Understanding Foreign Direct Investment in the Southern African Development Community: An Analysis Based on Project-Level Data

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ABSTRACT

This paper uses a uniquely rich project-level dataset to analyze determinants and trends of FDI flows to the Southern African Development Community (SADC) region. We control for the source of the investment, the sector in which the investment is undertaken, and the investment type in addition to project size. The results indicate market size to have a positive impact on FDI flows under all specifications- a result consistent with earlier studies. Other variables are unstable depending on specification and the subset of the data used. Furthermore, we find no significant differences in factors that drive FDI flows by source country, while greenfield investments are seen to respond more to the growth potential of the market relative to other forms of investment. In general, we find macroeconomic variables to be poor at explaining project-level FDI in the region. The descriptive analysis of the data points us more in the direction of the gravity model, with factors such as colonial ties and proximity of the investing country appearing to matter. Limited flows and minimal sectoral diversity, calls for enhanced investment promotion and collaborative efforts among member states. (JEL F23, O55)

Keywords: Foreign Direct Investment; determinants; Africa

I. Introduction

The Southern African Development Community[1] (SADC) member states, like most developing countries, are actively seeking foreign direct investment (FDI) to enhance their economic growth and promote their integration into the world economy. FDI has the potential to generate employment opportunities, and transfer managerial skills and technology, while enhancing domestic competition and entrepreneurship, hence its prominence among policy makers. However, despite concerted efforts to be the choice destination of FDI flows, African countries still receive a puny share of global FDI flows compared to countries in other regions. For instance, according to UNCTAD's 2007 World Investment Report, at $36 billion, Africa's share in global FDI was only 2.7 percent, implying the share of SADC was much smaller.[2] While such statistics are true, they 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. Moreover, FDI flows globally have experienced significant changes in recent years such as the emergence of multinational corporations from developing countries. All this calls for an in-depth analysis and revisiting of factors that drive FDI flows.

Using a uniquely rich dataset containing information on foreign investment projects into 14 SADC member countries, the objective of this paper is to examine the locational determinants of FDI for the SADC. Additionally, we offer a detailed descriptive and empirical analysis of inward FDI flows to the SADC. The analysis looks beyond the meager FDI flows to the region with an eye to identify key patterns and trends concealed in previous aggregate analyses. The

[1]The countries of the SADC are Angola, Botswana, Democratic Republic of Congo, Lesotho, Malawi, Madagascar, Mauritius, Mozambique, Namibia, South Africa, Swaziland, United Republic of Tanzania, Zambia, and Zimbabwe. Seychelles is not included in this study.

[2] For a detailed overview of FDI flows in Africa relative to other developing countries see Asiedu (2002) and various issues of the UNCTAD published World Investment Report.

empirical analysis addressing the driving factors of FDI asks the following questions: (1) What are the determinants of FDI to the SADC? (2). Are South-South flows determined by the same factors as North- South flows? (3) What are the differences between greenfield investments and other types of investments?[3] (4). Do investments in the natural resources sector correlate the same way with macroeconomic variables as investments in non-resource sectors?

The analysis is important for several reasons. First, the past few years have seen a change in the global landscape of FDI with the emergence of multinational corporations (MNCs) from developing countries. Firms from developing countries now invest heavily in other developing countries- a phenomenon coined "South-South" flows. South-South flows have become significant and offer renewed hope to African economies that in the past decades have been shunned by traditional investors from industrialized countries.[4] The World Bank (2004) and Aykut and Ratha (2004) estimate South-South flows to be in the magnitude of 30-36 percent of total FDI inflows to developing countries. South-South flows are more important for a number of countries in the SADC. For example, investments from South Africa account for more than 50 percent of all FDI flows into Botswana, Democratic Republic of Congo, Lesotho, Malawi and Swaziland (Rumney and Pingo 2004; UNCTAD 2006). Moreover, South-South flows have grown much faster than North-South flows—a trend expected to persist into the future (Gelb 2005; UNCTAD 2006). Despite the momentous expansion of South-South flows, empirical analysis on their driving factors has been limited.

[3] FDI can be in terms of investments in new facilities (Greenfield), or purchase of existing domestic firms (mergers and acquisitions).
[4]FDI from industrialized economies to developing economies is called "North-South" flows.

Compared to their counterparts in industrialized countries, MNCs from developing countries are thought to be largely market seeking and less risk averse being familiar with governance structures in developing countries (UNCTAD 2006; Gelb 2005). In general, they are thought to have less firm specific advantages thus it is possible to hypothesize that FDI from industrialized and developing countries may respond to external factors differently (Banga 2006; UNCTAD 2006; UNIDO 2007). Therefore, to answer the second question on the difference between South-South flows and North-South flows, we test both the market seeking and risk aversion hypotheses.

Second, we explore differences that may exist by type of investment. The major share of world FDI flows consists of mergers and acquisitions (M&As) but for M&As to take place, there needs to be vibrant domestic investment. For most African economies, this is not necessarily the case making greenfield investments crucial. Furthermore, policy makers appear to have a preference for greenfield investment, believing such projects to offer more benefits for development (UNCTAD 2000). Therefore, the interest is in finding the set of factors that drives greenfield investments. Although most empirical analyses on the determinants of FDI do not distinguish between M&As and greenfield investments, the international business literature on mode of entry suggests that greenfield investments occur for different reasons than M&As (see for example Brouthers (2002)). Country risk[5] and market potential are some of the macro level factors identified in the literature.

[5] Country risk in these studies is usually measured as cultural distance. In this study, we use host country risk rating from the Institutional Investor Magazine.

Third, we consider investments in natural resources against investments in other sectors. *A priori*, it is hard to imagine that investments in natural resources extraction depend on most of the factors suggested in the literature. Instead, there seems to be less effort required on the part of host country governments by way of creating a favorable investment climate for this type of investment. This is also suggested by remarks from some company executives.[6] We test the sensitivity of investments in natural resources to market size- a factor found to be significant in most past studies. In addition, since most investments in the extractive industry are export oriented, we examine if these investments respond more to trade openness relative to other investments. As far as we know, this study is the first to address these differences particularly for the case of the SADC.

The analysis is also timely amidst an increase in the number of studies examining determinants of FDI to developing countries and inconclusiveness in the results obtained on the important factors. Understanding investment patterns at project level enriches the formulation and conduct of investment policies and carries implications for targeting strategies.

The results indicate market size measured by gross domestic product to have a positive impact on FDI flows under all specifications—a result consistent with earlier studies (Chakrabarti 2001; Asiedu 2002). Other variables are unstable depending on specification and the subset of the data used. Furthermore, we find no significant differences in factors that drive FDI flows by source country, while greenfield investments are seen to respond more to the growth potential (GDP growth) of the market relative to other forms of investment. In general, we

[6] See Interview: Lee Raymond, ExxonMobil. *Financial Times*, March 12 (Buchanan, D., and S. McNulty. 2002) cited in McMillan (2004)

find macroeconomic variables to be poor at explaining FDI flows in the region. The descriptive analysis of the data points us more in the direction of the gravity model, with factors such as colonial ties and proximity of the investing country appearing to matter. Limited flows and minimal sectoral diversity, calls for enhanced investment promotion and collaborative efforts among member states.

The remainder of the paper proceeds as follows: Section II gives a brief review of the literature on FDI determinants. The empirical model is presented in section III. Section IV is qualitative and covers a detailed descriptive analysis of the project level data. The results of the empirical analyses are contained in section V. Section VI concludes and summarizes the main policy implications of the empirical results.

II. Determinants of Foreign Direct Investment

Consistent with the growing emphasis on FDI as a potential source of economic growth for developing countries, policy makers have sought to understand the relevance of locational factors in making their nations choice destinations for FDI flows. Consequently, there has been a proliferation of empirical studies on the determinants of FDI to developing countries. Since the literature is vast, the purpose of this section is not to conduct an all-encompassing literature review but to flesh out key papers that inform this study's empirical analysis. We first summarize the broad literature then move on to discuss select studies particularly those that have examined determinants of FDI to Africa.

The theoretical underpinnings of determinants of FDI are the locational advantages embodied in the OLI/ eclectic framework of FDI proposed by Dunning (1988). According to the eclectic theory, countries have economic, institutional, and political factors, which make them attractive to FDI. Empirical works on the determinants of FDI have not yet reached a consensus on the important factors. In a review of empirical studies that examine the determinants of flows of FDI to developing countries, Chakrabarti (2001) finds that not only is there a variation in the factors counted to be important but different studies yield conflicting results with respect to the same factor. A similar observation is also made by Asiedu (2002).[7] According to the evidence gathered by Chakrabarti (2001), market size as measured by per capita GDP is the most robust factor for explaining FDI flows. Among the remaining explanatory variables, a country's openness to trade has the highest likelihood of being positively correlated with FDI flows. On the other hand, Asiedu's review of the literature finds infrastructure quality and openness to international trade as the only two variables to have an unambiguously positive effect on FDI. Blonigen (2005) alludes such inconclusiveness to the complexity of the literature on determinants of FDI and discourages against making broad generalizations on factors without taking a closer look. He contends that the more insightful and innovative papers in the literature are those that have developed hypotheses about when a factor should matter and when it should not matter. Gaining such an understanding is the focus of this study.

The literature has been enriched by studies highlighting the importance of estimation techniques and the subset of the data used. Gastanaga, Nugent and Pashamova (1998) address

[7] See Table 1 in Chakrabarti (2001) and Table 3 in Asiedu (2002). Other reviews of the conflicting evidence including determinants based on survey data can be found in Jenkins and Thomas (2002).

the determinants of FDI in the context of panel data. They criticize studies based on pure cross-section analysis of biased results due to their failure to account for other non-measured factors. Using multivariate analysis, the authors examine the effects of different types of policy and institutional variables, and conclude that over time, trade liberalization is the most important motive for FDI. Addison and Heshmati (2003) employ three estimation techniques: pooled ordinary least squares (OLS), fixed effects and random effects to study the determinants of FDI for an unbalanced panel dataset. They reject the pooled OLS model in favor of the fixed effects model incorporating country fixed effects.

Observing the limited number of studies on Africa, Asiedu (2002) examines whether differences exist between the factors that influence FDI in Sub Saharan Africa (SSA) *vis-à-vis* other developing countries. The study reveals at least three differences. First, geographical location explains low levels of FDI to SSA. Second, *ceteris paribus*, higher returns on capital and infrastructure development encourage FDI flows to other developing countries but do not have a significant impact on FDI to SSA. Finally, the paper finds that openness to trade has less of an impact on FDI in SSA than in other developing countries. In the study, market size is not considered as one of the determinants, the reason being that most of the countries in her sample are poor and small countries, hence FDI flows are less likely to be market-seeking. This reasoning nonetheless precludes South-South flows that according to surveys undertaken by UNCTAD and partner organizations are largely driven by market-related factors (UNCTAD 2006; UNIDO 2007).[8] However, a follow-up study by the same author finds

[8] See UNCTAD WIR 2006 pages 155-165 or overview page xxvii.

evidence that larger markets will receive more FDI (Asiedu 2006). Similar results are obtained by Bende-Nabende (2002) based on the co-integration analysis of FDI flows to Africa.

The problem with all these studies is that they use aggregate FDI data in their analysis hence do not account for changes in the composition of FDI flows as currently witnessed by the emergence of south-south flows, neither do they consider the sector, nor type of investment—a problem our data overcomes.

III. The Empirical Model

Our approach to modeling determinants of FDI inflows to SADC countries builds on previous analyses of FDI flows into other developing countries. The model is modified to suit the panel structure of the data at the country level hence it is estimated using fixed effects estimation in addition to ordinary least squares. In addition, the explanatory variables are lagged one period to contain the dynamic nature of FDI flows. The basic regression equation can be written as:

$$Y_{cit} = \alpha_0 + \beta_x X_{c,t-1} + \gamma_d D_i + \delta D_i * X_{c,t-1} + \varepsilon_{cit} \qquad (1)$$

Where Y_{cit} is the log of the announced amount of FDI in million US dollars;[9] $X_{c,\,t-1}$ is a vector of explanatory variables comprising host country characteristics often cited as location-specific factors in the OLI paradigm; D is a vector of dummy variables for source, sector, and type of investment; and ε_{cit} the error term. The subscripts (i), (c), and (t) identifies the project country and year in which the investment was undertaken respectively. The error term could be broken down into a country-specific term (μc), a time-specific effect (λt) and a random error term (V_{cit}).

[9] The standard in the literature is to normalize FDI by GDP of the host country but in our case, using this measure was problematic particularly for small projects as it yielded minute figures.

$$\varepsilon_{\text{cit}} = \mu_c + \lambda_t + V_{cit} \qquad (2)$$

The model is extended to include interactions of the dummy variables with the regressors.

The regressors are drawn from the literature and are; market size, GDP growth, openness, infrastructure development, return on investment, political stability, risk, financial depth, and inflation rate. *Market size* is a measure of the host country's domestic market that is proxied by the log of GDP. A large market size implies greater demand for goods and services and offers economies of scale for the investor. *GDP growth* is the growth rate of GDP, which is a measure of the growth potential of the host economy. A higher growth rate is expected to attract more FDI since a rapidly growing economy offers relatively better opportunities for making profits. Openness is a measure trade volume of the host economy that is measured as a percentage of the sum of exports and imports to GDP. The impact of openness on FDI can have a positive sign if FDI is export-oriented and a negative one if FDI is "tariff jumping" (Asiedu 2002). *Return on investment* is measured by the log of the inverse of the real GDP per capita as used in previous studies (Asiedu 2002).

Infrastructure development of the host economy is also crucial for investments. Good infrastructure is expected to lower transaction costs and boost productivity of investments. Therefore, the more developed the infrastructure, the more FDI flows are expected. The number of fixed and mobile phone lines per 1000 people is used to proxy this variable. *Risk* is a measure of country risk as defined by Institutional Investors Magazine. A higher risk rating implies less risk thus is expected to result in more investment.[10] *Inflation rate* is a measure of

[10] Collier and Pattillo (2000) find risk to be a major deterrent of investments in Africa.

macroeconomic stability. The higher the inflation rate the less stable the environment thus a negative effect is expected. *Financial depth* is an additional measure of the health of the domestic economy and captures the ease of conducting financial transactions. Host countries with better financial development are expected to foster entry by foreign firms. Finally, we consider *political instability* measured as a sum of political rights and civil liberties indices as published by Freedom House. A higher score implies political instability, hence is expected to deter FDI flows.

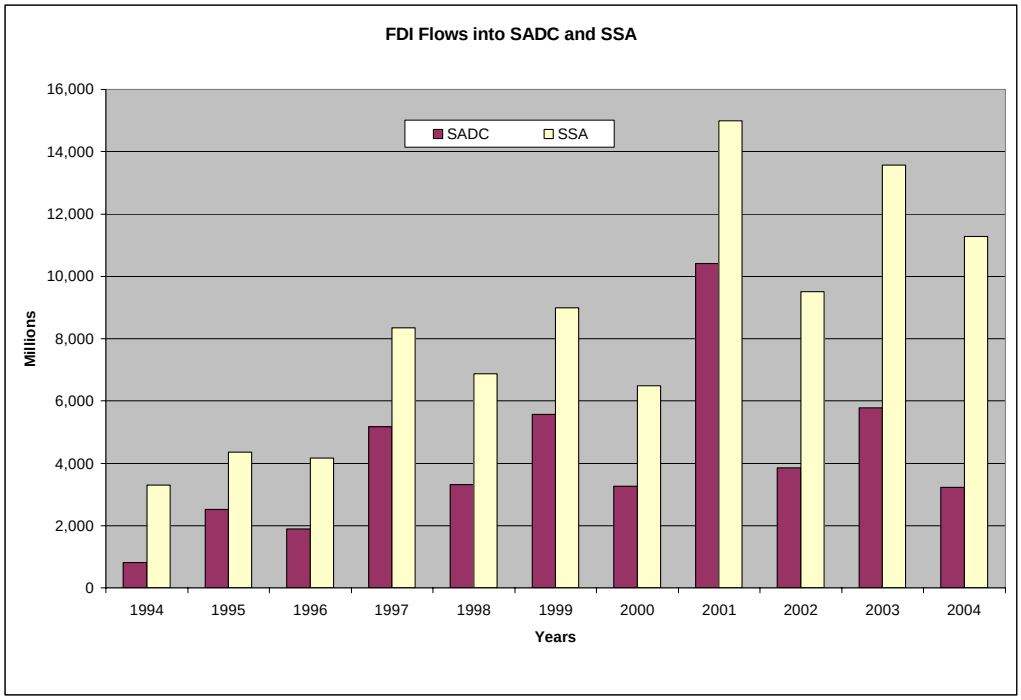
A dummy variable "*South*" is created to denote investment whose source country is classified as developing by the World Bank. The "*Greenfield"* dummy equals one if the investment type is a new venture. The reference then becomes other investment types like M&As and exploration. Finally, the "*Resources"* dummy captures investments in the extractive industry and utility provision (water, gas, electricity). Both Ordinary Least Squares (OLS) and fixed effects (FE) are used to estimate the parameters of interest. We correct the estimated standard errors by clustering at the country level.

IV. Data Description

The dataset used in the analysis consists of 1320 projects across 14 SADC countries, detailing the value, type, date of investment announcement, target country, target company, source country and source company of the investment. The data covering 1994–2005, was obtained from the BusinessMap Foundation.[11] Sources of data for explanatory variables are summarized in Table A.1. The SADC region receives significant FDI flows, accounting for

[11] BusinessMap Foundation is an independent not-for-profit organization based in Johannesburg, South Africa that specializes in strategic investment analysis and advice.

between 25 percent and 70 percent of total FDI flows to sub-Saharan Africa between 1994 and 2004 (Figure 1).



Source: World Bank Development Indicators

Figure 1: FDI Inflows to Sub-Saharan Africa and the SADC

Further justification for focusing only on African countries is derived from a recent study by Asiedu (2002) that posits determinants of FDI to Africa to differ from those of other developing countries (see section II for details).[12]

Description of Project-Level Data

Since FDI project-level data for Africa is not easily available, it is worthwhile to report the trends found in the sample before turning to statistical analysis. The average project size is

[12] Asiedu (2006) gives two additional reasons for limiting samples to African studies. See also Elbadawi and Mwega (1997) for importance of SADC.

approximately US$100 million but the median project size is US$15.5 million. These summary statistics already point to the presence of outliers that may drive empirical results a certain way and are noted in the analysis.

Sources of Foreign Direct Investment: Of the number of projects in the sample, 913 were North-South flows and 407 South-South flows. In value terms, North-South projects make up 69 percent of total investments. The remaining 31 percent is worth noting as it highlights the importance of South-South flows for the SADC countries. South Africa, Malaysia, China, and India in that order have the most number of projects among emerging market economies investing in the SADC region. United Kingdom (UK) accounts for 20 percent of all projects (28 percent of North-South), followed by South Africa at 17 percent (54 percent of South-South) and USA with 12 percent (17 North-South). Considering origin of the investment in conjunction with the target countries, ex colonial powers, UK in the English-speaking countries and Portugal in Angola and Mozambique, are among key investors. This trend suggests that language is a barrier to investment although South Africa, perhaps due to its proximity, has found ways to overcome the language barrier and invest in the two Lusophone countries.

Sectoral Composition of Projects: The projects are divided into 10 non-conventional economic sectors according to the Financial Times Stock Exchange/ Johannesburg Stock Exchange classification system (Table A.2 of the appendix). Natural resources, cyclical services (general retail and hospitality industry), and non-cyclical consumer goods (beverages,

tobacco, food processors and pharmaceuticals) dominate the number of projects with 26.3 percent, 13.4 percent, and 12.9 percent respectively (Table 1).

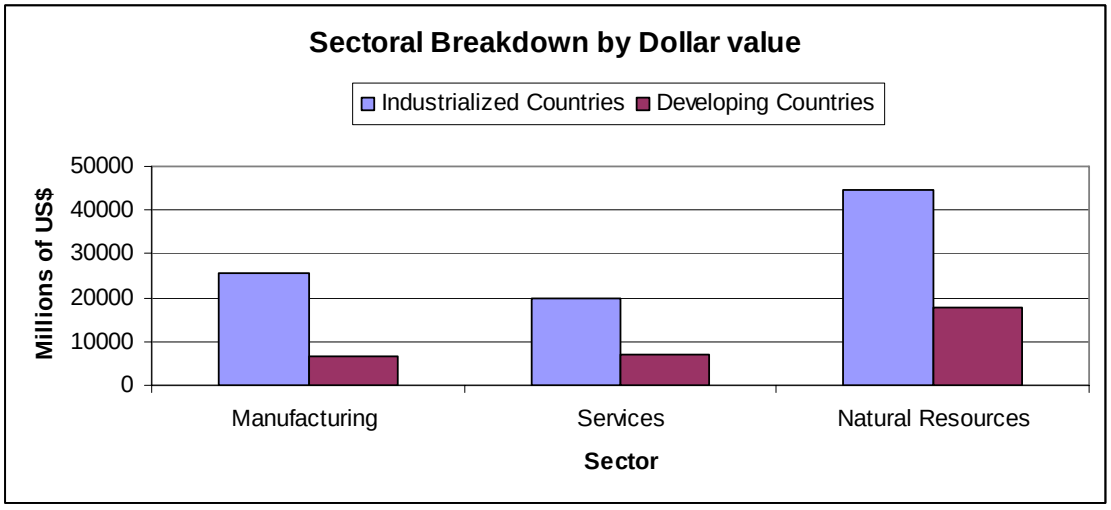
Table 1: Sectoral Composition of FDI Projects

SECTOR	CUMULATIVE (1994–2005)			
	Total Projects	**(%)**	**US$ (Millions)**	**(%)**
Resources	346	26.27	61524.72	47.51
Cyclical Services	176	13.36	6108.08	4.72
Non Cyclical Consumer Goods	170	12.91	6463.13	4.99
Cyclical Consumer Goods	157	11.92	9141.13	7.06
Basic Industries	156	11.85	14675.28	11.33
Financials	115	8.73	7790.91	6.02
General Industries	85	6.45	1824.84	1.41
Non-Cyclical Services	48	3.64	11415.9	8.82
Information Technology	37	2.81	1772.28	1.37
Utilities	27	2.05	8787.5	6.79
Total	**1317**	**100**	**129503.77**	**100**

Source: The BusinessMap Foundation 2006

The cumulative dollar value of investments changes significantly the ranking of the economic sectors with the exception of the resources sector. As seen in Table 1, despite a small number of projects in non-cyclical services (telecommunications, food, and drug retail), the investments in this sector are costly and rank in third place. While these figures show some sectoral diversification, it is very limited for SADC countries with the exception of South Africa. South African firms have the most notable areas of expansion outside the mining sector in the other countries and include financial services, information and communication technology (ICT), and retail. For instance, South African retailer Shoprite has made investments in almost all SADC countries while mobile phone service providers MTN and Vodacom operate in Lesotho, Mozambique, Swaziland, Tanzania, and Democratic Republic of Congo. American investments go mainly to the automobile and textile industries; British investments are in food production and processing industries including manufacturing of beverages and tobacco.

To make the sectoral analysis more comprehensive, we group the 10 economic sectors into three commonly used sectors namely: resources, manufacturing and services. Figures 2, shows the breakdown by dollar value and source of the investments.



Source: The BusinessMap Foundation 2006

Figure 2: Sectoral Breakdown by Source of Investment (Dollar Value)

Mode of Entry: Table 2 provides a breakdown of investment types by economic sector. Aside from the dominance of the resources sector, there are strong differences in sectoral and industry patterns among the modes of entry. Most resource investments are greenfield projects. M&As occur primarily in the non-cyclical consumer goods sector and cyclical services sector. Majority of the few joint ventures in the region are in the resources sector, with South African firms, speaking to the advancement of the South African economy relative to other countries in the region. Regarding investor propensities, the data shows a relatively higher proportion of greenfield investments from developing countries whereas industrialized economies tend to lean towards M&As.

Table 2: Distribution of Investment Types (Modes of Entry) by Economic Sector

	Greenfield	M& As	JVs	Expansion	Other	Total
Resources	97	70	19	81	79	346
Cyclical Services	80	60	2	24	10	176
Non Cyclical Con. Goods	43	85	2	30	10	170
Cyclical Consumer Goods	40	35	6	64	12	157
Basic Industries	36	48	2	46	24	156
Financials	50	46	1	12	7	115
General Industries	24	40	3	15	3	85
Non-Cyclical Services	14	12	5	11	6	48
Information Technology	12	18	0	5	2	37
Utilities	10	6	0	2	9	27
Total	406	419	40	290	162	1317

Source: The BusinessMap Foundation 2006

In summary, the project data shows some variation in the data and interesting patterns that we subject to empirical tests.

V. Results and Discussion

The model was first estimated using ordinary least squares (OLS), pooling all the observations from the 14 countries and across the 12 years. The results are reported in columns (1)–(6) of Table 3. Models (1), (3)–(6) use the log of fixed and mobile phones as a measure of infrastructure development while column 2 uses only the log of fixed lines. The estimations indicate that project FDI can be explained by market size, openness to trade, infrastructure development, and country risk. All the significant coefficients have the expected sign with the exception of country risk. The result that less risky countries receive less investment is not very surprising considering that despite favorable rankings, Botswana records less FDI flows compared to other countries such as Angola with a poor ranking. The same reason could explain the insignificance of political instability. Indeed, Angola has attracted a lot of investment in oil and natural gas extraction, which are arguably insulated from political and economic instability. GDP growth, return on investment, and inflation rate have the expected signs but are insignificant.

Models (3)–(6) incorporate the dummy variables and their interaction terms. The coefficients on the "South" dummy and its interactions, suggest that there is no statistically significant difference between "South-South" and "North-South" flows. Furthermore, the results show that on average, greenfield investment projects are approximately 31 percent smaller whereas projects in the resources sector are about 55 percent to more than twice as large compared to other projects. The coefficient on the interaction terms suggests that the marginal effect of the growth potential of the host economy on FDI is approximately 10 percent more for greenfield investments relative to other types of investment. The results also suggest that of market size is 13 percent less for FDI in resource extraction. Investments in resource extraction do not target the domestic market thus the negative coefficient on the influence of market size is as expected. In general, the significant factors do not explain a lot of the variation observed in announced FDI flows as illustrated by the low R-squared ranging between 5 and 11 percent.

Table 3: Pooled OLS Estimation

The Dependent variable is log of FDI.

	(1)	(2)	(3)	(4)	(5	(6)
Market Size	0.359	0.161	0.387	0.453	0.419	0.366
	(3.90)***	(1.55)	(4.93)***	(4.76)***	(5.07)***	(5.39)***
Openness	0.008	0.002	0.007	0.008	0.008	0.007
	(2.32)**	(0.63)	(2.39)**	(2.41)**	(2.38)**	(2.21)**
GDP Growth	0.015	-0.024	0.008	-0.023	-0.022	-0.027
	(0.90)	(1.47)	(0.52)	(1.25)	(1.19)	(1.56)
Infrastructure 2	0.454		0.350	0.341	0.325	0.186
	(4.43)***		(3.64)***	(3.49)***	(3.36)***	(2.18)**
Infrastructure 1		-1.133				
		(5.71)***				
Return on Investment	0.123	-1.500	0.207	0.244	0.200	
	(0.68)	(4.50)***	(1.31)	(1.49)	(1.25)	
Country Risk	-0.045	-0.043	-0.026	-0.024	-0.020	-0.028
	(3.33)***	(3.35)***	(2.47)**	(2.12)**	(1.89)*	(3.43)***
Financial Depth	-0.014	0.027	-0.013	-0.013	-0.013	
	(1.56)	(2.58)***	(1.58)	(1.57)	(1.59)	
Political Stability	0.001	-0.036				
	(0.02)	(0.95)				
Inflation Rate	-0.001	-0.002				
	(0.54)	(0.99)				
South			0.018	0.160	0.020	0.062
			(0.16)	(0.22)	(0.18)	(0.56)
Greenfield			-0.316	-0.342	-0.352	-0.439
			(3.10)***	(1.12)	(1.15)	(1.49)
Resources			0.549	2.129	2.146	2.271
			(4.98)***	(2.41)**	(2.44)**	(2.63)***
S x Market Size				-0.053		
				(0.53)		
S x Country Risk				0.011		
				(1.10)		
GF x GDP Growth				0.096	0.096	0.102
				(3.08)***	(3.06)***	(3.35)***
GF x Country Risk				-0.010	-0.010	-0.009
				(1.59)	(1.53)	(1.44)
NR x Market Size				-0.131	-0.133	-0.136
				(1.89)*	(1.92)*	(2.00)**
NR x Openness				-0.004	-0.004	-0.004
				(0.88)	(0.90)	(0.95)
Constant	-0.331	-4.814	-0.233	-0.661	-0.692	-1.069
	(0.45)	(5.11)***	(0.35)	(0.81)	(0.91)	(1.60)
Observations	1177	1177	1305	1305	1305	1317
R-Squared	0.06	0.07	0.09	0.11	0.11	0.10

Absolute value of t statistics in parentheses

* Significant at 10%; ** significant at 5%; *** significant at 1%

Subsequently, the models are specified to account for country fixed effects. We also assume error terms to be correlated over time, hence adjust for intra-group correlation at the country level. Table 4, reports the results of the fixed effects models and reveals that controlling for country fixed effects weakens the significance of variables that were significant in the OLS specifications. The negative and highly significant coefficient for return on investment is very suspect. Since there is evidence of multicollinearity in the regressors, we drop return to investment in the remaining specifications. The results appear in columns (2)–(5). The magnitude of the coefficient for market size increases by a factor of more than three compared to that in the OLS estimations bringing the magnitude closer to that obtained by Asiedu (2006).

The dummy for South-South investments remains insignificant, again suggesting that there are no differences by source of the investment. The interaction of the source dummy with market size and risk also yield insignificant results. Unlike in the pooled OLS estimation, the interactions of the resources dummy in the fixed effects models are both insignificant. This result meets our expectation, as we do not expect investments in the resources sector to be correlated with macroeconomic variables. Nonetheless, the interaction terms maintain the same sign and magnitude as in the pooled OLS model.

Table 4: Fixed Effects Estimation

	(1)	(2)	(3)	(4)	(5)
Market Size	0.606	1.487	1.515	1.506	1.518
	(1.45)	(1.95)*	(2.07)*	(2.05)*	(2.14)*
Openness	-0.012	0.006	0.007	0.007	0.006
	(1.67)	(0.43)	(0.49)	(0.51)	(0.43)
GDP Growth	-0.039	-0.025	-0.051	-0.050	-0.054
	(1.58)	(1.03)	(1.82)*	(1.79)*	(2.19)**
Infrastructure 2	0.062	0.197	0.187	0.177	0.110
	(0.49)	(1.08)	(0.93)	(0.91)	(0.82)
Return On Investment	-4.472				
	(3.89)***				
Country Risk	-0.025	-0.016	-0.014	-0.011	-0.010
	(1.93)*	(0.92)	(0.75)	(0.66)	(0.59)
Financial Depth	-0.003	-0.014	-0.015	-0.015	
	(0.22)	(0.86)	(0.80)	(0.83)	
Political Stability	0.013				
	(0.24)				
Inflation Rate	-0.001				
	(0.18)				
South		-0.042	0.170	-0.038	-0.028
		(0.50)	(0.24)	(0.49)	(0.35)
Greenfield		-0.311	-0.429	-0.435	-0.490
		(1.87)*	(2.11)*	(2.05)*	(2.41)**
Resources		0.453	1.809	1.795	1.657
		(2.61)**	(1.72)	(1.72)	(1.71)
S x Market Size			-0.048		
			(0.50)		
S x Country Risk			0.008		
			(0.79)		
GF x GDP Growth			0.086	0.086	0.090
			(2.60)**	(2.56)**	(2.80)**
GF x Country Risk			-0.006	-0.006	-0.005
			(1.67)	(1.55)	(1.31)
NR x Market Size			-0.112	-0.111	-0.104
			(1.50)	(1.50)	(1.50)
NR x Openness			-0.003	-0.003	-0.002
			(0.71)	(0.69)	(0.53)
Constant	-33.626	-12.499	-12.761	-12.710	-13.089
	(4.44)***	(1.60)	(1.70)	(1.69)	(1.82)*
Observations	1177	1305	1305	1305	1317
Number of cid	14	14	14	14	14
R-squared	0.05	0.08	0.08	0.08	0.08

Robust t statistics in parentheses
* Significant at 10%; ** significant at 5%; *** significant at 1%

Robustness Tests

OLS models with only the explanatory variables were estimated on six random sub-samples of the data- 3 for samples with replacement of 1000 projects and the other 3 on 75 percent of the projects sampled without replacement. These results validate the importance of market size in fostering FDI flows. Additional sensitivity tests were performed on (1) Projects excluding natural resource projects, (2) Investments in South Africa, (3) Projects excluding investments of more than US$1 billion and, (4) Samples separated by source, sector and type of investment. The results were consistent with prior estimations except for the baseline regression for investments in South Africa in which, financial depth was positive and significant. This result makes sense, as South Africa's financial sector is the most developed in the SADC region.

VI. Conclusions and Policy Implications

This paper investigated whether and to what extent project-level FDI in the SADC region during the period 1994–2005 could be explained by a set of host country economic variables and whether the impacts differed by source of investment, sector and mode of investment. Robustness checks were conducted on random sub-samples of the data to ascertain validity of results under differing conditional sets. The key results are that market size as measured by log of GDP promotes FDI flows to the SADC countries. Additionally, other factors such as infrastructure development and openness of the economy to trade have a positive effect on FDI projects although their significance is less robust. Growth of the host economy was also found to be more important for greenfield investments. However, differences between South-South FDI and North-South flows were found to be statistically insignificant; neither did we find

robust differences on the effect of factors based on the sector of the investment. Overall, we find macroeconomic variables to be poor at explaining project-level FDI in the region.

The significance of market size lends support to the market-seeking hypothesis that has led past studies to advocate for regional co-operation among countries. Since the SADC is already a recognized regional grouping, this recommendation calls for further deepening and harmonization of policies within member states.

The descriptive analysis with exception of South Africa shows limited sectoral diversity and influence of other factors such as geographical proximity and social relationships (colonial ties) in determining FDI flows. This could suggest lack of knowledge about investment opportunities and calls for targeted investment promotion. Indeed, Sachs (2006) underscores the importance of investment promotion for poor countries. More investments in manufacturing, particularly agro-processing, could be beneficial for the SADC member states.

APPENDIX

Table A.1: Variable Definitions and Sources

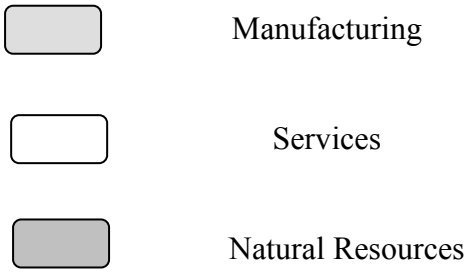
Variable Name	Description	Source
FDI	Logarithmic transformation of project-level FDI	BusinessMap Foundation
Market Size	Log of GDP at purchaser's prices in millions of US $	World Development Indicators (WDI)
Openness	[(Exports + Imports)/GDP]*100	WDI
Return on Investment	Log (1/GDP per Capita)	WDI
GDP Growth	Annual percentage growth rate of GDP at market prices	WDI
Infrastructure 1	Infrastructure Development= Log (telephone mainlines per 1000 people)	WDI
Infrastructure 2	Log (Fixed line and mobile phone subscribers per 1,000 people)	WDI
Country Risk	Host Country Risk rating- September values	Institutional Investor Magazine
Financial Depth	[Money and quasi money (M2) /GDP] *100	WDI
Political Stability	Sum of political rights and civil liberties indices	Freedom House
Inflation Rate	Inflation, consumer prices (annual %)	WDI
South (S)	Source country dummy = 1 for developing countries & 0 otherwise	BusinessMap Foundation
Greenfield (GF)	Greenfield= 1 if Mode of Entry = "Greenfield" and 0 otherwise	BusinessMap Foundation
Resources (NR)	Resources = 1 if Economic Sector = "Resources or Utilities" and 0 otherwise	BusinessMap Foundation

Table A.2: Description of Economic Sector, Industry, and Sub-sector of Investments

ECONOMIC SECTOR	INDUSTRY/ SUB-SECTOR
Basic Industries	Chemicals (Advanced Materials, Commodity and Specialty Chemicals)
	Construction and Building Materials
	Forestry and Paper
	Steel and Other Metals
Cyclical Consumer Goods	Automobiles and Parts; Tires and Rubber, Vehicle Distribution
	Household Goods and Textiles (Clothing and Footwear, Furnishings and Floor Coverings, Household Appliances and House wares, Other Textiles and Leather Goods)
General Industrials	Aerospace and Defense
	Diversified Industrials
	Electronic and Electrical Equipment
	Engineering and Machinery (Commercial Vehicles and Trucks, Engineering Contractors, Fabricators and General Engineering)
Non Cyclical Consumer Goods	Beverages (Brewers, Distillers and Vintners, Soft Drinks Manufacturers)
	Food Producers and Processors (Farming and Fishing, Food Processors)
	Health (Health Maintenance Organizations, Hospital Management and Long Term Care, Medical Equipment and Supplies, Other Health Care)
	Personal Care and Household Products
	Pharmaceuticals and Biotechnology
	Tobacco
Cyclical Services	General Retailers (Discount and Super Stores, Warehouses, Hardlines, Multi-Department and Soft Goods retailers)
	Leisure, Entertainment and Hotels (Gaming, Home Entertainment, Hotels, Leisure Facilities, Restaurants and Pubs)
	Media and Photography (Broadcasting Contractors, Cable and Satellite, Media Agencies, Photography, Publishing and Printing)
	Support Services (Business Support Services, Education, Business Training, Employ Agencies, Environmental Control, Security and Alarm Services)
	Transport (Airlines and Airports, Rail, Road and Freight, Shipping and Ports)

ECONOMIC SECTOR	INDUSTRY/ SUB-SECTOR
Financials	Banks
	Insurance (Insurance Brokers, Non Life Insurance, Other Insurance, Reinsurance)
	Investment Companies and Entities
	Life Assurance
	Real Estate (Property Agencies, Real Estate Holding and Development)
	Specialty and Other Finance (Asset Managers, Investment Banks, Mortgage Finance, Other Financial services)
Information Technology	Information Technology Hardware (Computer Hardware, Semiconductors, Telecommunications Equipment)
	Software and Computer Services (Internet)
Non Cyclical Services	Food and Drug Retailers
	Telecommunication Services (Fixed Line and Wireless Telecommunication Services)
Resources	Mining (Coal, Diamond, Gold, and Platinum, Mining, Other Mineral Extractors and Mines)
	Oil and Gas (Oil and Gas Exploration and Production, Oil Integrated, Oil Services)
Utilities	Electricity, Gas Distribution, Water

Source: The BusinessMap Foundation 2006



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