

The Opportunity Space for Foreign Direct Investments in the South African Economy

Wiza Munyeka

Department of Business Management, University of Limpopo (Turffloop Campus),
Private Bag X 1106. Sovenga, 0727. South Africa.
E-mail: masterwiza2000@yahoo.com

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Abstract

This paper investigates which economic factors determine Foreign Direct Investment (FDI) inflows in South Africa, establishes whether there is a statistical relationship or trends with foreign direct investment and factors such as financial openness, market size and growth, democracy, exchange and prime rates using time series data for the period 1970 to 2011. Though multivariate regression models were employed, this paper finds that financial openness (Kaopen index), democracy, one year lagged FDI and market size (GDP per capita) were significant in influencing FDI. GDP per capita had by far, the highest magnitude influencing FDI inflows in South Africa. This paper also compares South Africa with similar countries in terms of attracting FDI. Theoretical evidence showed that cheap labor and training of the labor force attracted higher FDI in the Chinese economy whereas this was not the case for South Africa. Other differences can ultimately be attributed to the start of democracy in South Africa.

Keywords: *Statistical relationship; Foreign Direct Investment (FDI); Gross Domestic Product (GDP); South African Reserve Bank (SARB); International Monetary Fund (IMF);*

1. Introduction

The study intends to help South Africa's policy makers understand what drives foreign investors' choices and how they react differently with regard to specific economic factors and policy issues. It is hoped that this study will help South Africa's National, Provincial and Local Governments understand, establish, refocus and refine their FDI attraction strategies.

2. Problem Statement

According to International Monetary Fund (IMF), Organization for Economic Co-operation and Development (OECD), United Nations Capital Development Fund (UNCDF) as cited by Chatterjee (2009), FDI Foreign Direct Investment (herein to be referred to as FDI) are a source of development generating employment and modernization, with the hope that the overall benefits will enhance enterprise development, create a more competitive business environment by stimulating technology spillovers, assist human capital formation, contribute to international trade integration, increase total factor productivity and improve efficiency of resource use.

3. Literature Review

3.1 The determinants of FDI

According to Blomstrom (1989) as cited by Agrawal & Ranjan (2011), FDI fosters the "income, production, prices, employment, economic growth, and general welfare of the recipient country." FDI can therefore play a key role in the development of a country's economy and hence essential for counties to assess the factors that attract inward Foreign Direct Investment.

3.2 Definition of FDI

FDIs "are the net inflows of investment to acquire a lasting management interest (10% or more of voting stock) in an

enterprise operating in an economy other than that of the investor's" (World Bank, 2012). This entails a subsistence long term relationship between the direct investor and the enterprise, as well as the significant influence that the direct investor will play in the management of the enterprise (Patterson, Montanjees, Motala & Cardillo, 2004). FDI comprises not only the initial transaction that established the relationship between the investor and the enterprise, but also the subsequent transactions between them and among affiliated enterprises.

3.3 Theoretical evidence

Studies according to Ohlin (1933) who was one of the first to address matters of international trade claimed that natural resources are immobile. However, through trade, "interregional factor movements are superfluous and interregional differences in the factor prices are reduced." He argued that improvements in the transport system and a reduction in these costs will decrease inconsistency in factor prices which may otherwise affect interregional factor movement. Various notions have been put forward to analyse whether investors prefer to operate in foreign locations instead of exporting into a licensing agreement with a local producer. Hymer (1960) as cited by Rojid & Seetenah (2011) argued that Multinational Corporations (MNCs) would prefer to supply the foreign market through direct investments instead of direct exports because of the presence of advantages such as imperfect competition (product differentiation, imperfect competition in the factor market (access to patented or proprietary knowledge or skill advantages, Internal or external economies of scale, including those arising from vertical integration and restriction on imports.

According to Buckley (1990), in order for MNCs to set up their firms in different locations, factors influencing growth in that region are relevant. Firms will consider the behavior of competitors, tariffs, taxes, transport, labor and material cost. According to Dunning (1972) as cited by Buckley (1990), as the degree of nationalism intensifies so does the role of locational variables become more significant. As cited by Rojid & Seetenah (2011), Buckley & Casson (1976) claimed that transaction costs of intermediate products would be minimized if markets are integrated by MNCs. They argued that MNCs have patented assets whose transfer may be expensive to diffuse, sell or lease. According to the authors, the main strength of the internalisation theory is its capacity to address the dilemma between the licensing of production to a foreign agent and own production.

Studies by Venables & Hans-Peter (1996) as cited by Agrawal & Ranjan (2011) further proposed that a large consumer market meant higher potential for consumption and thus more opportunity for trade. The results showed that countries with high growth rates tended to attract more FDI. Intuitively one could expect firms with relative persistence in high growth rates to achieve high future growth rates and thus establish their presence in fast-growing countries. Countries with a larger consumer market should therefore receive more inflows than that of smaller countries.

Culem (1988) argued that investors tend to prefer faster growing economies which are profitable and offer promising prospects. A larger host economy is more appealing to foreign investors as economies of scale are more likely to be captured. Similarly, a growing aggregate demand calls for new investment and as result stimulates FDI. High unit labor cost on the other hand restrains incoming FDI. Further studies by Dassgupta & Ratha (2000) as cited by Agrawal & Ranjan (2011) also show that countries with stable macroeconomic conditions and sustained growth rates receive further FDI in comparison to those countries with volatile economies.

Blomstrom (1992) supports this view and emphasizes that, developing the investment environment for foreign business will have beneficial implications for technology transfer to the host country. However it is not only about how easily financial markets can be accessed but how well the financial market is operating. Well-functioning financial institutions can therefore play a significant role in creating relations between domestic and foreign investors.

Table 1: Summary of Theoretical and Empirical determinants of FDI

Theoretical Determinants	Empirical determinants
Low Tariffs and taxes, transport, labor and material cost. large consumer market, sustained growth rates and stable macroeconomic conditions well-functioning financial market	Low unit labor costs, large market size educated population, minimal corruption political stability, Lower inflation

4. Objective of the Study

This study seeks to investigate which economic factors determine FDI inflows in South Africa. A basic multivariate econometric model framework that considers various interactions of FDI using data compiled from various sources was

conducted to establish whether there is a statistical relationship with Foreign Direct Investment and factors such as financial openness, market size, democracy, exchange and prime rates. Based on the empirical results from the econometric model, it is hoped that this study will help South Africa's national, provincial, and local governments understand, establish, refocus, and refine their FDI attraction strategies.

5. Research Hypothesis

Knowing what factors influence FDI can lead to useful policy implications. This study therefore intends to help South Africa's policy makers understand what drives foreign investors' choices and how they react to specific economic factors and policy issues. The study also explicitly covers the theory relating to the different types of FDI and the importance of FDI. It further compares South Africa's FDI inflows with similar countries in terms of economic potential.

6. Research Methodology

An econometric model approach was used to establish whether or not there is a significant relationship with the South African market size, exchange rate, interest rates, openness, post-apartheid period and incoming FDIs. Different multivariate regressions were run in stata (a data analysis and statistical software package) to test which variables determine South Africa's foreign direct investment inflows. The annual time series data used in this study were from 1970 to 2011 (41 years). In order for the output of regression to be satisfactory, the sample size has to be big enough, at least 35 numbers of observation. The data sources used were from the South African Reserve Bank online statistics, Stats South Africa, IMF World Economic outlook, International Financial Statistics databases, World Bank's "World Development Indicators database and World Data Bank." Table 2 indicates variables that have been used in the literature as proxies to the possible FDI Determinants.

Table 2: The possible FDI determinants and the proxies used

Determinants of Factors	Proxies used
Market demand and market size	GDP per capita GDP Population
Growth rate	GDP growth rate Industrial production index Interest rates Inflation rates
Infrastructure and other externalities	Infrastructure (highway per square kilometer, telephone lines) Degree of industrialization (domestic investment) Stock of foreign investment(cumulative FDI)
Cost-related locational factors	Dollar wages Unit labor costs Quality of labor Cost of capital (lending rates) Exchange rate volatility Level of taxation
Investment environment	Return on investment Exchange rate Prime rate
Trade and financial openness of the economy	Kaopen index Arear index Total trade amount Import/ GDP
Country risks	Political Risk index Financial Risk index

6.1 Instrumentation

6.1.1 Econometric model

An econometric model was used to establish whether a relationship exists between the explanatory and response variables and to what extent they exist. In so doing, it endorses or refutes the existing theory. The following explanatory variables were used to build the model:

6.1.2 Continuous variables

Continuous variables are variables that can take on infinite number of possible values that fall between any two values. Continuous variables included in the model were the GDP, GDP per capita, prime rate and exchange rates. These were included for various reasons:

6.1.2.1 GDP and GDP Per Capita

GDP and GDP per capita were considered as relevant indicators of growth and standard of living for a country whose market value of all final goods and services produced within the country amount to R2.9 trillion. This explains why South Africa certainly plays a key leading role in the regions' economic development.

6.1.2.2 Prime rates

Root (1984) as cited by Shoeman (2000) showed that capital flows to countries that have higher long term interest rate which later leads to higher returns. Furthermore, "capital will continue to flow from one country to the other until both interest rates and the marginal product of capital in the two countries are equal." Relatively high interest rates in the host country can have positive impacts on the inward FDI if investors are willing to reinvest and get higher returns in the country. However, this will not be beneficial to the investors that are planning to borrow funds in the host country. Contrary to the view held by Root, studies by Hymer (1995) posited that the amount firms can sponsor in a country will depend on where it can borrow the cheapest (a country which has the lowest interest rates). Prime rates were therefore among the independent variables that were used in the model. South Africa's prime rate was 8.5% on 24th October, 2012 (South African Reserve Bank, 2012).

6.1.2.3 Exchange rates

Exchange rates were also included in the model as movements in exchange rate can either benefit or worsen the chances for the host country to be chosen. Fontagné (1999) as cited by (Ruiz, 2005), states that exchange rates may affect the decision of receiving FDI and may therefore determine its relation with respect to trade. On one hand, an appreciation of the Rand may reduce the purchasing power of potential investors because it means they are getting less rands for a dollar. On the other hand, a depreciation of the rand may increase FDI as the purchasing power of investors will be higher as goods in the host country seem cheaper. This increases the relative wealth of foreign firms and hence their capacity to invest through the reduced cost of capital.

6.1.3 Dummy variables

A dummy variable is a variable that can take on a value of one if the observation meets specified criteria and a value of zero if otherwise. However, dummy variables can also be created; the following section on the "chin ito" index explains this better.

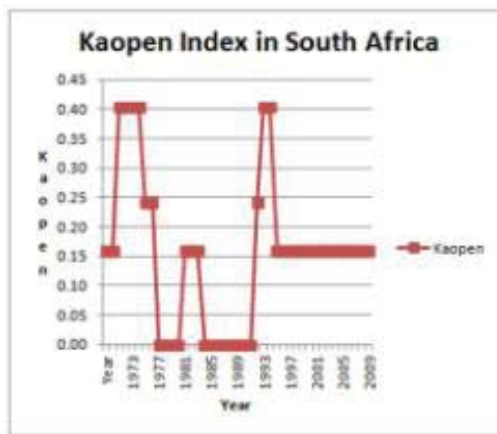
6.1.3.1 The Chinn-Ito (Kaopen) index

The Chinn-Ito index also known as Kaopen index was included in the model to measure the country's degree of capital account openness. The Kaopen index is based on the binary dummy variables that codifies the tabulation of restrictions on cross-border financial transactions reported in the IMF's Annual Report (Ito, 2007). "One of the merits of the kaopen

index is that it attempts to measure the intensity of capital controls, to the extent that the intensity is correlated with the existence of other restrictions on international transactions" (Aizenman, Chinn & Ito, 2011). Measuring the extensity of capital controls may be a good proxy to the measure of intensity of capital controls and how open the economy is.

The Kaopen indices are ranged from zero to one, the closer the index is to one the more open the economy is, the closer it is to 0 the more closed the economy. Exactly one means the economy is totally open and exactly zero will indicate a closed economy. In the South African data, there were only 4 different numbers (0, 0.16, 0.24 and 0.40) for indices since 1970. In the regression model a dummy variable was created using the kaopen index, 0 will take the value of zero indicating a closed economy, 0.16 will take the value of one indicating fairly low openness, 0.24 will take the value of two indicating moderately open and 0.40 will take three indicating fairly good openness, even though 0.4 is not even half way close to one. It is posited that the level of openness will be considered relative to itself rather than the rest of the world. Figure 2 shows the 40 year history of openness in the South African economy. As shown in figure 2, there was downturn during the 1970s up until the early 1990s; the turmoil that was going on in the country during that time might have had an effect on this.

Figure 2: 40 year history of the Kaopen Index in South Africa



Source: Chin Ito Data

6.1.3.2 Democracy

Democracy was used as a dummy variable representing the effects of pre and post-apartheid period on FDIs in South Africa. The net capital flows to South Africa became very unstable after political incidents such as the Sharpeville uprising in 1976. This was more evident after the "Rubicon speech" of the then prime minister, Mr P W Botha. This impeded investment, economic growth and job creation (Shoeman, Robinson & De Wet, 2000). It was worsened by economic sanctions, turmoil and eventually commodity prices also dropped. "In 1990, the economy shrank, meanwhile the total South African population was swelling by 2.5% a year, adding around one thousand newcomers to the labour force each day" (Homer-Dixon, 1995). With population growth, arose the problem of unemployment. The period from 1970 to 1994 will therefore take on the value of zero (0) representing all the hardships in terms of sanctions, violence and political instability the country experienced during that period. The period from 1994 to 2011 will take on the value of one (1) representing the post-apartheid (Democracy) effects on FDI flows.

6.2 Regression

Multiple regression tests were conducted in order to build a reliable model that would include a number of explanatory variables within the model. The following section shows the output and analysis from stata:

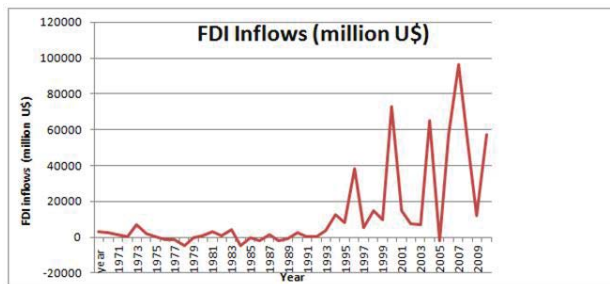
Before initiating the econometric model in stata, the "tsset" function was used in order to declare the data to be time series. Time series consists of observations on a variable or on several variables over time. In this study, the data

collected were from 1970 to 2011. When analyzing time series data, it is important to recognize that past events can affect the future and lags in behavior are prevalent. Time is therefore an important dimension in time series data sets (Wooldridge, 2009). Logs were taken on both sides of the equation for the ease of interpretation of results. The t denotes time and \ln denotes the natural logarithm as shown in general equation (1). Employing the logarithm on both sides of the equation implies a percentage change in the explanatory variable will lead to a percentage change in the response variable. Furthermore, “a logarithm form approximates a proportionate change” (Wooldridge, 2009).

$$\ln Y = \beta_0 + \beta_1 \ln \text{GDP} + \beta_2 \ln \text{GDP/capita} + \beta_3 \ln \text{Primet} + \beta_4 \ln \text{Exchange Rate} + \beta_4 \text{Kaopent} + \beta_4 \text{Democracy} + E \quad (1)$$

The variable (Y) on the left of equation 1 is called the response variable that is trying to be explained by the explanatory variables in this case it represents FDI. The variables on the right (GDP, GDP per capita, prime rate, exchange ret, kaopen index and democracy) are called explanatory variables and are used in the regression to test whether there is a relationship with the response variable FDI. The (E) which is the error term represents factors that cannot be explained by the explanatory variables. The idea is to see whether there is a relationship between FDI and the explanatory variables as indicated in equation (1). By using a model like this, a hypothesis on how much FDI will change by can therefore be derived by knowing how much GDP changed by.

Figure 1: 40 year history of FDIs inflows in South Africa



Source: World Bank Data

South Africa has attracted high volumes of foreign portfolio investment in the form of reasonably long-term equity inflows. The value of South African equity securities held by foreign portfolio investors increased from 8% of GDP in 1995 to 31% in 2009. When compared internationally, the IMF “s Coordinated Portfolio Investment Survey” suggested that the stock of foreign portfolio equity holdings in South Africa is higher relative to GDP than for upper middle income economies as a whole. This reflects the maturity of the domestic corporate sector, size and development of the local equity market (National Treasury, 2011).

It is important to note that the internationalization of some of the largest South African multinationals in the late 1990s has significantly added to the value of non-resident ownership of South African enterprises as reflected in the stock of FDI. The relocation of Anglo American, Billiton, Old Mutual and South African Breweries in the UK resulted in the existing South African operations of these firms being re-classified as foreign-owned in South Africa’s international investment position. In terms of their ownership of existing operations and subsequent investments in the country, these companies remain important multinational investors in the South African economy (National Treasury, 2011).

7. Data Analysis

This section explains some of the important variables and interprets the output from stata that is summarized in tables 2. The model tested financial openness (Kaopen), market size (GDP), interest rates and exchange rates. The results show that only exchange rate was a significant determinant for FDI at the 5% significance level. The p-value of the exchange rate (2%) was less than (5%), causing the null hypothesis to be rejected. The section on P-value will explain this concept better.

8. Research Findings

The number of observations also denoted by (n) is 41 (1970 – 2010). However by using logarithms, it is important to remember that (Ln) returns the natural logarithm of an exponential function and therefore cannot be taken on a negative number. In the years FDI inflows were negative (more investments were made outside the country than those coming in) stata assumes missing values and will automatically omit variables with missing values from the regression. So the 9 years that saw negative FDIs were omitted and the observations ended up at 32.

8.1 T (T STAT)

Inference on whether a single explanatory variable in the regression function is significant in explaining the response variable can be drawn by conducting the t test. The null hypothesis is shown in equation (2) as follows:

$$H_0: \beta_1 = 0 \quad (2)$$

The null hypothesis in equation 2 implies that if β_1 is the coefficient of Kaopen index (refer to table 3); this means that once GDP, prime and exchanges rates have been accounted for, the kaopen index has no effect on FDI (Y). The next step is to decide on the significance level, which implies the probability of rejecting H_0 when in fact it is true.

If the significance level is set at 5%, this means that individuals are 5% more likely to reject the hypothesis when it is in fact true. The alternative hypothesis is shown in equation (3) implies that individuals are looking for sufficiently large values in order to reject ($H_0: \beta_1 = 0$) in favour of ($H_1: \beta_1 \neq 0$). "With a 5% significance level, the definition of "sufficiently large" means that this is the 95th percentile in a t distribution with $n - k - 1$ degrees of freedom. The rejection rule is that H_0 is rejected in favour of H_1 at the 5% significance level if $H_1: \beta_1 \neq 0$ " (Wooldridge, 2009).

The 95% confidence interval implies that the t static is 95% likely to lie within that range. Then again, the t stat will have to be compared to the critical value that can be taken from the t test critical values. If the t stat falls within 5% parameter end of the tails of the t critical value, the variable will be rejected but also implying that there is a significant relationship with the dependent variable. Comparing the t stat and critical value can be a little time consuming if critical tables are not available, so a better measure to use is a the P – value.

$$H_1: \beta_1 \neq 0 \quad (3)$$

8.2 P-Values

P- value is the probability that if the hypothesis is true, the test statistic would have as extreme as or more extreme than the one obtained. If the P-value is greater than the significance level, the hypothesis will not be rejected implying that there is no relationship between the explanatory and the response variables. If the P-value is less than the significance level, the hypothesis is rejected but in statistics this implies there is a significant relation between the explanatory and the response variables. Assuming the significance value is 5% in table 3, the p-value of kaopen index (65%) is greater than (5%) significance level. So the null hypothesis is not rejected and this infers that there is no relationship between the kaopen and FDI. However, if you consider the p- value of exchange rate 2%, it is less than 5% significance level. This implies reject the null hypothesis $H_0: \beta_1 = 0$ and hence exchange rates are a significant factor in explaining FDI in the host country.

8.3 R- Squared (R^2)

R^2 also known as the goodness of fit measures how well the explanatory variables (market size, financial openness, and exchange rates) explain the response variable Y (Foreign Direct Investment). The value of R^2 is always between zero and one and can be multiplied by 100 and read in percentage form. The higher the R^2 , the better the fit of the model and the lower R^2 , the poor fit. (Wooldridge, 2009). The R^2 in table 3 was 73%, indicating it is a good fit because half of the variation in the model can be explained by the explanatory variables.

8.4 Adjusted R Square ($adj R^2$)

Whenever explanatory variables are added to a model, R^2 always gets higher even though the explanatory variables are not significant. Adjusted R^2 takes into account the number of explanatory variables included in the regression model. As new variables enter into the regression equation $adj R^2$ does not increase but instead it tends to stabilize. From the

summary output of the regression analysis in table 3, the adjusted coefficient of determination is 69% indicating that the model is still fairly good fit.

8.5 Total Sum of Squares (SST)

SST is the measure of the total sample variation in the estimated response variable y (FDI). Total sum of squares can be calculated by adding the sum of squares of the model which measure the sample variation of explanatory variables and the sum of squares of residuals which measure the variation in (E) (Wooldridge, 2009). SST is useful in that it helps to calculate R², it is simply calculated by dividing the model sample variation by the total variation (162/223) = 73% as shown in table 3.

8.6 Beta Coefficient (Slope)

The beta measures the sensitivity of the response variable (FDI) given changes in the explanatory variables. While keeping everything else constant, a percentage change in exchange rates will lead to 3.37% positive change in FDI.

Table 3: Regression 1 in Stata

RegLn_FDI_R_Mil kaopen lnGDP lnPrime lnExchange						
Source	SS	Df	MS	Number of Obs = 32		
Model	162.19	4	40.55	F(4, 27) = 17.92		
Residual	61.08	27	2.26	Prob> F = 0.00		
Total	223.27	31	7.20	R-squared = 0.73 Adj R- squared = 0.69 Root MSE = 1.50		
Ln FDI_R_Mill	Coef.	Std.Err.	t	P> t	[95%Conf. Interval]	
Kaopen	0.15	0.32	0.46	0.65	-0.52	0.81
lnGDP	-0.41	0.69	-0.59	0.56	-1.83	1.01
lnPrime	-2.02	1.01	-2.00	0.06	-4.10	0..5
lnExchange	3.37	1.30	2.58	0.02	0.69	6.05
_Cons	4.47	7.34	0.61	0.55	-10.59	19.53

Source: output from stata

In the following regression in table 4, trade openness, market size, prime rate, exchange rates and dummy variable democracy were used as explanatory variables to determine FDI. Results show that only democracy was a significant predictor for FDI. A percentage change in democracy or policies that promote democracy will lead to a 3.65% increase in FDI inflows ceteris paribus. On the other hand, all the p-values of kaopen index, GDP, prime rate and in this particular regression, exchange rate p-values were higher than the 5% significance level. This implies that the null hypothesis will not be rejected and therefore no significant relationship. The R² (80%) was fairly good, indicating that 80% of the variation in FDI inflows in South Africa is explained by variation in the explanatory variables; financial openness, GDP, democracy, prime and exchange rates even though only one variable was significant.

Table 4: Regression 2 in Stata

RegLn_FDI_R_Mil kaopen lnGDP lnPrime lnExchange						
Source	SS	Df	MS	Number of Obs = 32		
Model	178.513	5	35.702	F(5, 26) = 20.740		
Residual	44.754	26	1.721	Prob> F = 0.000		
Total	223.267	31	7.202	R-squared = 0.800 Adj R- squared = 0.761 Root MSE = 1.312		
Ln FDI_R_Mill	Coef.	Std.Err.	t	P> t	[95%Conf. Interval]	
Kaopen	-0.340	0.323	-1.050	0.304	-1.00	0.33
lnGDP	-0.326	0.605	-0.540	0.594	-1.569	0.916
lnPrime	-1.12	0.93	-1.210	0.239	-3.029	0.789

lnExchange	1.222	1.336	0.920	0.369	-1.524	3.969
Democracy	3.651	1.186	3.080	0.005	1.214	6.089
_Cons	6.324	6.431	0.980	0.335	-6.895	19.543

Source: output from stata

While using prime rates, kaopen index, GDP per Capita and democracy, the regression model in table 5 lnGDP_Cap.D1. (Δ lnGDP_Cap) is interpreted as a percentage change in GDP per capita between the years. The results from stata show that democracy was again significant; a percentage change in promoting democracy policies which improves the political stability of the nation will lead to a 5.14% increase in FDIs. A percentage change in interest rate will also lead to a 3.05% increase in FDI at the 10% significance level. (Refer to Table 5).

Table 5: Regression 3 in Stata

Prais-Winsten AR (1) regression – iterated estimates Linear regression						
Number of Obs = 31						
F(4, 26) = 20.750						
Prob> F = 0.000						
R-squared = 0.748						
Adj R- squared = 0.761						
Root MSE = 1.323						
Ln FDI_R_Mill	Coef.	Semirobust Std.Err.	t	P> t	[95%Conf. Interval]	
LnGDPCAPD1.	0.856	9.002	0.100	0.925	-17.648	19.361
Kaopen.D1	0.296	0.338	0.880	0.388	-0.398	0.991
Democracy	5.138	0.727	7.060	0.000	3.642	6.634
lnPrimeD1.	3.051	1.691	1.800	0.083	-0.424	6.526
_Cons	4.395	1.199	3.670	0.001	1.930	6.861
rho	0.139					

Durbin- Watson statistic (original) 1.461

Durbin- Watson statistic (transformed) 1.668

Source: output from stata

Most of the past literature showed that that market size of a country and openness of an economy are likely to be linked with FDI than other potential determinants. The previous two regression employed in the models using South African data do not capture this kind of relationship. The following regression in table 6 took lag effects into account. The model allowed more than one variable to be affected by a one year lag. These variables were lnGDPcap LD. (GDP per capita) and lnFDI LD. The (LD) is just a function for lag and can also be represented as t-1 as shown in equation 4. Other variables included in the regression were kaopen, democracy, prime, GDP per capita of the same year. The idea is to establish whether there is a relationship that can exist between last years' GDP per capita, last years' FDI, trade openness, prime and democracy with the current year FDI.

Serial correlation can also be high when using time series data, the "prais" function was therefore used in stata to correct the generalized least-squares to estimate the parameters in the regression model if the errors were serially correlated.

In table 6, the regression estimation indicated that the FDI flows are well explained by standard economic fundamentals such as trade openness, democracy, previous year GDP per capita and previous year FDI. Intuitively, GDP per capita can be interpreted in terms of the potential demand for output in the economy. GDP per capita is a proxy for economic development and growth; investors would like to see that the country they are investing in is growing consistently. For this reason, it makes sense to consider the GDP per capita over time rather than the current year GDP per capita. In the words of Kinoshita (1998) as cited by Rojidi (2011), "it takes time for the stock of FDI to reach the optimal level. Moreover, there might also be important causality with regards to the size of the market, wages and openness which are hypothesized to affect FDI but the causality may also run from FDI to these variables as well and should thus be taken into account."

In table 6, the effect of the openness of the host country seems to have a smaller effect in attracting FDI. A

percentage increase in the kaopen index will only lead to a 0.94% increase in FDI. The magnitude of the lagged GDP per capita is even greater; a percentage increase in the previous year GDP per capita will lead to a 31.61% increase in FDI. Alternatively a percentage change in the previous year FDI will lead to 0.51% decline in FDI. The regression seems to be robust with a goodness of fit of 63%, implying that 63% of the variation in FDI in South Africa can be predicted by previous year's FDI and GDP per Capita, democracy and trade openness. The Durbin-Watson statistic which tests auto correlation was 1.64, which is close to 2 indicating there was no problem of autocorrelation in the sample.

$$\Delta \ln FDI_t = \beta_0 + \beta_2 \Delta \ln GDP/capita_{t-1} + \beta_4 Kaopen_t + \beta_3 \Delta \ln Prime_t + \beta_4 Democracy_t + \beta_4 GDP/Capita_{t-1} + \ln FDI_{t-1} + E \quad (4)$$

Table 6: Regression 4 in Stata

Prais-Winsten AR (1) regression – iterated estimates Linear regression						
Number of Obs = 23						
F(4, 26) = 11.700						
Prob> F = 0.000						
R-squared = 0.630						
Root MSE = 1.323						
D.LnFDI_R_Mill	Coef.	Semirobust Std.Err.	t	P> t	[95%Conf. Interval]	
LnGDPCAPD1.	17.128	11.633	1.470	0.160	-7.533	41.789
Kaopen.D1	0.938	0.225	4.160	0.001	0.461	1.416
Democracy	3.342	0.897	3.730	0.002	1.441	5.243
lnPrimeD1.	2.638	2.791	0.950	0.359	-3.278	8.555
LnGDPCAP LD.	31.607	11.554	2.740	0.015	7.112	56.102
Ln FDI_R_Mil LD.	-0.508	0.177	-2.870	0.011	-0.883	-0.132
_Cons	-6.780	1.536	-4.420	0.000	-10.036	-3.535
rho	0.321					

Durbin- Watson statistic (original) 1.454

Durbin- Watson statistic (transformed) 1.640

Source: output from stata

8.7 Comparison with Other Countries

This section compares South Africa with similar countries in terms of attracting FDI. In knowing what fellow peers have done, South Africa can choose to emulate strategies that worked for those countries and avoid those that did not work.

The South African economy displays many characteristics associated with developing countries. It applies a mixed economy to address the legacy of apartheid with the state's role being dynamic and shifting emphasis to meet the changing developmental needs. South Africa is the economic power house of its southern African neighbours and accounts for approximately 30% of the continent's GDP. South Africa's industrial output and mineral production makes 40% and 45% of total output in the continent and the country generates 50% of Africa's electricity in 2009 (South African Consulate General, 2012).

Emerging economies of Brazil, Russia, India, China and now South Africa (BRICS) have acquired an important role in the world economy as producers of goods and services. The countries are attracting large amounts of investors around the world based on the characteristics of big land size, fast economic growth, large population and potential consumer market (Agrawal & Ranjan, 2011). However FDI inflows differ for each country and these differences raise interesting questions for both academia and policy makers as to why the (BRICS) countries have performed differently in attracting inward FDI.

China, by far the leading market destination of FDI, received US\$ 185.8 billion inflows in 2010 where as Brazil, Russia, India and South Africa attracted US\$ 48.5, US\$ 43.3, US\$ 24.2 and US\$ 1.2 billion respectively (World data bank, 2012). According to IMF, "the BRIC countries had a share of 46.3% of global GDP growth based on purchasing power parity in dollars while the G7 countries only contributed 19.8% during the period 2000 to 2008" (Agrawal & Ranjan, 2011).

While some literature shows that labor costs are an important determinant of FDI, World Bank and IMF reports show that "South Africa has been attracting far less foreign direct investment and exporting less industrial output than many countries in the same peer group. In a country where trade unions demand salary hikes more than double the rate

of inflation, this triggers high labor costs and low manufacturing productivity. As a result this has been holding back FDI inflows to the economy(Ngcobo, 2012).

China on the other hand, has an abundant supply of human capital of 1.3 billion people and labor participation rate of 59% compared to South Africa which has 49 million and labor participation of 36% in 2010. Unit labor costs have been higher for South Africa than in China, South African managers earn nine times as much as unskilled workers compared to three times as much in Brazil and about twice as much in China. In addition, while 80% of South African labourers reported that they had not received any training, between 60% and 80% of unskilled and skilled workers in China and Brazil reported to have received training (George R.G. Clarke, n.d.). This enhances the quality of labor and skill abilities provided in China and as a result, the country sees an inflow of MNC wanting to build relationships with them.

Since the beginning of the economic reform in 1978, the Chinese Yuan had been on a devaluation track until 1994. During that period, FDI into China surged, the cost of Chinese labor and other productive inputs relative to foreign production costs reduced significantly. This reinforced China's comparative advantage in labor-intensive industries and strengthened its competitiveness in attracting FDI. Moreover, as the devaluation decreased prices of domestic assets, this encouraged foreign firms to acquire them. The wealth and production cost effects induced by the devaluation were too large to be ignored by multinational enterprises (Xing, 2006).

Though South Africa has been attracting higher direct investments within the African continent, but the country's FDI net inflows as a percentage of GDP is still low (0.37%) compared to (3.12%) in China as shown in table 7.

Table 7: Differences Between South Africa and Comparator Countries BRICS in 2010

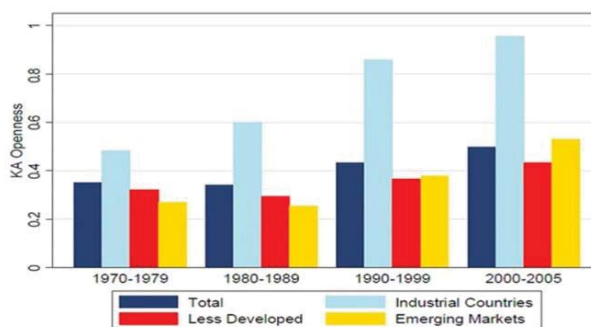
Variables	Brazil	China	India	Russia	South Africa
Foreign direct investment, net inflows (% of GDP)	2.26	3.12	1.43	2.91	0.34
GDP (current US\$)	2.14E+12	5.93E+12	1.68E+12	1.48E+12	3.64E+11
GDP growth (annual %)	7.53	10.40	9.55	4.30	2.89
GDP per capita (constant 2000 US\$)	4716.61	2426.33	794.80	2926.53	3753.45
GDP per capita (current US\$)	10992.94	4432.96	1375.39	10481.37	7271.73

Source: World data Bank

The African continent has been less favorable in comparison to Asia and Latin America. Studies by Morisset (2000) showed that the reforms in many African countries have been incomplete and as a result not entirely convinced foreign investors to develop activities that are not natural resources dependent and aimed at regional and global markets.

Industrialized countries on the other hand, have maintained high levels of financial openness throughout the period and steadily increased since the 1970s. Interestingly, both the less developed and emerging market countries groups slowed down the efforts of opening financial markets during the 1980s and accelerated financial opening since the 1990s as shown in figure 3 (Ito,2007).

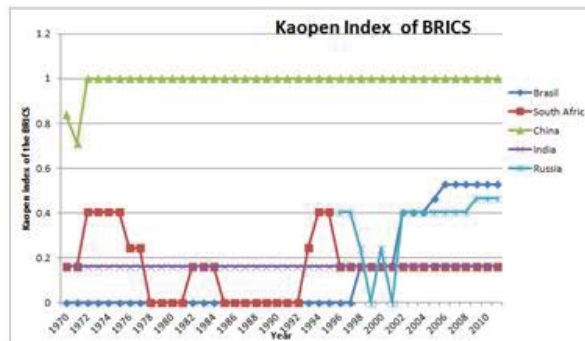
Figure 3: Development of capital account openness measured by the Kaopen Index in Industrialized, Less Developed and Emerging Market Countries



Source: (Ito data)

As shown in figure 4, South Africa's financial openness is still relatively low in comparison to its peers such as China which has maintained a kaopen index of 1 for the past 40 years. India has performed relatively low compared to South Africa with a constant kaopen index of 0.16 for the past 40 years. Brazil was practically closed from 1970 up until 1998 when it opened up its economy. There has not been information for Russia's Kaopen index prior 1996 but has been volatile but higher than South Africa's financial openness (Ito, 2007).

Figure 4: Kaopen Index of the BRICS countries



Source: Chin Ito Data

9. Discussion

Results from the regressions showed that financial openness, democracy, lagged GDP per Capita and lagged FDI have been important ingredients into making the country attractive FDI and to a lesser degree exchange rates and interest rates. In the final regression in table 5, results showed a positive relationship between the GDP per capita and FD, a percentage change in the GDP per capita will lead to a 31.60% change in FDIs given that all else is constant. This is in line with Venables & Hans-Peter, (1996), Duran (1999), Dassgupta & Ratha (2000) and Asiedu (2002) as cited by Agrawal & Ranjan (2011) who proposed that stable growth rates coupled with a sizeable consumer market which imply a higher potential of consumption and more opportunity for trade, will eventually attract more FDIs. The positive and significant lagged value of the dependent variables also confirms the existence of dynamism and endogeneity in FDI modeling. This is in line with Quazi's (2005) as cited by Rojid & Seetenah (2011) argument that foreign investors are typically risk averse and tend to invest in countries that they are familiar with as they gain more confidence over time.

10. Conclusion

This study investigated the determinants of FDI for South Africa, for the period 1970 to 2011. An econometric model approach was used to establish whether or not there is a significant relationship with the South African market size (GDP), market growth (GDP per capita), exchange rate, interest rates, financial openness (Kaopen index), post-apartheid period and incoming FDIs. Different multivariate regressions were run in stata to test which variables determine South Africa's FDI inflows.

Experiences on what drives foreign investors' choices on investing in emerging economies largely differ. In a group of countries comparable to South Africa trade potential, market size, labor cost, skills availability, openness and exchange rates were among the important factors attracting FDI. South Africa has some way to go before it reaches the FDI levels of comparator countries. Even during the period after independence, South Africa had lower rates of growth, less trade openness, less deep telecommunication infrastructure, weaker labor skills and slightly less competitive tax rates (Ricci, 2005). However, it should be noted that the magnitude of FDI inflows in China, Brazil, India and Russia be relatively higher because South Africa is a smaller economy.

11. Recommendations

FDI can act as a catalyst to stimulate growth, employment and redistribution strategy for a country whose private investment has been constrained by low savings. Given that unemployment (25.5% in 2011) in South Africa is a major problem, coupled with low national savings, in turn impact growth. The country depends on FDI to not only bridge the current gap between savings and investment, but to expand investment to more acceptable levels as well (Shoeman, 2000). FDI can therefore help address the saving deficiency and promote economic growth (Murshid, 2002). In addition, FDI can also enhance the source of foreign exchange inflows that can help strengthen South Africa's international reserves in order to allow for a sustained improvement in the country's external position.

Although the comparison showed that cheap labor and training of the labor force attracted higher FDI as seen in the Chinese economy, this was not the case for South Africa. Labour in South Africa is not cheap and only a handful of the management reported they received training. The South African government can therefore invest more in training the labor force and maybe setting up more realistic goals for the labor unions.

The core long term sustainable economic growth for South Africa is to maintain an open environment for investment. As a low-savings developing economy, with high domestic investment requirements, the country requires to attract foreign direct investment in order to support domestic investment financing requirements. In line with the National Treasury (2011) the review framework for cross-border direct investment can aim to maintain an open environment for inward FDI with the following objectives: To encourage new inflows of foreign capital - with expected benefits for employment, growth and competition - while safeguarding public interests relating to strategic cross-border acquisitions and corporate restructuring, to support consistency in policy on inward investment across government departments, to support the growth of South African companies domestically and abroad with long-term benefits for the South African economy, to provide policy certainty for investors through the transparency of decision-making and to support the overall policy framework for the management of the macroeconomic benefits and risks arising from cross-border capital flows.

The existing regulatory framework in a country may either enhance or hinder FDI. South Africa is ranked fairly in terms of the regulatory restrictive index. Foreign investors are not systematically disadvantaged relative to domestic investors as a non-discrimination approach to regulation applies, main component of operational restrictions coming from foreign owned firms with equity restrictions. The main objective of the incoming investments are expected to have net economic benefits across most sectors of the economy. Existing regulations or policies as placed by the National Treasury (2011) to address these objectives include: Protecting the tax base, balancing the benefits and risks of cross-border direct investments, facilitating the growth of South African companies in both domestic and international markets in order to deliver broader economic benefits and supporting the stability of the financial system and well-functioning domestic financial markets and institutions.

Joint ventures, Greenfield investments, mergers and acquisition characterize South Africa's businesses. However, "acquisition of domestic enterprises often creates apprehension over potential negative effects in the host economy. These concerns include the perceived risks for employment, production, exports and R&D at the firm level; as well as issues of corporate governance, competition, security of the tax base, and the identity and control of national champions. FDIs in form of Mergers and acquisitions in South Africa are subject to screening and approval under the Competition Act. The Competition Commission or Tribunal will firstly consider the effects of the merger on competition. If there are adverse implications for competition, then it will determine whether there are offsetting gains and whether the merger can be justified on public interest grounds (National Treasury , 2011).

All things considered, the econometric model used in this study was valid. However ever adding on more explanatory variables such as unit labour cost, well-functioning financial market, inflation and education of the population would yield much more realistic results based on the special characteristics of the South African economy. Among the significant factors (financial openness, democracy, lagged FDI and to a smaller extent exchange and rates) that determine FDI in south Africa, GDP per capita had by far, the highest magnitude influencing FDI inflows in South Africa. Policy makers should therefore work on the factors that will increase the GDP per capita so as to increase direct investment in South Africa. A further collaboration with institutions such as Industrial Development Corporation (IDC) and the development bank of South Africa (DBSA) which have fostered many of South African businesses through providing funding and sharing risks of projects will be ideal.

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