .1154638  | 6.37  | 0.000   | .5093214 - .961931  |
| linfn    | -1.12788| .0774709  | -1.55 | 0.061   | -.2797261 - .0239541|
| gdpg     | .0286818| .0168158  | 1.71  | 0.088   | -.0242766 - .061403 |
| ltop     | 1.025024| .0710155  | 3.59  | 0.000   | .764962 - 1.285085  |
| polcon   | .4598128| .1038823  | 1.57  | 0.118   | .250343 - .6692826  |
| rbitpolcon|-.4357013| .0311552 | -1.41 | 0.159   | -.796863 - .0747012 |
| _cons    | -.5599034| .269792   | -2.08 | 0.036   | -.108897 - .1909034 |
```

Estimated coefficients = 8
Estimated autocorrelations = 8
Estimated covariances = 14

**Table 11.1a: Taking account of serial correlation and heteroscedasticity-Model 1**

Coefficients: generalized least squares
Panels: heteroskedastic
Correlation: panel-specific AR(1)

|          | Coef.   | Std. Err. | z     | P>|z|     | [95% Conf. Interval] |
|----------|---------|-----------|-------|---------|---------------------|
| rbit     | .0454861| .0241902  | 1.88  | 0.060   | -.0019259 - .0928981|
| lpop     | .3843085| .0985624  | 3.90  | 0.000   | .191169 - .5774841 |
| lgfcf    | .5912228| .0932962  | 6.34  | 0.000   | .4083656 - .7740801 |
| linfn    | -.0469181| .0534888 | -1.29 | 0.196   | -.1740343 - .0763681|
| gdpg     | .0274861| .0100007  | 2.75  | 0.006   | .007885 - .0470872 |
| ltop     | .3704766| .0233247  | 5.90  | 0.000   | .3121282 - 1.825824 |
| polcon   | .4598128| .0473323  | 9.70  | 0.000   | -.4678833 - 1.387509 |
| _cons    | -.5599034| .269792   | -2.08 | 0.036   | -.108897 - .1909034 |

Estimated covariances = 14
Estimated autocorrelations = 14
Estimated coefficients = 8
Estimated correlations = 14

**Table 6.1b**

|          | Coef.   | Std. Err. | z     | P>|z|     | [95% Conf. Interval] |
|----------|---------|-----------|-------|---------|---------------------|
| rho      | .2130468| .0067785  | 31.52 | 0.000   | .199503 - .2265904  |
| sigma_u  | .5789375| .1222673  | 4.75  | 0.000   | .338838 - .8180372  |
| sigma_e  | 1.112673| .2536784  | 4.39  | 0.000   | .641865 - 1.583481  |

**Table 11.1a**

|          | Coef.   | Std. Err. | z     | P>|z|     | [95% Conf. Interval] |
|----------|---------|-----------|-------|---------|---------------------|
| rbit     | .0454861| .0241902  | 1.88  | 0.060   | -.0019259 - .0928981|
| lpop     | .3843085| .0985624  | 3.90  | 0.000   | .191169 - .5774841 |
| lgfcf    | .5912228| .0932962  | 6.34  | 0.000   | .4083656 - .7740801 |
| linfn    | -.0469181| .0534888 | -1.29 | 0.196   | -.1740343 - .0763681|
| gdpg     | .0274861| .0100007  | 2.75  | 0.006   | .007885 - .0470872 |
| ltop     | .3704766| .0233247  | 5.90  | 0.000   | .3121282 - 1.825824 |
| polcon   | .4598128| .0473323  | 9.70  | 0.000   | -.4678833 - 1.387509 |
| _cons    | -.5599034| .269792   | -2.08 | 0.036   | -.108897 - .1909034 |

55
### Table 11.1b: Taking account of serial correlation and heteroscedasticity - Model 2

```
.xtgls lfdi sbit lpop lgfcf linfn gdpg ltop polcon, panels(heterosk) corr(psar1) nolog f
> orce
```

Cross-sectional time-series FGLS regression

<table>
<thead>
<tr>
<th>Coefficients:</th>
<th>generalized least squares</th>
</tr>
</thead>
<tbody>
<tr>
<td>Panels:</td>
<td>heteroskedastic</td>
</tr>
<tr>
<td>Correlation:</td>
<td>panel-specific AR(1)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Estimated covariances</th>
<th>14</th>
<th>Number of obs</th>
<th>299</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimated autocorrelations</td>
<td>14</td>
<td>Number of groups</td>
<td>14</td>
</tr>
<tr>
<td>Estimated coefficients</td>
<td>8</td>
<td>Obs per group:</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>min = 15</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>avg = 21.35714</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>max = 24</td>
<td></td>
</tr>
<tr>
<td>Wald chi2(7)</td>
<td>185.33</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prob &gt; chi2</td>
<td>0.0000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

```
Estimated coefficients     =         8          Obs  per group: min =        15
Estimated autocorrelations =        14          Number of groups   =        14
Estimated covariances      =        14          Number of obs      =       299
Correlation:   panel-specific AR(1)
Panels:        heteroskedastic
Coefficients:  generalized least squares
Cross-sectional time-series FGLS regression
```  

| lfdi | Coef.  | Std. Err. | z     | P>|z|  | [95% Conf. Interval] |
|------|--------|-----------|-------|------|---------------------|
| sbit | .0062543 | .0131054 | 0.48  | 0.633 | -.0194318 - 0.0319404 |
| lpop | .4316691 | .1011131 | 4.27  | 0.000 | .233491 - 0.6298472 |
| lgfcf | .6392072 | .0905855 | 7.06  | 0.000 | .4616628 - 0.8167516 |
| linfn | -.079389 | .0568748 | -1.40 | 0.163 | -.1908615 - 0.0050933 |
| gdpg | .0249057 | .0101086 | 2.46  | 0.014 | .0050933 - 0.0447181 |
| ltop | 1.403388 | .0905855 | 5.97  | 0.000 | .9423662 - 1.864409 |
| polcon | .3811398 | .04712789 | 8.11 | 0.419 | -.5425499 - 1.304483 |
| _cons | -7.304668 | 2.680136 | -2.73 | 0.006 | -12.55764 - 2.051698 |