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Trade and Investment in South Africa

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Abstract

A strong and sustained economic growth emanating from trade and investment is needed to confront the challenges of unemployment and poverty. The mining sector is not performing as well as it used to, in South Africa. Reliance on minerals for production has its challenges, for example, being interrupted by strikes, resulting in nonproduction. To fill this gap, using a vector error correction approach, the influence of oil and exchange rate on foreign direct investment (FDI) using quarterly data from January 2008 to January 2017 is investigated. The results for the Johansen approach show that the variables are cointegrated and that there is one cointegrating equation. The long-run cointegration equation shows that oil price and exchange rate have a negative long-run relationship with FDI. The country should continue to focus on policies aimed at strengthening its exchange rate and stabilizing oil prices.

Keywords: trade, investment, exchange rate, oil price, foreign trade investments

1. Introduction

Trade involves the transfer of goods or services from one person or entity to another, in exchange for money. A system or network that allows trade is called a market. There are two types of trade, namely, retail trade and wholesale trade. Retail trade involves the sale of goods from a very fixed location such as a store, in small or lots, to a purchaser, while wholesale trade is defined as traffic in goods that are sold as merchandise to industrial, commercial, institutional or to other wholesalers.

Investment is defined as the current commitment of resources in order to achieve later benefits. If resources and benefits take the form of money, investment is the present commitment of money for the purpose of receiving money later. In some cases, such as the purchase of a bank certificate of deposit, the amount of money to be obtained later is known. However, in most situations, the amount of money to be obtained later is uncertain [1].

In a report which was recently released by Statistics South Africa [2], under the “Environmental Economic Accounts Compendium”, it was estimated that the country has 239 years of platinum-group metals (PGMs) reserves, while coal has 118 years of reserves available, and that there are only 38 years with regard to the amount of gold resources remaining [3]. The report also indicated that in the mining industry, gold was once the biggest employer; however, this all changed in the year 2006 when PGMs took the lead [4].

PGMs are made up of six essential metals, namely, platinum, palladium, osmium, ruthenium and iridium. These are considered to be the important raw materials. PGMs play a significant role in the manufacturing process as they are used in commercial applications and the production of different technologies such as computer hard drives, monitors and medical tools and are also used in industrial processes. PGMs are said to also play a huge role in the automotive sector [5].

PGMs contribute greatly to South Africa's mining production. It has been seen over the years that the performance of PGMs has either a positive or negative effect on the performance of other minerals and mining production as a whole. A decline in the production of PGMs has led to the increase in the production of other commodities and vice versa.

It is evident that in South Africa, there is a tendency of over-reliance on certain minerals, such as PGMs, and as a result, this leads to other minerals not performing as well as they should. The mining in South Africa is not performing as well as it used to many years ago; however, it is still considered to be the country's most important employer. It was reported that in the year 2007, the mining sector employed 493,000 workers [6]. In South Africa, the well-known minerals that are mined include platinum, gold, coal and iron ore. South Africa is commonly known for its commodities. However, according to a recent mining report, the PGM industry has the largest number of employees, and this is followed by the gold and coal industries [2]. It is evident that gold production is not performing as well as it used to when mining practices began.

Disruptions or unforeseen situations such as industrial actions or strikes negatively impact industries such as the mining industries. An example of this was in the year 2014 when the South African mining production decreased, and this was caused by strikes which occurred in the sector. According to Stats SA [3], the decline in mining production was mainly caused by the decline in PGMs as a result of strike. The industrial action lasted slightly 5 months during that year.

Since over-reliance on PGMs has adverse results from instability, investigation of the determinants of foreign direct investment (FDI) in growing the economy is important. Investigating the drivers of FDIs will help the country or investors in monetary gain by making informed decisions.

FDI can be explained as when an organization or individual in a particular country is interested in another country's business, either building up business operations or procuring business resources in another country, for example, proprietorship or controlling enthusiasm for an outside organization. FDI includes capital streams starting from one country to another, conceding broad proprietorship stakes in local organizations and resources. Foreign investment signifies that foreigners have a significant role in the administration of a certain country as part of their investment. In simple terms, it can be said that foreign direct investment is a major form of international capital transfer.

Over the previous decade, developing countries around the globe encountered generous development in their economies, with considerably faster development in global exchanges, particularly in the type of FDI. The net offer FDI of world gross domestic product (GDP) has developed more than five times in both the 1990s and the early twenty-first century, making the results and causes of FDI and monetary development a subject of regularly developing intrigue [7].

According to [8] gold, oil and the exchange rate have received much attention recently from investors, traders, policymakers and producers, partly because of the recent flare up in their prices, increases in their economic uses and synchronization of their movements. Their relationships have even attracted the attention of lay persons.

Policymakers have frequently discussed the link between oil prices and exchange rates in recent years, particularly the idea that an appreciation of the US dollar triggers a dip in oil prices [9]. Empirical research is not so clear on the direction of causation, as there is evidence for bidirectional causality. For example, some studies find that an increase in the real oil price actually results in a real appreciation of the US dollar, while others show that a nominal appreciation of the US dollar triggers decreases in the oil price.

The reverse relationship between the value of US dollar and that of gold is one of the most discussed about relationships in currency markets, and most of the international transactions take place in dollar equivalent. The major reason behind the relationship of gold and USD/INR exchange rate is that gold is used as a hedge against the adverse exchange value of dollar. As the dollar's exchange value decreases, it takes more dollars to buy gold, which increases the value of gold. The value of dollar can be at a potential risk of fluctuation through various factors like shifts in monetary policy, international trade, etc., but the value of yellow metal is largely determined by supply and demand, without interference from shifts in monetary and corporate policies. Therefore, there is a need to investigate the influence of exchange rate and oil on attracting FDI.

The previously mentioned information demonstrates that in supreme terms, South Africa's appeal has improved; however, in contrast with other developing countries, South Africa has not been attracting FDI. The question at hand then is "what method can South Africa use to draw more FDI?" This is a very important question, in light of the fact that FDI can play a major role in the continent's development. FDI can fortify household speculation, encourage innovation exchange, make business, advance fares and, most importantly, produce financial growth. The part of FDI as a wellspring of wealth is especially critical in South Africa, in a setting where net official development assistance (ODA) to the country declines.

To fill the gap identified, this chapter seeks to understand the nature of the relationship between FDI, oil price and exchange rate in order to investigate the determinants of FDI for South Africa. It investigates the drivers of FDI using the vector error correction model (VECM) approach. There is a need for knowledge dissemination and culture change to enable innovation and collective problem-solving, only then will the investment flow with the creation of sustainable employment and economic growth.

This chapter is organized as follows: Section 2 discusses related works. Section 3 discusses the research methodology, while Section 4 discusses the analysis and results. The conclusion and recommendations are discussed in Section 5.

2. Related works

2.1 Mining production and sales

The South African mining sector has contributed positively to the country's economy, specifically impacting the increase in employment and GDP through trade. The mining industry has played an important role in the contribution to civilization and human existence [10]. Mining is considered to be the second earliest human endeavour, while agriculture is considered the first. To date, these two industries have continued to play an important role in the economy since the beginning of civilization [10]. Mining is not and has not always been the only major contributor to the economy as the manufacturing industry was considered to be the

largest in the year 1980, making the mining industry the second largest industry, followed by agriculture [3].

Mining practices in South Africa began about 165 years ago. It started with the discovery of diamond followed by that of gold a few years later. These two discoveries played a significant role in the growth of the South African economy. According to [2], the 1970s are best remembered as the decade in which the South African mining sector greatly influenced the economy and employment. The contribution to the economic production reached its peak in the year 1980, and in 1987 the mining industry employed more than 760,000 individuals [2].

2.2 Retail sales

Retail sales are sales of finished goods and services sold to either consumers or businesses. Fluctuations in retail sales are a matter of concern for businessmen and businesswomen, investors and policymakers [11].

According to [12], aggregate retail sales are a summative measure of sales of retail goods over a stated period of time, typically grounded on a data sampling that is extrapolated to model the entire retail sales of a country. Evaluating consumer demands for finished goods, aggregate retail sales help measure the pulse of an economy and its estimated path towards growth [12]. Similarly, to other various economic time series, South Africa's aggregate retail sales have a strong trend and seasonal patterns. Modelling and forecasting these patterns have been a long-standing issue in time series.

According to [13], several years ago, worldwide, participants (buyers and sellers) were individual retail investors and institutions such as banks, insurance companies and hedge funds and also publicly traded corporations trading in their own shares. Investors such as wealthy businessmen were market participants. Previously, markets became more "institutionalized". Buyers and sellers were institutions such as insurance companies, mutual funds, index funds, investor groups, banks and various other financial institutions.

Presently, participants in the stock market array from small individual stock investors to large hedge fund trader. Their orders regularly end up with a professional at the stock exchange, who completes the order. Most stocks are traded at the exchanges, for example, the Johannesburg Stock Exchange (JSE), which are places where participants decide on a price. The key objective of a stock exchange is to simplify the exchange of securities between participants, thus providing a marketplace.

2.3 Food and beverage sales

The food and beverage sector is a critical sector of the South African economy, as indicated by [14]. It represents 18% of assembling deals (sustenance (13.5%) and drinks (4.4%)) and 17% of gross esteem including the assembling segment and utilizes around 230,000 workers in 2009 [3]. The area is a piece of the nourishment business esteem chain, which comprises of cultivating and the generation of crude farming produce; preparing of crude horticultural wares; fabricating, changing the crude and handled delivery into completed or prepared wares; wholesalers and retailers of the completed items; and buyers.

The South African food and beverage sector concentrates on the third connection in the chain beneath and changes through mechanical procedures and agrarian wares into semi-handled or completely prepared nourishment fixings or items. In spite of the fact that there are up- and downstream interdependencies, the nourishment and drinks fabricating part contrasts from the essential horticulture segment through its unpredictability, utilization of capital-concentrated innovation

and forms and the substantial number of providers, merchants and directs engaged with taking the items to business sectors.

As indicated by the arrangement of monetary exercises in South Africa, the food and beverage sector incorporates the assembling of sustenance items and refreshments, be that as it may, as opposed to the training in most different nations, it prohibits the tobacco-producing area, which is incorporated in the rural division. As indicated by [15], the food and beverage sector is critical in South Africa on account of its high level of forward and in reverse linkages with different enterprises, which enables it to assume an imperative part in quickening monetary action. The food and beverages sector is suited to South Africa's creating nation qualities because handling plants are not generally scale-reliant and little operations might be as monetarily productive as bigger plants, subsequently promising the cooperation of small, medium and microenterprises (SMMEs) in specialty markets [16].

2.4 The banks' stock prices

Stock prices are share prices of several numbers of saleable stock of a company. Stock prices are sold and bought to improve the credibility of a company so that investors can come into the company and invest. In addition, selling stock helps the company grow. An empirical study that was done by [17] says that the stock price index is an indicator for reference issued by the financial service institutions that show change in the stock market. The researcher continues to say that it mainly denotes the general trend of stock price and the change range for the market so that it provides investors with real-time movement of the stock market.

2.5 Foreign direct investments

In 1970 (the first year for which FDI information was accessible), the aggregate sum of FDI inflows in Africa was \$1.26 billion, and it rose to \$55.04 billion in 40 years. This means that from 1970 to 2010, FDI inflows expanded by 4.268% which is a commendable achievement. Nonetheless, for a decent appraisal of the circumstance, it is smarter to put Africa's achievement into a relative point of view. The picture painted here is extraordinary. In 1970, Africa's offer in the worldwide FDI inflows was 9.5% dropping to 4.4% 40 years later. Similarly, the offer of Africa in building up the nation's FDI inflows was 32.8% in 1970, dropping to 9.6% 40 years later. As per information from the [18] World Bank's 2014 World Development Indicators, Africa's normal net official development assistance as a level of gross national salary decreased from 5.3% in 2005 to 4.2% 3 years later and later decayed to 3.3% in 2012. Africa and other developing regions are probably going to keep accepting less ODA, because of monetary challenges, which restrain numerous Western benefactor nations to give improvement help to developing nations. Africa gets less ODA, while its requirement for advancement financings stays very large. In reality, it has been evaluated that about \$186 billion will be required every year to back Africa's post-2015 advancement motivation [19]. Accordingly, Africa needs to discover elective assets for financing its improvement, and FDI is an essential alternative. The uplifting news for Africa is that, over the previous years, the continent has been one of the quickest developing regions on the planet, which makes it one of the potential outskirts markets. This builds financial specialists' interests in Africa. On the other hand, FDI streams will not consequently appear, and efforts should be made to change the potential into real FDI streams to Africa. [20] emphasize that literature suggests the emergence of policy and non-policy factors as determinants of FDI. The non-policy factors in determining the determinants of FDI would include market size, distance factor proportions and political

and monetary dependability. The policy factors in determining the determinants of FDI would include openness to trade, product market regulation, labour market arrangements, corporate tax rates and infrastructural developments [20].

3. Materials and methods

The data employs quarterly data in all the variables and was sourced from the South African Reserve Bank (SARB). The variables studied are foreign direct investment, exchange rate (EXRATE) and crude oil price (OIL). FDI was used as a dependent variable, while EXRATE and OIL were used as independent variables. Monthly data on these commodities' spot prices cover a 5-year period, from January 2008 to January 2017. E-Views 8 software was used to run the specified models. The table below shows the descriptive statistics of the data (Table 1).

The augmented Dickey-Fuller (ADF) test was used to test for a unit root (nonstationary) in the series and to determine the order of integration in the variables. The optimal lag length which removes serial correlation in the residuals as well as determines the deterministic trend for the vector autoregression (VAR) model was determined in order to apply the Johansen test for cointegration analysis. The Johansen test has two likelihood ratio tests of significance, trace test and maximum eigenvalue test. For choosing the lag order for the VAR, the lag selection criteria approach was applied. The vector error correction model approach was used to evaluate the short-term properties of the time series. Adequacy of the model was tested by performing diagnostic and stability tests.

The coefficients obtained from the estimation of the VAR model may not be proper to interpret directly. Hence, both impulse response functions and the variance decomposition were used. Impulse response functions are used to trace out the dynamic interaction among variables. It shows the dynamic response of all the variables in the system to a shock or innovation in each variable. In other words, it focuses more on the increase or decrease in trend rather than the actual value of the variable. On the other hand, variance decomposition is used to detect the causal relationships among the variables. It shows the extent to which a variable is explained by the innovations or shocks in all the variables in the system.

	EXRATE	FDI	OIL
Mean	745.3667	783,438.3	50.76139
Median	713.8900	611585.0	38.3200
Maximum	1542.240	2,069,790	132.1500
Minimum	304.7764	36,334.00	10.27000
Std. dev	289.8703	651,751.2	34.90964
Skewness	0.737866	0.592239	0.713470
Kurtosis	3.301539	2.085011	2.173178
Jarque-Bera	9.169366	9.054111	10.99249
Probability	0.010207	0.010812	0.004102
Sum	72,300.57	75,993,515	4923.855
Sum sq. dev	8,066,380	4.08E + 13	116993.6
Observations	97	97	97

Table 1.
Descriptive statistics.

3.1 Model specification

The model below will be generated by FDI being the dependent variable and oil and exchange rate being independent variables.
This can be written as follows:

$$FDI_Q = f(EXRATE_Q, OIL_Q) \tag{1}$$

where
 FDI_Q = foreign direct investment in quarter Q
 $EXRATE_Q$ = exchange rate in quarter Q
 OIL_Q = oil price in quarter Q

4. Analysis and findings

4.1 Results

A stationery time series is defined as a series with constant mean, constant variance and constant auto-variance for each lag. A unit root test examines whether the time series variables are nonstationary. If there are unit roots (nonstationary) in the series, a series of successive differences can change it into a stationary one.

Figures 1 and **2** depict the exchange rate processes. This is to show how nonstationary and stationary processes look like.

After differencing, there exists a stationary linear combination of nonstationary random variables; the variables combined are said to be cointegrated. When two or more variables move together for a long period of time, we say they are cointegrated. The ADF test was used to investigate the order of integration. This test is important in determining whether cointegration methods can be applied to study the long-run relationship between the variables. The variables in this study are integrated to the same order. In order to examine the impact of oil price and the exchange rate on FDI, the VAR model was used. A selection is done using a maximum of four lags.

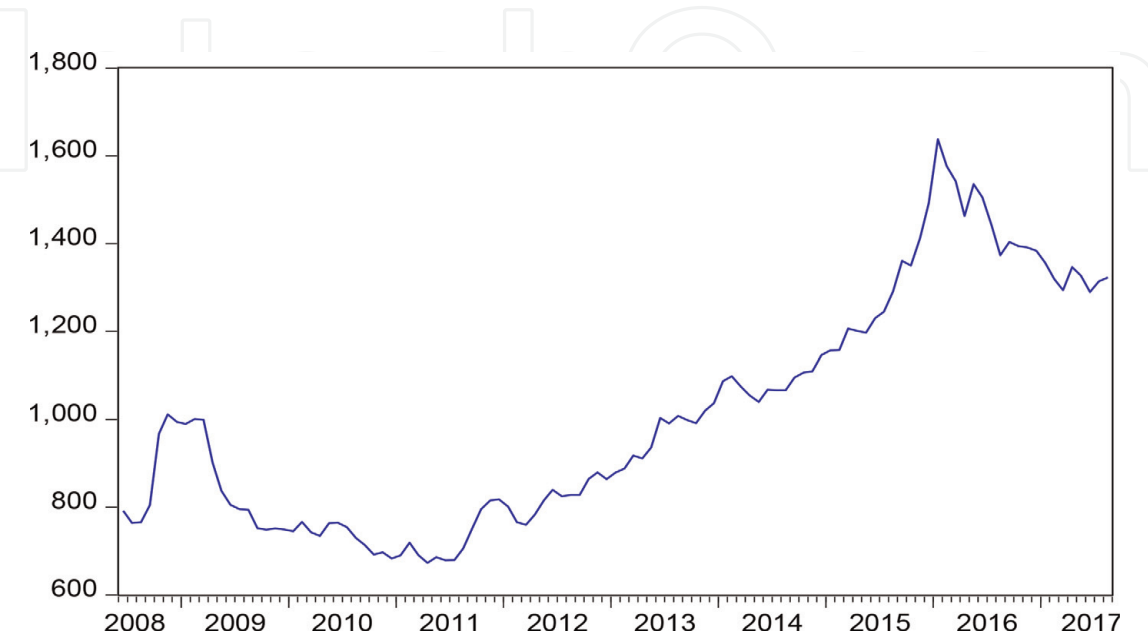


Figure 1.
Exchange rate.

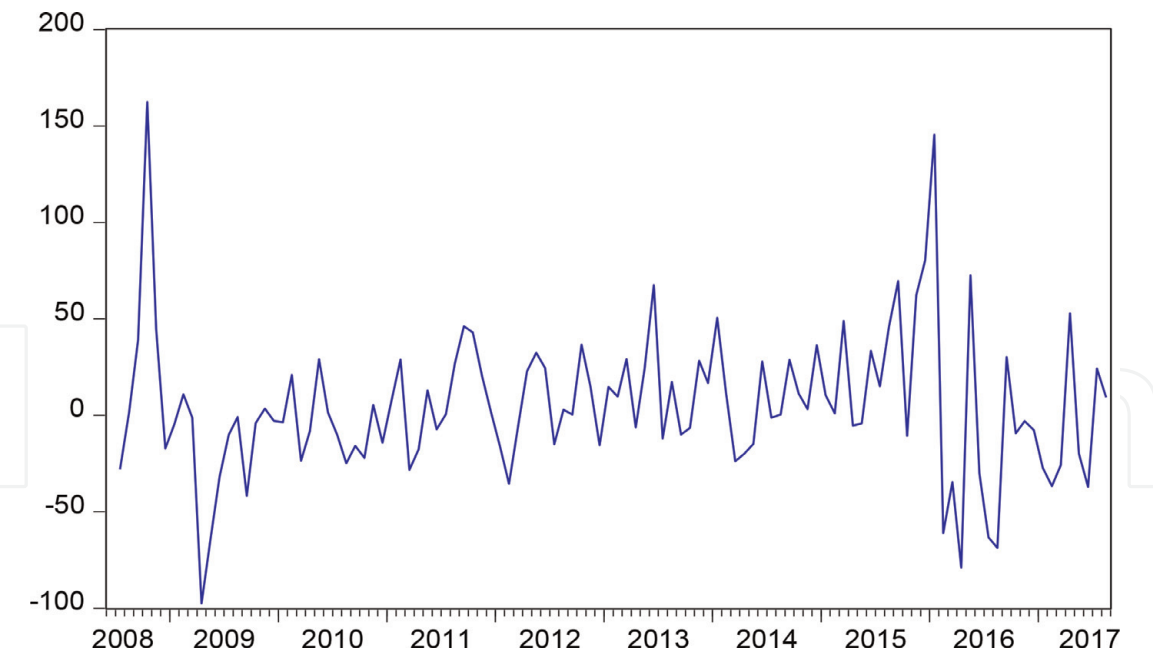


Figure 2.
Differenced exchange rate.

	FDI	EXRATE	OIL
FDI	1	0.808648	0.718984
EXRATE	0.808648	1	0.378294
OIL	0.718984	0.378294	1

Table 2.
Pair-wise correlation results.

Correlation in statistics is defined as the relationship between variables. It is explained by numbers ranging between -1 and 1 , called correlation coefficients. The pair-wise correlation is shown in **Table 2**, which shows that FDI was correlated with all the variables and that there was no specific variable that was correlated with all the variables. With this information, we can conclude that there is a less chance of multicollinearity being a problem.

According to the trace and maximum eigenvalue test for cointegration, the null hypothesis for at least one cointegration equation was accepted, concluding that there is one cointegration vector and that there is one significant long-run relationship between variables. From both the Johansen's trace and maximum eigenvalue tests, the results showed that the variables (EXRATE, OIL and FDI) could either have a short- or long-run relationship.

If the variables are cointegrated, the residuals from estimated regression can be used to estimate error correction model so that the short- and long-run effects of the variables can be analysed; VECM was used to analyse these results. **Tables 3** and **4** depict these analyses.

The long-run relationship is shown in the equation below:

$$FDI = 88851.1 - 1491.34EXRATE - 10923.00OIL... \tag{2}$$

The equation above shows that EXRATE and OIL have a negative long-run relationship with FDI, which can be interpreted by saying that a unit increase in EXRATE and OIL results in a decrease in FDI.

Vector Error Correction Estimates Date: 5/17/19 Time:10:10 Sample (adjusted): 397 Included observations: 95 after adjustments Standard errors in () & t-ststistics in []			
Cointegrating Eq:	CointEq1		
FDI(-1)	1.000000		
EXRATE(-1)	-1491.343 (198.792) [-7.50201]		
OIL(-1)	-1498.343 (198.792) [-7.50201]		
C	888851.1		
Error Correction:	D(FDI)	D(EXRATE)	D(OIL)
CointEq1	-0.022509 (0.00573) [-3.92662]	1.89E-05 (2.6E-05) [0.73310]	7.46E-06 (4.3E-06) [1.74042]
D(FDI(-1))	0.881781 (0.05119) [17.2251]	-7.17E-05 (0.00023) [-0.31093]	-0.000110 (3.8E-05) [-2.87390]
D(EXRATE(-1))	1.094261 (26.0267) [0.04204]	0.123299 (0.11716) [1.05236]	0.014435 (0.01947) [0.74134]
D(OIL(-1))	208.6206 (157.047) [1.32840]	-0.597837 (0.70698) [-0.84562]	0.098271 (0.11749) [0.83642]
C	2744.589 (1859.97) [1.47561]	11.48938 (8.37304) [1.37219]	2.482484 (1.39148) [1.78406]
R-squared	0.782814	0.044247	0.129882
Adj. R-squared	0.773162	0.001769	0.09121
Sum sq. resids	1.77E+10	357516.3	9884.826
S.E. equation	14008.52	63.06225	10.48005
F-statistic	81.09798	1.041642	3.358567
Log likelihood	-1039.236	-525.92	-355.4309
Akaike AIC	21.98391	11.17732	7.588019
Schwarz SC	22.11833	11.31173	7.722434
Mean dependent	21397.23	11.21842	0.361895
S.D. dependent	29412.63	63.1181	10.99339
Determinant resd covariance (dof adj.)	6.37E+13		
Determinant resd covariance	5.42E+13		
Log likelihood	-1906.503		
Akaike information criterion	40.51585		
Schwarz criterion	40.99974		

Table 3.
Vector error correction estimates.

System: UNTITLED Estimation Method: Least Squares Date: 5/17/19 Time:10:30 Sample : 3 97 Included observations: 95 Total system (balanced) observations 285					
		Coefficient	Std. Error	t-Statistic	Prob.
	C(1)	-0.022509	0.005732	-3.926617	0.0001
	C(2)	0.881781	0.051192	17.22507	0.0000
	C(3)	1.094261	26.0267	0.042044	0.9665
	C(4)	208.6206	157.0466	1.328399	0.1852
	C(5)	2744.589	1859.97	1.475610	0.1412
	C(6)	1.89E-05	2.58E-05	0.733098	0.4641
	C(7)	-7.17E-05	0.00023	-0.310927	0.7561
	C(8)	0.123299	0.117165	1.052356	0.2936
	C(9)	-0.597837	0.706978	-0.845623	0.3985
	C(10)	11.48938	8.37304	1.372187	0.1711
	C(11)	7.46E-06	4.29E-06	1.740417	0.0829
	C(12)	-0.000110	3.83E-05	-2.873902	0.0044
	C(13)	0.014435	0.019471	0.741344	0.4591
	C(14)	0.098271	0.11749	0.836419	0.4037
	C(15)	2.482484	1.39148	1.784060	0.0755
Determinant resd covariance			5.42E+13		
Equation: D(FDI)=C(1)*(FDI(-1)-1491.34325017* EXRATE(-1)-10923.0038946*OIL(-1) + 888851.058439)+C(2)*D(FDI(-1))+C(3)* D(EXRATE(-1))+C(4)*D(OIL(-1))+C(5)					

Table 4.
Vector error correction model coefficients.

The vector error correction equation is given as

$$\Delta FDI = -0.0225 \times (FDI_{t-1} - 1491.3433 \times EXRATE_{t-1} - 10923.0039 \times OIL_{t-1} + 888851.0584) + 0.8878 \times \Delta FDI_{t-1} + 1.0943 \times \Delta EXRATE_{t-1} + 208.6206 \times \Delta OIL_{t-1} + 2744.589 \tag{3}$$

where $(FDI_{t-1} - 1491.3433 \times EXRATE_{t-1} - 10923.0039 \times OIL_{t-1} + 888851.0584)$ is the error correction term.

4.2 Summary

To reiterate, South Africa’s appeal has improved; however, in contrast with other developing countries, South Africa has not been attracting FDI. The question at hand was “what method can South Africa use to draw more FDI?” This is a very important question, in light of the fact that FDI can play a major role in the continent’s development. FDI can fortify household speculation, encourage innovation exchange, make business, advance fares and, most importantly, produce financial growth. The part of FDI as a wellspring of wealth is especially critical in South Africa, in a setting where net official development assistance to the country declines.

This section analysed FDI and its determinants. The descriptive statistics showed that the mean values of the variables are all positive, ranging from 50.762 to 783,438.3, with oil price being the lowest and FDI being the highest. This can be interpreted by saying that South Africa has experienced more FDI inflows over the years understudy.

For stationarity tests, the ADF and PP test were used. The PP test showed that variables used are I(1). The pair-wise correlation showed that FDI was correlated with all the variables and that there were no specific variables that were correlated with all the variables, concluding that there is less chance of multicollinearity. The vector error correction estimates showed that the variables (*EXRATE* and *OIL*) have a negative long-run relationship with FDI. All explanatory variables were statistically significant in explaining FDI since they have absolute *t*-values above 2.

According to the trace and maximum eigenvalue test for cointegration, the null hypothesis for at least one cointegration equation was accepted, concluding that there is one cointegration vector and that there is one significant long-run relationship between variables.

The long-run relationship is shown in the Eq. (2).

The equation above shows that *EXCHANGE* and *OIL* have a negative long-run relationship with FDI, which can be interpreted by saying that a unit increase in *EXRATE* and *OIL* results in a decrease in FDI.

5. Conclusion and recommendations

The results show that exchange rate is an important variable in determining FDI inflows into South Africa as it was highly correlated with FDI. Among other things, this suggests that South Africa needs to reduce inflation rates because if inflation is lower than competing countries, South Africa's goods will become attractive and the demand will rise. Also, the country needs to increase interest rates as this would attract hot money flow, which occurs when banks and financial institutions move money to other countries to get a better rate of return on savings. The empirical results also suggested that oil is another important factor in determining FDI inflows as it was also highly correlated with FDI. The study showed that the country should continue focusing on policies aimed at strengthening its exchange rate and stabilizing oil prices.


What is pertinent to the picture painted above is that economic growth in the country will continue to be stifled if the urgent need to enhance economic growth is not taken into consideration. We have to come up with the methods on how to save our economy.

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