Project Report on

A Study on relationship

Between Foreign Exchange Rate and FDI

In

BRICS Nations

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DECLARATION

I, **Lalit Kumar Shah** hereby declare that the thesis entitled "**A Study on relationship Between Foreign Exchange Rate and FDI in BRICS Nations**" in fulfil ment of the requirements for the award of the degree of Master of Business Administration (Executive) which is submitted by me to the Delhi School of Management, Delhi Technological University, New Delhi has been done by me and that, to the best of my knowledge and belief, it contains no material previously published or written by another person nor material which has been accepted for the award of any other degree or diploma ,Associate ship, Fellowship or other   similar title or recognition. This is the original work and is the result of my own effort.

Dated: 20 May 2017

Place: New Delhi   **Lalit Kumar Shah**

Certificate

*On the basis of the declaration submitted by Lalit Kumar Shah,, a student of MBA (Executive), I hereby certify that that the project report titled "***A Study on relationship Between Foreign Exchange Rate and FDI in BRICS Nations***" w*hich is submitted to the Delhi School of Management, Delhi Technological University, New Delhi in partial Fulfilment of the requirements for the award of the degree of Master of Business Administration, is an original contribution with existing knowledge and faithful record of research carried out by him/her under my guidance and supervision. Certified further, that to the best of my knowledge the work reported herein does not form part of any other project report or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.*

Dated: 22, May 2017

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Abstract / Executive Summary

Brics Nations are the emerging economies in the world. These five countries have about 56.5 percent population of the World. This study was conducted to examine the impact of exchange rate on foreign direct investment in Brics Nations. Exchange rates have main role that affect the macroeconomics performance of any leading country. The objective of this research was to investigate whether uncertainty or fluctuations in exchange rate affects the macroeconomic in BRICS NATIONS. This Study was based on secondary and time series data. For this purpose 06 years data of Exchange rate and FDI for the period of 2010 to 2015 was used and was collected from the website of World Trade Organization, International Trade Statics, 2015. The tests of Correlation regression, co integration analysis were applied through Microsoft Office Excel and E-views software to check the relationship between Exchange rate and FDI. The correlation results showed that there is positive significant relationship between Exchange rate and Foreign Direct Investment while in regression analysis the value of R-square which shows that the independent variable Exchange has 67% impact on dependent variable Foreign Direct Investment and research model is accurate. This research will help the mangers, related organization and future researchers to make or revise the further economic decisions.

The goal of the research was to investigate the impact of exchange rate volatility on FDI into BRICS Nations with very specific focus on annually data for the period between 2010-2015.

Keywords Exchange Rate, Foreign Direct Investment, Correlation, Regression Co Integration, .

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Chapter 1
Introduction

FOREX

In finance, an **exchange rate** (also known as a **foreign-exchange rate**, **forex rate**, **ER**, **FX rate** or **Agio**) between two currencies is the rate at which one currency will be exchanged for another. It is also regarded as the value of one country's currency in relation to another currency.

Exchange rates are determined in the market, which is open to a wide range of different types of buyers and sellers, and where currency trading is continuous: 24 hours a day except weekends.

In the retail currency exchange market, different buying and selling rates will be quoted by money dealers. Most trades are to or from the local currency. The buying rate is the rate at which money dealers will buy foreign currency, and the selling rate is the rate at which they will sell that currency. The quoted rates will incorporate an allowance for a dealer's margin (or profit) in trading, or else the margin may be recovered in the form of a commission or in some other way. Different rates may also be quoted for cash (usually notes only), a documentary form (such as traveler's cheques) or electronically (such as a credit card purchase). The higher rate on documentary transactions has been justified as compensating for the additional time and cost of clearing the document. On the other hand, cash is available for resale immediately, but brings security, storage, and transportation costs, and the cost of tying up capital in a stock of banknotes (bills)

Foreign Direct Investment - FDI

Foreign direct investment (FDI) is an investment made by a company or individual in one country in business interests in another country, in the form of either establishing business operations or acquiring business assets in the other country, such as ownership or controlling interest in a foreign company. Foreign direct investments are distinguished from portfolio investments in which an investor merely purchases equities of foreign-based companies. The key feature of foreign direct investment is that it is an investment made that establishes either effective control of, or at least substantial influence over, the decision making of a foreign business.

BRICS Nations

BRICS stands for Brazil, Russia, India, China, and South Africa. Jim O'Neill, chairman of Goldman Sachs Asset Management, coined the BRIC concept in 2001. BRICS is the international political organization of leading emerging economies. With the entrance of South Africa, at the 3rd BRIC's Summit, in April 2011, the BRIC became BRICS, with capital "S".The BRICS Forum was formed in 2011. It is an independent international organization that works for a structured social, economic and environmentally sustainable BRICS block. Currently the forum is working on building partnerships and collaborating with member state institutions.

How the FOREX influences the FDI in BRICS Countries

BRICS Countries pertains to developing countries and it is essential to research the relation between the foreign exchange rate and foreign direct investment. Brazil, Russia, India, China and South Africa are the emerging economics. These five countries have about 56% population of the worlds. The study was conducted to examine the impact of foreign exchange rate on foreign direct investment in all the 05 Brics Nations. For analyzing impact of foreign exchange rate on FDI the correlation and regression technique with EVIEWS software has been used. It was also analyzed that during the currency become weaker the FDI had very high inflow on the other hand when the FDI inflow is very high then currency become also weaker.

As the current scenario suggests, the world markets have been on the defensive. The economies of all countries are maneuvering through the hardships of the China led currency war since August, 2015. With the Crude Oil Prices reaching a 13 year low, even the ever rich Arabs are losing ground. There is indeed great turmoil among all economies. The developed countries are also experiencing a slowdown, however it is the developing ones that are the most affected. At this time one of the concerns that are flocking around the economies is the FDI or the Foreign Direct Investment. With the BRICS countries announcing the BRICS Bank, it is clear that the path is steering the members to achieving a higher level of economic integration. Then what do the aforementioned events imply. How has the FOREX benefited the members? How does China have ten times the FOREX reserves of India? Are we at opportunity? These questions and a lot more need to be answered. The suggested research is an empirical study on the relationship between FDI and Forex. The study

further investigates the change s in the FDI trends in the BRICS countries due to the dynamics of their respective FOREX reserves.

OBJECTIVES: To analyze whether there is any influence on the FDI due to FOREX and the extent if any. Herein the effects of each respective currency will be studied as well as the combined influence that the FOREX of the currencies has on each other.

Is the degree of exposure and outcome that is seen in the FDI patterns. There is an equal need to find the right indications on when to seek or make FDI for BRICS, a part of the world the developing world.

Examples:

Monthly Flux

General Relation

Concurrent Wealth

BACKGROUND

There are innumerable opportunities that have been used by the different countries in favor of gaining both equity and better returns out of the FDI systems of different countries. As is evident that even though the FDI is beneficial for the countries at inflow, they never the less intend to maximize their FDI outflows to counter measure the predefined anomalies that come into action.

Talking about India alone, the country has seen a great flux in the FDI scenario. Though there are a lot of players in the race to invest in one of the most promising economies in the future, there are many that have often left the market for unknown reasons at times when needed most. This creates a temporary form of volatility in the market, which in-turn leads to higher trading, that generally ends to great exploitation of the economies trend upon the sudden retreat of the foreign investor. Following is a great example, as it is derived from the statistical reports of RBI and shows the data of FDI through 6 months, coming from places that are by the economic theories not apt investors.

The most relevant factor at this point of interval is that the FOREX favored the investments in countries with low exchange rates. This was further supported by investments through routes that offered ambiguity.

Historic FDI Data 2015

AGRICULTURE AND MINING

COMMUNITY, SOCIAL AND PERSONAL SERVICES

CONSTRUCTION

ELECTRICITY, GAS AND WATER

FINANCIAL,INSURANCE AND BUSINESS SERVICES

MANUFACTURING

MISCELLANEOUS

TRANSPORT, STORAGE AND COMMUNICATION SERVICES

WHOLSALE, RETAIL TRADE, RESTAURANTS AND HOTELS

(blank)

AFGHANISTAN
AUSTRALIA
BAHRAIN
BELARUS
BRAZIL
CANADA
CHANNEL ISLAND
COLOMBIA
DENMARK
FEDERATION OF SAINT KITTS AND NEVIS
GHANA
GUINEA REPUBLIC
INDONESIA
ISRAEL
JERSEY
LAOS
MALAYSIA
MALTA
MOROCCO
NAMIBIA
NEW ZEALAND
PERU
PORTUGAL
REPUBLIC OF MADAGASCAR
SAUDI ARABIA
SOUTH AFRICA
SRI LANKA
TAIWAN
TURKEY
UNITED ARAB EMIRATES
URUGUAY
ZAMBIA

BRICS Nations and a Bright Future

The world economy has seen many slow-downs by now and has yet to recover from the current crisis. It is evident that the ever so prosperous European countries too have seen a hard time. It is said that the debt alone on the USA cannot be re-paid in a course of several years without giving out the whole of the country's GDP. Yet it is also the other side of the coin that this country with the highest wastage ratio and highest sovereign debt happens to be the most productive country around the world. The competitors are left behind by numbers so big that the second largest GDP is almost half as much and nowhere closing in. Amazingly the BRICS group has shown the world that the degree of technological advances alone is not the only factor that ensures better production. The potential lies in the factors such as labor, natural resources, services and the economies of scale. The BRICS nations together possess from the whole world a total 30 % land and the population of the five countries is about 3% of the world's total population.

Based on several researches and the potential that these developing economies have shown in the last two decades, it is inevitable that they shall prevail as the makers and shapers of the future international markets. These countries as a conjunction have also planned the BRICS Bank as an alternate to the monopolistic North dominated world trade scenario. For the BRICS Bank all member countries are contributing a huge amount of money so that they may backup their positions In case the developed counties are not stable enough.

The New Development Bank (NDB), formerly referred to as the BRICS Development Bank, is a multilateral development bank established by the BRICS states (Brazil, Russia, India, China and South Africa) to "mobilize resources for infrastructure and sustainable development projects in BRICS and other emerging economies and developing countries." According to the Agreement on the NDB, "the Bank shall support public or private projects through loans, guarantees, equity participation and other financial instruments." Moreover, the NDB "shall cooperate with international organizations and other financial entities, and provide technical assistance for projects to be supported by the Bank."

The initial authorized capital of the bank is $100 billion divided into 1 mln shares having a par value of $100,000 each. The initial subscribed capital of the NDB is $50

billion divided into paid-in shares ($10 billion) and callable shares ($40 billion). The initial subscribed capital of the bank was equally distributed among the founding members. The Agreement on the NDB specifies that the voting power of each member will be equal to the number of its subscribed shares in the capital stock of the bank.

Therefore one may say that the most promising and progressive of the many economies are the BRICS nations and they shall become the key influencers in the globalized trade scenario based on their current levels of production, stability and opportunity.

This has led to a changed pattern of investments in the BRICS nations. The investors are looking for Equity over profits meaning they too see future potential. Among the BRICS countries itself, there is a very high flow of investments, with China being the largest foreign equity holder in South Africa. China has also helped Greece Bailout of the economic crisis in favor to parley their equity over several old, profound and government owned business units.

So the investments have become a method in today's trading to gain both equity and market control. It is highly influenced by the FOREX also. As the rate of exchange of the currency helps decide how much a country would manage to invest in another economy. Countries with lower exchange rates do not manage to gain much stake or trade out of these routes. In this project the example of South Africa would serve the purpose to further elaborate what is presented here as a notion. Following are the basic stats for the BRICS countries, that help illustrate the relevance and future that lies in these five developing countries.

Graph 1.1 – Share of the BRICS Countries in the World Population, 2013

[%]

- Brazil
- Russia
- India
- China
- South Africa
- Rest of the World
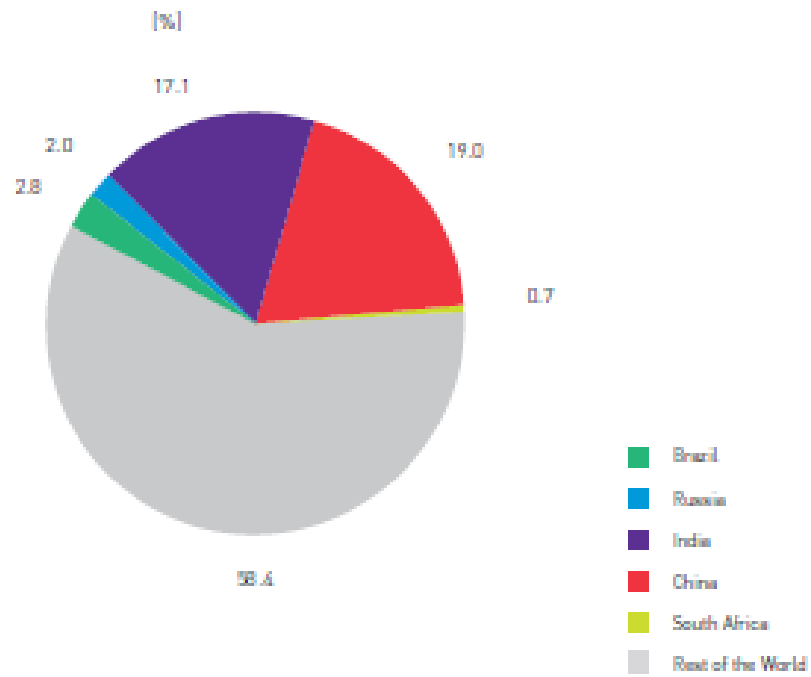
Graph 1.2 – Share of the BRICS Countries in the World Territory, 2013

[%]

- Brazil
- Russia
- India
- China
- South Africa
- Rest of the World
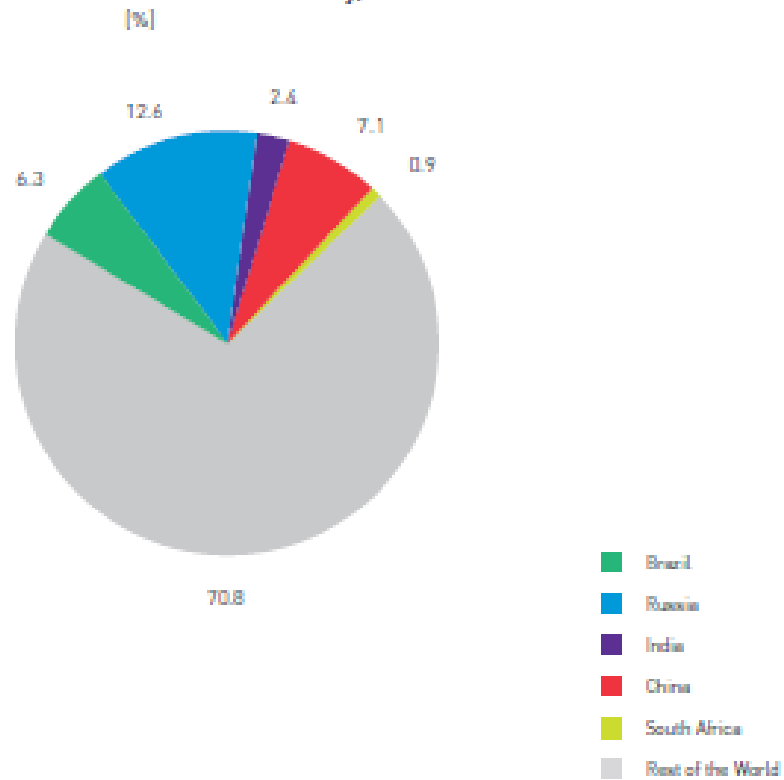
Objectives of the study:

The main purpose of conducting this research is to investigate the impact exchange rate on FDI in BRICS Nations, By collecting data on both variable exchange rate and FDI,

- To study the trends in exchange rate and FDI in BRICS nations during 2010 to 2015.

- To examine the impact of Exchange Rate on FDI inflows in BRICS Nations.

- To compare the empirical analysis of exchange rate and FDI of BRICS Nations.

- What Steps taken by the Central Bank to stabilize the values of BRICS Nations.

- Uncertainty or fluctuations in exchange rate affects the macroeconomic in BRICS NATIONS.

Chapter 2
Literature Review

Exchange Rates and Foreign Direct Investment

Foreign Direct Investment (FDI) is an international flow of capital that provides a parent company or multinational organization with control over foreign affiliates. By 2005, inflows of FDI around the world rose to $916 billion, with more than half of these flows received by businesses within developing countries.2 One of the many influences on FDI activity is the behavior of exchange rates. Exchange rates, defined as the domestic currency price of a foreign currency, matter both in terms of their levels and their volatility. Exchange rates can influence both the total amount of foreign direct investment that takes place and the allocation of this investment spending across a range of countries.

When a currency depreciates, meaning that its value declines relative to the value of another currency, this exchange rate movement has two potential implications for FDI. First, it reduces that country's wages and production costs relative to those of its foreign counterparts.

All else equal, the country experiencing real currency depreciation has enhanced "locational advantage" or attractiveness as a location for receiving productive capacity investments. By this one Federal Reserve Bank of New York and NBER. The views expressed in this paper are those of the individual author and do not necessarily reflect the position of the Federal Reserve Bank of New York or the Federal Reserve System.

"Relative wage" channel, the exchange rate depreciation improves the overall rate of return to foreigners contemplating an overseas investment project in this country. The exchange rate level effects on FDI through this channel rely, on a number of basic considerations. First, the exchange rate movement needs to be associated with a change in the relative production costs across countries, and thus should not be accompanied by an offsetting increase in the wages and production costs in the destination market for investment capital.

Second, the importance of the "relative wage" channel may be diminished if the exchange rate movements are anticipated. Anticipated exchange rate moves may be reflected in a higher cost of financing the investment project, since interest rate parity conditions equalize risk-adjusted expected rates of returns across countries. By this

argument, stronger FDI implications from exchange rate movements arise when these are unanticipated and not otherwise reflected in the expected costs of project finance for the FDI.

Some experts on FDI implications of exchange rate changes dismiss the empirical relevance of the interest-parity type of caveat. Instead, it is argued that there are imperfect capital market considerations, leading the rate of return on investment projects to depend on the structure of capital markets across countries. For example, Froot and Stein (1991) argue that capital markets are imperfect and lenders do not have perfect information about the results of their overseas investments. In this scenario, multinational companies, which borrow or raise capital internationally to pay for their overseas projects, will need to provide their lenders some extra compensation to cover the relatively high costs of monitoring their investments abroad.

Multinationals would prefer to finance these projects out of internal capital if this were an option, since internal capital is increasing in the parent company's wealth. Consider what occurs when exchange rates move. A depreciation of the destination market currency raises the relative wealth of source country agents and can raise multinational acquisitions of certain destination market assets. To the extent that source country agents hold more of their wealth in own currency-denominated form, a depreciation of the destination currency increases the relative wealth position of source country investors, lowering their relative cost of capital. This allows the investors to bid more aggressively for assets abroad.

Empirical support for this channel is provided by Klein and Rosengren (1994), who show that the importance of this relative wealth channel exceeded the importance of the relative wage channel in explaining FDI inflows to the United States during the period from 1979 through 1991.

Blonigen (1997) makes a "firm-specific asset" argument to support a role for exchange rates movements in influencing FDI. Suppose that foreign and domestic firms have equal opportunity to purchase firm-specific assets in the domestic market, but different opportunities to generate returns on these assets in foreign markets. In this case, currency movements may affect relative valuations of different assets. While domestic and foreign firms pay in the same currency, the firm-specific assets

may generate returns in different currencies. The relative level of foreign firm acquisitions of these assets may be affected by exchange rate movements. In the simple stylized example, if a representative foreign firm and domestic firm bid for a foreign target firm with firm-specific assets, real exchange rate depreciations of the foreign currency can plausibly increase domestic acquisitions of these target firms. Again, this channel predicts that foreign currency depreciation will lead to enhanced FDI into the foreign economy. Data on Japanese acquisitions in the United States support the hypothesis that real dollar depreciations make Japanese acquisitions more likely in U.S. industries with firm-specific assets.

In addition to these arguments supporting the effects of levels of exchange rates, volatility of exchange rates also matters for FDI activity. Theoretical arguments for volatility effects are broadly divided into "production flexibility" arguments and "risk aversion" arguments. To understand the production flexibility arguments, consider the implications of having a production structure whereby producers need to commit investment capital to domestic and foreign capacity before they know the exact production costs and exact amounts of goods to be ordered from them in the future. When exchange rates and demand conditions are realized, the producer commits to actual levels of employment and the location of production. As Aizenman (1992) nicely demonstrated, the extent to which exchange rate variability influences foreign investment hinges on the sunk costs in capacity (i.e. the extent of investment irreversibility's), on the competitive structure of the industry, and overall on the convexity of the profit function in prices. In the production flexibility arguments, the important presumption is that producers can adjust their use of a variable factor following the realization of a stochastic input into profits. Without this variable factor, i.e. under a productive structure with fixed instead of variable factors, the potentially desirable effects on profits of price variability are diminished.

By the production flexibility arguments, more volatility is associated with more FDI ex ante, and more potential for excess capacity and production shifting ex post, after exchange rates are observed.

An alternative approach linking exchange-rate variability and investment relies on risk aversion arguments. The logic is that investors require compensation for risks that exchange rate movements introduce additional risk into the returns on

investment. Higher exchange-rate variability lowers the certainty equivalent expected exchange-rate level, as in Cushman (1985, 1988). Since certainty equivalent levels are used in the expected profit functions of firms that make investment decisions today in order to realize profits in future periods. If exchange rates are highly volatile, the expected values of investment projects are reduced, and FDI is reduced accordingly. These two arguments, based on "production flexibility" versus "risk aversion", provide different directional predictions of exchange rate volatility implications for FDI.

The argument that producers engage in international investment diversification in order to achieve ex post production flexibility and higher profits in response to shocks is relevant to the extent that ex post production flexibility is possible within the window of time before the realization of the shocks. This suggests that the production flexibility argument is less likely to pertain to short term volatility in exchange rates than to realignments over longer intervals.

When considering the existence and form of real effects of exchange rate variability, a clear distinction must be made between short term exchange rate volatility and longer term misalignments of exchange rates. For sufficiently short horizons, ex ante commitments to capacity and to related factor costs are a more realistic assumption than introducing a model based on ex post variable factors of production. Hence, risk aversion arguments are more convincing than the production flexibility arguments posed in relation to the effects of short-term exchange rate variability. For variability assessed over longer time horizons, the production flexibility motive provides a more compelling rationale for linking foreign direct investment flows to the variability of exchange rates.

As exposited above, the exchange rate effects on FDI are viewed as exogenous, unanticipated, and independent shocks to economic activity. Of course, to the extent that exchange rates are best described as a random walk, this is a reasonable treatment. Otherwise, it is inappropriate to take such an extreme partial equilibrium view of the world. Accounting for the co-movements between exchange rates and monetary, demand, and productivity realizations of countries is important. As Goldberg and Kolstad (1995) show, these correlations can modify the anticipated effects on expected profits, and the full presumption of profits as decreasing in

exchange rate variability. Empirically, exchange rate volatility tends to increase the share of a country's productive capacity that is located abroad. Analysis of two-way bilateral foreign direct investment flows between the United States, Canada, Japan, and the United Kingdom showed that exchange rate volatility tended to stimulate the share of investment activity located on foreign soil. For these countries and the time period explored, exchange rate volatility did not have statistically different effects on investment shares when distinguished between periods where real or monetary shocks dominated exchange rate activity. Real depreciations of the source country currency were associated with reduced investment shares to foreign markets, but these results generally were statistically insignificant.

Although theoretical arguments conclude that the share of total investment located abroad may rise as exchange rate volatility increases, this does not imply that exchange rate volatility depresses domestic investment activity. In order to conclude that domestic aggregate investment declines, one must show that the increase in domestic outflows is not offset by a rise in foreign inflows. In the aggregate United States economy, exchange rate volatility has not had a large contractionary effect on overall investment (Goldberg 1993).

Overall, the current state of knowledge is that exchange rate volatility can contribute to the internationalization of production activity without depressing economic activity in the home market. The actual movements of exchange rates can also influence FDI through relative wage channels, relative wealth channels, and imperfect capital market arguments.

Chapter 3
Research Methodology

RESEARCH METHODOLOGY:

BRICS countries are becoming increasingly attractive destinations from the past few decades; the main reason being that they can offer investors with a wide range of "Created assets". A paper by Goldman Sach's in 2003 – Dreaming with BRICS: The path to 2050 predicted that over the next 50 years, the BRICS could become a major force in the world economy. The following predictions were supported by the emerging dynamics over the last decade. It is seen that with share of a little over 10% in the world GDP and less than 4% in the world trade (1990), BRICS (with inclusion of South Africa) now accounts for 25% of the world GDP and 15% of the world trade.

The research is descriptive in nature and is a non-contrived correlation study. This means that the data that will be collected will be used to formulate relations and regressions that help interpret the trends that they tend to follow and thus help conclude the future forecast and expected trends.

STUDY DESIGN:

By definition Descriptive research is a study designed to depict the participants in an accurate way. More simply put, descriptive research is all about describing people who take part in the study.

SETTING: The research setting is the environment in which research is carried out. This could be a laboratory or a 'real' setting, such as the subject's working environment if you are conducting research into people's working lives. You can get a full overview of the idea of research setting and its importance. The research will be conducted through various information platforms and analyzed using research software's. As the data needs to be tested for different types of regression and co-relation models E-Views 7 will be used.

This Study is based on secondary and time series data. The study is long term analysis, to check the impact of Exchange rate on FDI in BRICS NATIONS. For this purpose we collected the 06 years data of Exchange rate and FDI, for the period of to 12010 to 2015 for this research. The data was collected for our study from the website of World Trade Organization, International Trade Statistics. We apply the test of Correlation regression and Co Integration in software to check the relationship between Exchange rate and FDI. In our research, the purpose of study would be

descriptive because substantial year data is at hand and how this exchange rate impacts on FDI in the past. The type of investigation would be co relational study because we are interested in delineating the important variables associated with the problem. Hence, we are giving the detailed description of all the results and findings, we had from our research.

TYPE OF DATA: For the subject research methodology two types of Data collected:-

1. **Foreign Exchange Rates of Bricks Nations.**
2. **FDI of Brics Nations.**

Chapter 4
Data Analysis and Recommendation

Introduction to the Case

Foreign Exchange rate and FDI continues to be the two major drivers of BRICS economies. In this study, these two factors are taken into account as they are impressively contributing for the growth and development of their respective host nations. The increase in direct investment flows has laid to the foundation for a dramatic expansion of international trade and production by transnational corporations. The value of sales by these foreign affiliates has increased more rapidly than that of foreign trade (world exports).While FDI represents investment in production facilities, its importance for developing nations is much greater as it adds to the nation's capital stock and promotes capital formation. In addition, FDI plays a significant role leading to long-term competitiveness and sustainable growth of the host countries. There are evidences of reports and articles about the Trade flows in the BRICS countries, which is the main factor in stimulating a nation's economic growth. From a recent statistics, it has been found that, Russia and China remain the most export oriented among the other member nations, followed by South Africa, India and Brazil. China has now become the leading exporting country in the world dominating Germany (2nd) and US (3rd). Apart from China, Russia ranked 8 th in the world with exports amounting to $536bn – is the only other BRICS country high on the list of top exporters. Now the main aim is to track whether the pattern and trends in bilateral and intra-regional trade of the BRICS economies are identical or whether they have varied in a wider sense till date. BRICS countries are becoming increasingly attractive

Foreign direct investment (FDI) is an investment made by a company or individual in one country in business interests in another country, in the form of either establishing business operations or acquiring business assets in the other country, such as ownership or controlling interest in a foreign company. Foreign direct investments are distinguished from portfolio investments in which an investor merely purchases equities of foreign-based companies. The key feature of foreign direct investment is that it is an investment made that establishes either effective control of, or at least substantial influence over, the decision making of a foreign business.

The origin of the investment does not impact the definition as an FDI: the investment

may be made either "inorganically" by buying a company in the target country or "organically" by expanding operations of an existing business in that country.

There are two type of FDI:-

1. Foreign Direct Investment in Real Project: Tangible Form of FDI.
2. Foreign Direct Investment in Portfolio Expansion: Investment form of FDI.

Data Collection Sources / Techniques:

DATA COLLECTION:

The data to be analyzed is all statistical in nature. Therefore the data will be collected through the statistical publications of the respective governments, international organizations and the joint publications.

TYPE OF DATA: For the subject research methodology two types of Data collected:-

1. **Foreign Exchange Rates of Bricks Nations.**
2. **FDI of Brics Nations.**

SAMPLE SIZE: The historical data for the past 6 years has been assessed; the data was available on a monthly basis and therefore has 72 observations in total. South Africa being the only exception with a bi-annual statistical reporting system till the year 2012.

SAMPLE SELECTION: Inclusion criteria: All data through reliable resources will be inducted in the study. The data has to be tested at level for common and discrete time intervals

Exclusion criteria: All data that does not reflect in the Statistical publications will be excluded from the study.

STATISTICAL TECHNIQUE: The monthly mean of the data will be used to assess the FOREX, whereas the monthly mean of the same will be co-related to the monthly FDI for the six years.

DATA COLLECTION PROCEDURE: The collected data will be converted to USD. The variables shall be the FDI for each country, the currency of the five BRICS countries and the USD. The data will be converted to USD based on the annual FOREX rates. The independent variable for the research will be the FOREX rates for the respective countries.

DATA ANALYSIS PROCEDURE: Microsoft Office Excel and E-views are the software's that will be used to assess the data. To conduct the study, the data will first be checked for relative stationary behavior, then a unit root test followed by

study on the model for the basic 7 requisites i.e. the R square value, the T-test, the F-test, the relative impact, etc.

Relative stationary behavior checked because the data pertains to Time Series Data.

Data Analysis:-

The Analysis consists of regression models that have been primarily related to the respective FDI and FOREX of each BRICS countries. These models have been tested to relate the secondary data available through the statistical reports and through the monetary reports.

Stationarity

Statistical stationarity: A *stationary* time series is one whose statistical properties such as mean, variance, autocorrelation, etc. are all constant over time. Most statistical forecasting methods are based on the assumption that the time series can be rendered approximately stationary (i.e., "stationarized") through the use of mathematical transformations. A stationarized series is relatively easy to predict: you simply predict that its statistical properties will be the same in the future as they have been in the past!   (Recall our famous forecasting quotes.) The predictions for the stationarized series can then be "untransformed," by reversing whatever mathematical transformations were previously used, to obtain predictions for the original series. (The details are normally taken care of by your software.) Thus, finding the sequence of transformations needed to stationarize a time series often provides important clues in the search for an appropriate forecasting model. Stationarizing a time series through differencing (where needed) is an important part of the process of fitting an **ARIMA model**, as discussed in the ARIMA pages of these notes.

Correlation

Correlation is a statistical technique that can show whether and how strongly pairs of variables are related. For example, height and weight are related; taller people tend to be heavier than shorter people. The relationship isn't perfect. People of the same height vary in weight, and you can easily think of two people you know where the shorter one is heavier than the taller one. Nonetheless, the average weight of people 5'5" is less than the average weight of people 5'6", and their average weight is less than that of people 5'7", etc. Correlation can tell you just how much of the variation in peoples' weights is related to their heights.

Although this correlation is fairly obvious your data may contain unsuspected correlations. You may also suspect there are correlations, but don't know which are the strongest. An intelligent correlation analysis can lead to a greater understanding of your data

Regression

In statistical modeling, **regression analysis** is a statistical process for estimating the relationships among variables. It includes many techniques for modeling and analyzing several variables, when the focus is on the relationship between a dependent variable and one or more independent variables (or 'predictors'). More specifically, regression analysis helps one understand how the typical value of the dependent variable (or 'criterion variable') changes when any one of the independent variables is varied, while the other independent variables are held fixed. Most commonly, regression analysis estimates the conditional expectation of the dependent variable given the independent variables – that is, the average value of the dependent variable when the independent variables are fixed. Less commonly, the focus is on a quintile, or other location parameter of the conditional distribution of the dependent variable given the independent variables. In all cases, the estimation target is a function of the independent variables called the **regression function**. In regression analysis, it is also of interest to characterize the variation of the dependent variable around the regression function which can be described by a probability distribution. A related but distinct approach is necessary condition analysis (NCA), which estimates the maximum (rather than average) value of the dependent variable for a given value of the independent variable (ceiling line rather than central line) in order to identify what value of the independent variable is necessary but not sufficient for a given value of the dependent variable.

Co-integration

The concept of cointegration was first introduced by Granger (1981) and elaborated further by Engle and Granger (1987), Engle and Yoo (1987), Phillips and Ouliaris (1990), Stock and Watson (1988), Phillips (1986 and 1987) and johansen (1988, 1991, 1995a).

Time series Yt and Xt are said to be cointegrated of order d, where d > 0, written as Yt, Xt ~ CI (d). If

(a) Both series are integrated of order d,

(b) There exists a linear combination of these variables.

Conditions of Co-integration:

If all variables are stationary on level, we use OLS method of estimation.

If all variables or single variable are stationary on first difference, we use Co-integration Method.

If all the variables are stationary on first difference, we use Johnson Co-integration and ARDL also.

If some variables are stationary on level and some are stationary on first difference, we only use ARDL model.

Johansen and Juselius (1990) J.J Co-integration:

If all the variables are stationary on first difference, we use Johnson Co-integration.

Although Johansen's methodology is typically used in a setting where all variables in the system are I(1), having stationary variables in the system is theoretically not an issue and Johansen (1995) states that there is little need to pre-test the variables in the system to establish their order of integration.

Johansen Co-integration :

Johansen, Is a procedure for testing cointegration of several I(1) time series. This test permits more than one cointegrating relationship so is more generally applicable than the engle–granger test **.**

$Yt = α_0 + α_1x_1t + α_2x_2t + et$

$Yt = α_0 + α_1x_1t + α_2x_1t_{-1} + α_3x_2t + α_4x_2t_{-1} + et$

Regression for BRAZIL:

Dependent Variable: BRAZILFDI
Method: Least Squares
Date: 05/18/17   Time: 12:13
Sample: 1 72
Included observations: 72

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	8090.341	1403.086	5.766107	0.0000
BRAZILFOREX	-527.9448	608.9050	-0.867040	0.3889

R-squared	0.010625	Mean dependent var	6917.160
Adjusted R-squared	-0.003509	S.D. dependent var	3144.352
S.E. of regression	3149.863	Akaike info criterion	18.97549
Sum squared resid	6.95E+08	Schwarz criterion	19.03873
Log likelihood	-681.1177	Hannan-Quinn criter.	19.00067
F-statistic	0.751758	Durbin-Watson stat	1.854838
Prob(F-statistic)	0.388883		

Interpretation:

- R-squared- value is 1 % and is very low from the basic requisite, i.e. 60 %.

- F-stat is more than 5 % hence which means forex has less influence on FDI

- T-stat is 38 % hence has less individual significance.

- Follows the economic theory as forex is inversely affecting the FDI.

- Durbin-Watson statistics is greater than R-squared which means this is not a spurious correlation.

Regression for Russia:

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3693.543	85.19976	43.35156	0.0000
RUSSIAFOREX	2.350272	2.167456	1.084346	0.2819

R-squared	0.016520	Mean dependent var		3781.420
Adjusted R-squared	0.002470	S.D. dependent var		223.3638
S.E. of regression	223.0877	Akaike info criterion		13.68039
Sum squared resid	3483770.	Schwarz criterion		13.74363
Log likelihood	-490.4941	Hannan-Quinn criter.		13.70557
F-statistic	1.175805	Durbin-Watson stat		0.354844
Prob(F-statistic)	0.281932			

Interpretation:

- R-squared- value is 35 % and is very low from the basic requisite, i.e. 60 %.

- F-stat is less than 5 % hence which means forex has significant influence on FDI

- T-stat is less than 5 % hence has individual significance.

- Follows the economic theory as forex is inversely affecting the FDI.

- Durbin-Watson statistics is greater than R-squared which means this is not a spurious correlation.

Regression for India:

Dependent Variable: INDIAFDI
Method: Least Squares
Date: 05/18/17   Time: 12:22
Sample: 1 72
Included observations: 72

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	771.4612	1068.893	0.721738	0.4729
INDIAFOREX	25.53323	19.25199	1.326265	0.1891

R-squared	0.024512	Mean dependent var	2176.347
Adjusted R-squared	0.010577	S.D. dependent var	1220.131
S.E. of regression	1213.662	Akaike info criterion	17.06806
Sum squared resid	1.03E+08	Schwarz criterion	17.13130
Log likelihood	-612.4500	Hannan-Quinn criter.	17.09323
F-statistic	1.758978	Durbin-Watson stat	1.694604
Prob(F-statistic)	0.189063		

Interpretation:

- R-squared- value is 2.5 % and is very low from the basic requisite, i.e. 60 %.
- F-stat is more than 5 % hence which means forex has little influence on FDI
- T-stat is less than 5 % hence has individual significance.
- Is not Following the economic theory as forex is directly affecting the FDI.
- Durbin-Watson statistics is greater than R-squared which means this is not a spurious correlation.

Regression for China:

Dependent Variable: CHINAFDI
Method: Least Squares
Date: 05/18/17   Time: 12:21
Sample: 1 72
Included observations: 72

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2712.225	1119.657	2.422371	0.0180
CHINAFOREX	-328.4824	176.1605	-1.864676	0.0664

R-squared	0.047321	Mean dependent var	625.6781
Adjusted R-squared	0.033711	S.D. dependent var	334.5115
S.E. of regression	328.8247	Akaike info criterion	14.45631
Sum squared resid	7568799.	Schwarz criterion	14.51955
Log likelihood	-518.4272	Hannan-Quinn criter.	14.48149
F-statistic	3.477018	Durbin-Watson stat	0.783021
Prob(F-statistic)	0.066419		

Interpretation:

- R-squared- value is 4 % and is very low from the basic requisite, i.e. 60 %.

- F-stat is more than 5 % hence which means forex has less influence on FDI

- T-stat is more than 5 % hence has no individual significance.

- Follows the economic theory as forex is inversely affecting the FDI.

- Durbin-Watson statistics is greater than R-squared which means this is not a spurious correlation.

Regression for South Africa:

Dependent Variable: SOUTHAFRICAFDI
Method: Least Squares
Date: 05/18/17   Time: 12:19
Sample: 1 72
Included observations: 72

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-4541.716	1039.740	-4.368125	0.0000
SOUTHAFRICAFOREX	748.3772	107.9594	6.932026	0.0000

R-squared	0.407046	Mean dependent var	2484.602
Adjusted R-squared	0.398575	S.D. dependent var	2534.797
S.E. of regression	1965.776	Akaike info criterion	18.03255
Sum squared resid	2.70E+08	Schwarz criterion	18.09579
Log likelihood	-647.1717	Hannan-Quinn criter.	18.05772
F-statistic	48.05299	Durbin-Watson stat	0.287165
Prob(F-statistic)	0.000000		

Interpretation

- R-squared- value is 40 % and is very low from the basic requisite, i.e. 60 %.
- F-stat is less than 5 % hence which means forex has significant influence on FDI
- T-stat is less than 5 % hence has individual significance.
- Does not follow the economic theory as forex is directly affecting the FDI.
- Durbin-Watson statistics is less than R-squared which means this isa spurious correlation.

Group Analytics

The two data groups are further assessed for co-integrative results to understand the trends and whether they affect the patterns with respect to each other.

FDI Group Analytics

Graph
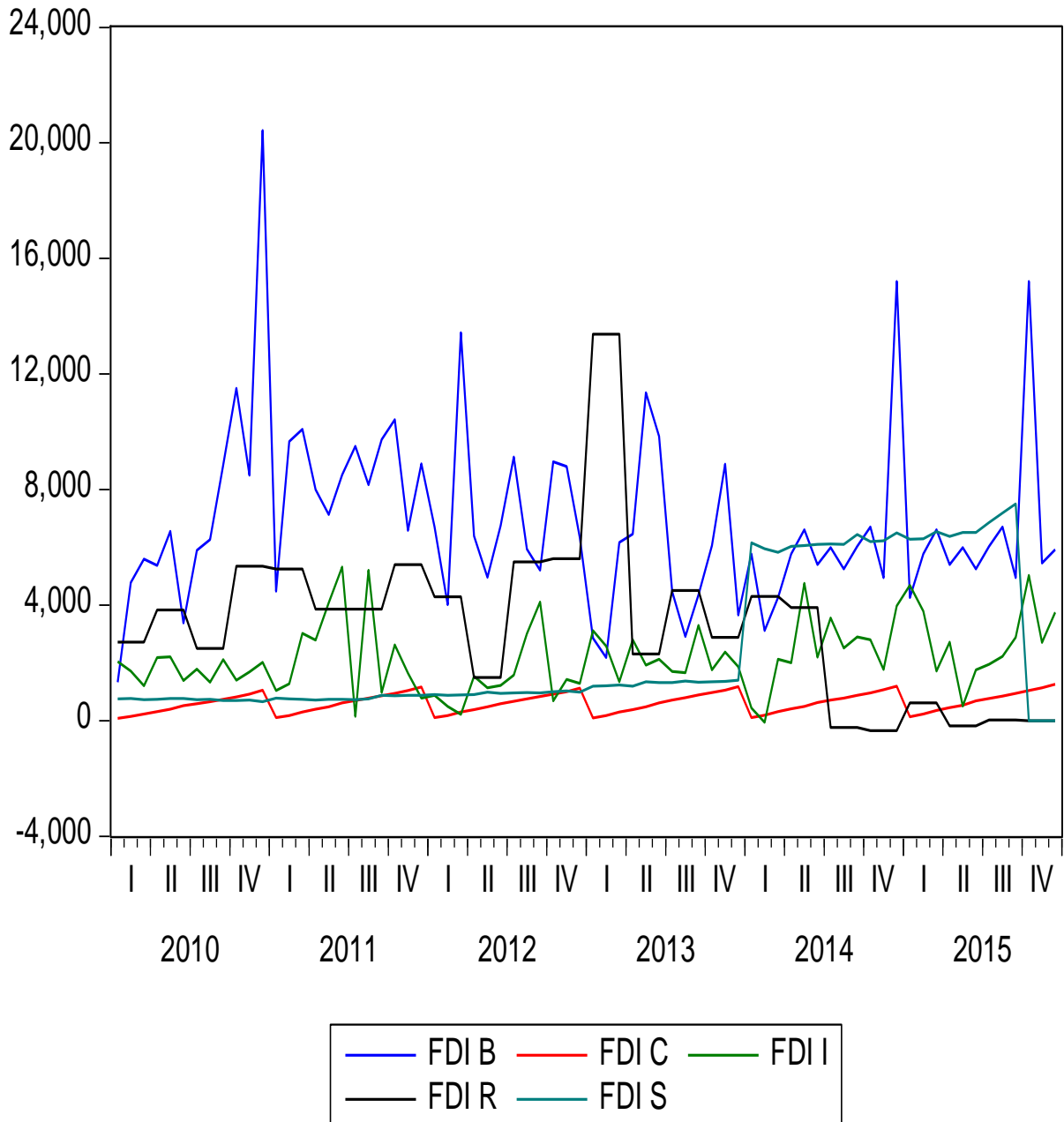
Johansson Co-Integration Test

At LAG 1:

The confidence level at 95%

Date: 05/18/17   Time: 12:19
Sample (adjusted): 2010M03 2015M12
Included observations: 70 after adjustments
Trend assumption: Linear deterministic trend
Series: BRAZIL CHINA INDIA RUSSIA S__AFRICA
Lags interval (in first differences): 1 to 1

Unrestricted Co-integration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.356818	89.91956	69.81889	0.0006
At most 1 *	0.275524	59.02664	47.85613	0.0032
At most 2 *	0.232342	36.46516	29.79707	0.0074
At most 3 *	0.197290	17.95637	15.49471	0.0209
At most 4	0.036090	2.573046	3.841466	0.1087

 Trace test indicates 4 Co-integrating equation(s) at the 0.05 level
 * denotes rejection of the hypothesis at the 0.05 level
 **MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Co-integration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None	0.356818	30.89291	33.87687	0.1090
At most 1	0.275524	22.56148	27.58434	0.1930
At most 2	0.232342	18.50879	21.13162	0.1120
At most 3 *	0.197290	15.38333	14.26460	0.0331
At most 4	0.036090	2.573046	3.841466	0.1087

 Max-eigenvalue test indicates no Co-integration at the 0.05 level
 * denotes rejection of the hypothesis at the 0.05 level
 **MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Co-integrating Coefficients (normalized by b'*S11*b=I):

BRAZIL	CHINA	INDIA	RUSSIA	S__AFRICA
-0.000358	-0.001667	0.000374	-4.69E-05	-0.000138
3.46E-06	-0.000403	0.000826	-0.000314	-0.000340
3.11E-05	-0.001727	-0.000675	-0.000331	-0.000120
0.000390	-0.003085	0.000309	0.000141	0.000215
3.23E-05	-0.000354	-0.000129	5.99E-05	-0.000340

Unrestricted Adjustment Coefficients (alpha):

D(BRAZIL)	1501.444	-458.6743	-149.3259	-714.3382	-245.4654
D(CHINA)	130.0721	18.59887	51.48343	57.52876	-12.48638
D(INDIA)	-200.7532	-496.2655	337.7080	18.44915	-56.57261
D(RUSSIA)	-400.3332	466.1333	454.8329	-518.2037	-19.83284
D(S__AFRICA)	16.71420	27.75991	-4.954302	-80.85918	198.8087

1 Co-integrating Equation(s):	Log likelihood	-2944.277

Normalized Co-integrating coefficients (standard error in parentheses)

BRAZIL	CHINA	INDIA	RUSSIA	S__AFRICA
1.000000	4.660640	-1.046253	0.131209	0.385691
	(1.76659)	(0.55647)	(0.22162)	(0.24178)

Adjustment coefficients (standard error in parentheses)

D(BRAZIL)	-0.537159
	(0.13656)
D(CHINA)	-0.046535
	(0.01143)
D(INDIA)	0.071822
	(0.05608)
D(RUSSIA)	0.143224
	(0.08237)
D(S__AFRICA)	-0.005980
	(0.04795)

2 Co-integratingLog Equation(s): likelihood -2932.996

Normalized Co-integrating coefficients (standard error in parentheses)

BRAZIL	CHINA	INDIA	RUSSIA	S__AFRICA
1.000000	0.000000	8.178660	-3.361249	-3.405561
		(2.68391)	(1.04642)	(1.16936)
0.000000	1.000000	-1.979323	0.749352	0.813462
		(0.56470)	(0.22017)	(0.24603)

Adjustment coefficients (standard error in parentheses)

D(BRAZIL)	-0.538746	-2.318712
	(0.13499)	(0.64722)
D(CHINA)	-0.046470	-0.224375
	(0.01140)	(0.05464)
D(INDIA)	0.070104	0.534673
	(0.05142)	(0.24655)
D(RUSSIA)	0.144837	0.479717
	(0.07965)	(0.38190)
D(S__AFRICA)	-0.005884	-0.039053
	(0.04794)	(0.22983)

3 Co-integratingLog Equation(s): likelihood -2923.742

Normalized Co-integrating coefficients (standard error in parentheses)

BRAZIL	CHINA	INDIA	RUSSIA	S__AFRICA
1.000000	0.000000	0.000000	-1.352802	-0.788878
			(0.37444)	(0.41133)
0.000000	1.000000	0.000000	0.263286	0.180196
			(0.05729)	(0.06293)
0.000000	0.000000	1.000000	-0.245572	-0.319940
			(0.09768)	(0.10730)

Adjustment coefficients (standard error in parentheses)

D(BRAZIL)	-0.543391	-2.060801	0.284093
	(0.13533)	(0.91732)	(0.42600)
D(CHINA)	-0.044869	-0.313295	0.029280
	(0.01120)	(0.07591)	(0.03525)
D(INDIA)	0.080608	-0.048604	-0.712977
	(0.04930)	(0.33420)	(0.15520)
D(RUSSIA)	0.158984	-0.305853	-0.072079
	(0.07726)	(0.52369)	(0.24320)

D(S__AFRICA)	-0.006038	-0.030496	0.032524
	(0.04812)	(0.32615)	(0.15146)

4 Co-integrating Equation(s):	Log likelihood	-2916.050

Normalized Co-integrating coefficients (standard error in parentheses)

BRAZIL	CHINA	INDIA	RUSSIA	S__AFRICA
1.000000	0.000000	0.000000	0.000000	0.234679
				(0.16259)
0.000000	1.000000	0.000000	0.000000	-0.019011
				(0.02468)
0.000000	0.000000	1.000000	0.000000	-0.134136
				(0.07657)
0.000000	0.000000	0.000000	1.000000	0.756620
				(0.19677)

Adjustment coefficients (standard error in parentheses)

D(BRAZIL)	-0.822113	0.143104	0.063596	0.022320
	(0.19405)	(1.43809)	(0.42882)	(0.17543)
D(CHINA)	-0.022422	-0.490785	0.047037	-0.020889
	(0.01608)	(0.11919)	(0.03554)	(0.01454)
D(INDIA)	0.087807	-0.105524	-0.707283	0.055837
	(0.07279)	(0.53946)	(0.16086)	(0.06581)
D(RUSSIA)	-0.043210	1.292930	-0.232034	-0.350759
	(0.10870)	(0.80558)	(0.24021)	(0.09827)
D(S__AFRICA)	-0.037588	0.218974	0.007565	-0.019217
	(0.07084)	(0.52501)	(0.15655)	(0.06405)

At LAG 2:

The confidence level at 95%

Date: 05/18/17   Time: 12:19
Sample (adjusted): 2010M04 2015M12
Included observations: 69 after adjustments
Trend assumption: Linear deterministic trend
Series: BRAZIL CHINA INDIA RUSSIA S__AFRICA
Lags interval (in first differences): 1 to 2

Unrestricted Co-integration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.429283	100.9507	69.81889	0.0000
At most 1 *	0.305183	62.25127	47.85613	0.0013
At most 2 *	0.247052	37.12787	29.79707	0.0060
At most 3 *	0.196990	17.54849	15.49471	0.0242
At most 4	0.034335	2.410751	3.841466	0.1205

 Trace test indicates 4 Co-integrating equation(s) at the 0.05 level
 * denotes rejection of the hypothesis at the 0.05 level
 **MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Co-integration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.429283	38.69947	33.87687	0.0123
At most 1	0.305183	25.12339	27.58434	0.1000
At most 2	0.247052	19.57938	21.13162	0.0813
At most 3 *	0.196990	15.13774	14.26460	0.0363
At most 4	0.034335	2.410751	3.841466	0.1205

 Max-eigenvalue test indicates 1 Co-integrating equation(s) at the 0.05 level
 * denotes rejection of the hypothesis at the 0.05 level
 **MacKinnon-Haug-Michelis (1999) p-values

 Unrestricted   Co-integrating   Coefficients   (normalized   by b'*S11*b=I):

BRAZIL	CHINA	INDIA	RUSSIA	S__AFRICA
7.73E-05	0.003188	-0.000179	-0.000231	-0.000196
0.000254	0.001654	-0.000802	0.000463	0.000494

-0.000132	0.001902	0.001027	0.000228	-3.48E-05
-0.000544	0.001960	-0.000473	-2.52E-05	-0.000148
7.17E-05	-0.000454	-0.000105	6.57E-05	-0.000331

Unrestricted Adjustment Coefficients (alpha):

D(BRAZIL)	-382.6839	-239.9319	331.6292	1138.846	-275.1072
D(CHINA)	-126.5884	-100.4832	-25.38787	7.830204	-15.86024
D(INDIA)	-117.5395	352.1635	-481.8761	116.3278	-52.02608
D(RUSSIA)	1050.435	-334.6607	-369.4341	48.31586	5.076589
D(S__AFRICA)	39.05615	-45.14512	42.15058	79.00816	194.0355

1	Co-integrating	Log		
Equation(s):		likelihood	-2890.571	

Normalized Co-integrating coefficients (standard error in parentheses)

BRAZIL	CHINA	INDIA	RUSSIA	S__AFRICA
1.000000	41.24544	-2.314697	-2.992606	-2.530593
	(8.69427)	(2.75139)	(1.09040)	(1.15130)

Adjustment coefficients (standard error in parentheses)

D(BRAZIL)	-0.029578
	(0.03175)
D(CHINA)	-0.009784
	(0.00260)
D(INDIA)	-0.009085
	(0.01259)
D(RUSSIA)	0.081190
	(0.01586)
D(S__AFRICA)	0.003019
	(0.01095)

2	Co-integrating	Log		
Equation(s):		likelihood	-2878.009	

Normalized Co-integrating coefficients (standard error in parentheses)

BRAZIL	CHINA	INDIA	RUSSIA	S__AFRICA
1.000000	0.000000	-3.322196	2.729994	2.789673
		(1.38345)	(0.54204)	(0.58307)
0.000000	1.000000	0.024427	-0.138745	-0.128990
		(0.08416)	(0.03297)	(0.03547)

Adjustment coefficients (standard error in

parentheses)

D(BRAZIL)	-0.090416	-1.616720
	(0.10855)	(1.47069)
D(CHINA)	-0.035263	-0.569713
	(0.00820)	(0.11109)
D(INDIA)	0.080210	0.207620
	(0.04137)	(0.56044)
D(RUSSIA)	-0.003667	2.795339
	(0.05310)	(0.71935)
D(S__AFRI CA)	-0.008428	0.049858
	(0.03752)	(0.50835)

3   Co-integratingLog
Equation(s):   likelihood   -2868.219

Normalized   Co-integrating   coefficients   (standard   error   in parentheses)

BRAZIL	CHINA	INDIA	RUSSIA	S__AFRICA
1.000000	0.000000	0.000000	7.928773	6.319640
			(1.47982)	(1.52508)
0.000000	1.000000	0.000000	-0.176970	-0.154945
			(0.03842)	(0.03959)
0.000000	0.000000	1.000000	1.564862	1.062540
			(0.32156)	(0.33140)

Adjustment   coefficients   (standard   error   in parentheses)

D(BRAZIL)	-0.134063	-0.985917	0.601611
	(0.12050)	(1.65464)	(0.53565)
D(CHINA)	-0.031921	-0.618004	0.077150
	(0.00910)	(0.12496)	(0.04045)
D(INDIA)	0.143632	-0.708972	-0.756492
	(0.04215)	(0.57873)	(0.18735)
D(RUSSIA)	0.044956	2.092626	-0.299102
	(0.05749)	(0.78936)	(0.25554)
D(S__AFRI CA)	-0.013976	0.130034	0.072525
	(0.04186)	(0.57480)	(0.18608)

4   Co-integratingLog
Equation(s):   likelihood   -2860.650

Normalized   Co-integrating   coefficients   (standard   error   in parentheses)

BRAZIL	CHINA	INDIA	RUSSIA	S__AFRICA
1.000000	0.000000	0.000000	0.000000	0.278056
				(0.17696)
0.000000	1.000000	0.000000	0.000000	-0.020097

				(0.01715)
0.000000	0.000000	1.000000	0.000000	-0.129857
				(0.07065)
0.000000	0.000000	0.000000	1.000000	0.761982
				(0.14762)

Adjustment coefficients (standard error in parentheses)

D(BRAZIL)	-0.753413	1.245929	0.062474	0.024217
	(0.23415)	(1.70626)	(0.52876)	(0.21397)
D(CHINA)	-0.036180	-0.602659	0.073443	-0.023199
	(0.01903)	(0.13865)	(0.04297)	(0.01739)
D(INDIA)	0.080368	-0.480999	-0.811563	0.077551
	(0.08765)	(0.63874)	(0.19794)	(0.08010)
D(RUSSIA)	0.018680	2.187313	-0.321975	-0.483156
	(0.12020)	(0.87588)	(0.27143)	(0.10984)
D(S__AFRI CA)	-0.056944	0.284870	0.035122	-0.022327
	(0.08733)	(0.63640)	(0.19722)	(0.07981)

FOREX Group analytics

Graph
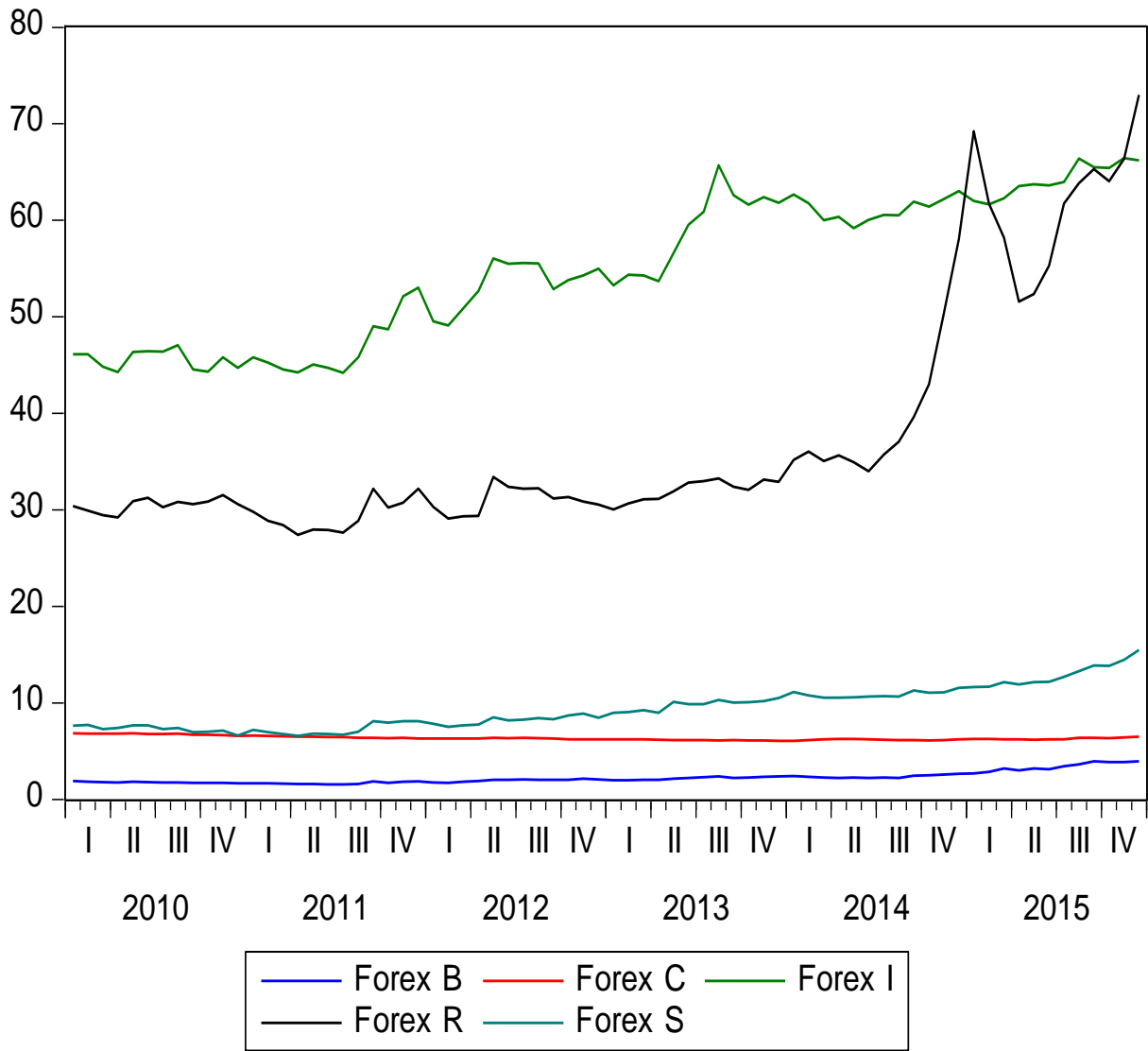
Johansson Co-Integration Test

At LAG 1:

The confidence level at 95%

Date: 05/18/17   Time: 12:19
Sample (adjusted): 3 72
Included observations: 70 after adjustments
Trend assumption: Linear deterministic trend
Series: BRAZIL CHINA INDIA RUSSIA S__AFRICA
Lags interval (in first differences): 1 to 1

Unrestricted Co-integration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.404097	81.15438	69.81889	0.0048
At most 1	0.312134	44.91696	47.85613	0.0920
At most 2	0.187280	18.72563	29.79707	0.5128
At most 3	0.058225	4.209782	15.49471	0.8859
At most 4	0.000151	0.010541	3.841466	0.9179

Trace test indicates 1 Co-integrating equation(s) at the 0.05 level
 * denotes rejection of the hypothesis at the 0.05 level
 **MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Co-integration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.404097	36.23742	33.87687	0.0256
At most 1	0.312134	26.19134	27.58434	0.0745
At most 2	0.187280	14.51585	21.13162	0.3242
At most 3	0.058225	4.199241	14.26460	0.8378
At most 4	0.000151	0.010541	3.841466	0.9179

 Max-eigenvalue test indicates 1 Co-integrating equation(s) at the 0.05 level
 * denotes rejection of the hypothesis at the 0.05 level
 **MacKinnon-Haug-Michelis (1999) p-values

 Unrestricted Co-integrating Coefficients (normalized by b'*S11*b=I):

l

BRAZIL	CHINA	INDIA	RUSSIA	S__AFRICA
4.029199	-3.104533	-0.083585	0.000975	-0.527235
-5.281837	1.869274	0.293823	0.263096	-0.574401
1.703083	8.173278	0.565868	-0.034913	-1.634133
5.146578	-3.961443	0.048584	0.045125	-2.323326
-0.027952	-2.888444	0.227554	-0.000998	-0.911464

Unrestricted Adjustment Coefficients (alpha):

D(BRAZIL)	0.030565	0.031467	-0.027520	-0.000969	-0.000437
D(CHINA)	0.018709	-0.006029	-0.002871	-0.002392	0.000279
D(INDIA)	0.165858	-0.161736	-0.604052	0.034600	-0.000265
D(RUSSIA)	0.704327	-0.570761	-0.201679	-0.336625	-0.016789
D(S__AFRI CA)	0.172074	-0.010028	-0.059400	0.031722	-0.001662

1	Co-integratingLog		
Equation(s):		likelihood	-62.21427

Normalized Co-integrating coefficients (standard error in parentheses)

BRAZIL	CHINA	INDIA	RUSSIA	S__AFRICA
1.000000	-0.770509	-0.020745	0.000242	-0.130853
	(0.36562)	(0.02579)	(0.00870)	(0.09985)

Adjustment coefficients (standard error in parentheses)

D(BRAZIL)	0.123151
	(0.05046)
D(CHINA)	0.075380
	(0.01824)
D(INDIA)	0.668274
	(0.73452)
D(RUSSIA)	2.837872
	(1.22363)
D(S__AFRI CA)	0.693321
	(0.15928)

2	Co-integratingLog		
Equation(s):		likelihood	-49.11860

Normalized Co-integrating coefficients (standard error in parentheses)

BRAZIL	CHINA	INDIA	RUSSIA	S__AFRICA
1.000000	0.000000	-0.085263	-0.092332	0.312295
		(0.03725)	(0.01637)	(0.18582)
0.000000	1.000000	-0.083734	-0.120147	0.575137

	(0.06358)	(0.02795)	(0.31721)

Adjustment coefficients (standard error in parentheses)

D(BRAZIL)	-0.043052	-0.036069
	(0.07891)	(0.04305)
D(CHINA)	0.107226	-0.069352
	(0.02965)	(0.01617)
D(INDIA)	1.522537	-0.817240
	(1.20347)	(0.65649)
D(RUSSIA)	5.852539	-3.253515
	(1.96011)	(1.06924)
D(S__AFRICA)	0.746290	-0.552956
	(0.26247)	(0.14318)

3   Co-integratingLog Equation(s):   likelihood   -41.86068

Normalized Co-integrating coefficients (standard error in parentheses)

BRAZIL	CHINA	INDIA	RUSSIA	S__AFRICA
1.000000	0.000000	0.000000	-0.024857	-0.107265
			(0.00505)	(0.02726)
0.000000	1.000000	0.000000	-0.053882	0.163099
			(0.01051)	(0.05673)
0.000000	0.000000	1.000000	0.791371	-4.920773
			(0.14946)	(0.80668)

Adjustment coefficients (standard error in parentheses)

D(BRAZIL)	-0.089921	-0.261000	-0.008882
	(0.07792)	(0.10158)	(0.00731)
D(CHINA)	0.102336	-0.092821	-0.004960
	(0.03051)	(0.03977)	(0.00286)
D(INDIA)	0.493785	-5.754327	-0.403199
	(1.12744)	(1.46981)	(0.10572)
D(RUSSIA)	5.509064	-4.901889	-0.340697
	(2.01598)	(2.62818)	(0.18903)
D(S__AFRICA)	0.645126	-1.038451	-0.050942
	(0.26606)	(0.34685)	(0.02495)

4   Co-integratingLog Equation(s):   likelihood   -39.76106

Normalized Co-integrating coefficients (standard error in parentheses)

BRAZIL	CHINA	INDIA	RUSSIA	S__AFRICA

1.000000	0.000000	0.000000	0.000000	0.172105
				(0.11213)
0.000000	1.000000	0.000000	0.000000	0.768672
				(0.21994)
0.000000	0.000000	1.000000	0.000000	-13.81493
				(3.22933)
0.000000	0.000000	0.000000	1.000000	11.23892
				(4.31745)

Adjustment coefficients (standard error in parentheses)

D(BRAZIL)	-0.094908	-0.257162	-0.008929	0.009226
	(0.09741)	(0.11110)	(0.00733)	(0.00306)
D(CHINA)	0.090027	-0.083346	-0.005076	-0.001576
	(0.03806)	(0.04340)	(0.00286)	(0.00119)
D(INDIA)	0.671858	-5.891394	-0.401518	-0.019740
	(1.40911)	(1.60707)	(0.10598)	(0.04424)
D(RUSSIA)	3.776598	-3.568369	-0.357052	-0.157627
	(2.49415)	(2.84453)	(0.18759)	(0.07831)
D(S__AFRICA)	0.808383	-1.164114	-0.049401	0.001035
	(0.33087)	(0.37736)	(0.02489)	(0.01039)

Johansson Co-Integration Test

At LAG 2:

The confidence level at 95%

Date: 05/18/17   Time: 12:19
Sample (adjusted): 4 72
Included observations: 69 after adjustments
Trend assumption: Linear deterministic trend
Series: BRAZIL CHINA INDIA RUSSIA S__AFRICA
Lags interval (in first differences): 1 to 2

Unrestricted Co-integration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.478499	82.86187	69.81889	0.0032
At most 1	0.296051	37.93980	47.85613	0.3046
At most 2	0.122011	13.71739	29.79707	0.8561

| At most 3 | 0.065824 | 4.739011 | 15.49471 | 0.8359 |
| At most 4 | 0.000591 | 0.040793 | 3.841466 | 0.8399 |

Trace test indicates 1 Co-integrating equation(s) at the 0.05 level
 * denotes rejection of the hypothesis at the 0.05 level
 **MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Co-integration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.478499	44.92207	33.87687	0.0016
At most 1	0.296051	24.22241	27.58434	0.1272
At most 2	0.122011	8.978375	21.13162	0.8342
At most 3	0.065824	4.698218	14.26460	0.7793
At most 4	0.000591	0.040793	3.841466	0.8399

 Max-eigenvalue test indicates 1 Co-integrating equation(s) at the 0.05 level
 * denotes rejection of the hypothesis at the 0.05 level
 **MacKinnon-Haug-Michelis (1999) p-values

 Unrestricted Co-integrating Coefficients (normalized by b'*S11*b=I):

BRAZIL	CHINA	INDIA	RUSSIA	S__AFRICA
-6.498571	3.723142	0.148280	0.080123	0.530920
-2.207741	5.448763	0.651717	0.228778	-2.144438
-2.528740	-8.122973	-0.302110	0.200248	0.313283
-6.537208	3.012632	-0.000470	0.031725	2.157459
-1.390621	2.913878	-0.223446	0.054376	1.142342

 Unrestricted Adjustment Coefficients (alpha):

D(BRAZIL)	-0.028339	0.000105	0.022840	0.003766	0.000920
D(CHINA)	-0.018273	-0.002995	0.001210	0.001974	-0.000668
D(INDIA)	-0.205665	-0.562838	0.325384	-0.007223	-0.001104
D(RUSSIA)	-1.051302	-0.614299	-0.234355	0.296170	0.021259
D(S__AFRICA)	-0.184993	-0.040864	0.035896	-0.033772	0.002120

| 1 Co-integrating Equation(s): | Log likelihood | -37.40398 |

Normalized Co-integrating coefficients (standard error in parentheses)

BRAZIL	CHINA	INDIA	RUSSIA	S__AFRICA
1.000000	-0.572917	-0.022817	-0.012329	-0.081698

| | (0.22444) | (0.01607) | (0.00560) | (0.06234) |

Adjustment coefficients (standard error in parentheses)

D(BRAZIL)	0.184165
	(0.07097)
D(CHINA)	0.118748
	(0.03007)
D(INDIA)	1.336527
	(1.21325)
D(RUSSIA)	6.831961
	(1.92984)
D(S__AFRICA)	1.202188
	(0.24106)

2   Co-integrating   Log
Equation(s):   likelihood   -25.29277

Normalized Co-integrating coefficients (standard error in parentheses)

BRAZIL	CHINA	INDIA	RUSSIA	S__AFRICA
1.000000	0.000000	0.059527	0.015271	-0.400041
		(0.02194)	(0.01015)	(0.11087)
0.000000	1.000000	0.143727	0.048175	-0.555654
		(0.02792)	(0.01291)	(0.14106)

Adjustment coefficients (standard error in parentheses)

D(BRAZIL)	0.183932	-0.104938
	(0.07496)	(0.07207)
D(CHINA)	0.125360	-0.084352
	(0.03164)	(0.03043)
D(INDIA)	2.579127	-3.832489
	(1.17476)	(1.12957)
D(RUSSIA)	8.188174	-7.261317
	(1.96017)	(1.88476)
D(S__AFRICA)	1.292406	-0.911413
	(0.25187)	(0.24218)

3   Co-integrating   Log
Equation(s):   likelihood   -20.80359

Normalized Co-integrating coefficients (standard error in parentheses)

BRAZIL	CHINA	INDIA	RUSSIA	S__AFRICA
1.000000	0.000000	0.000000	-0.021654	-0.094655
			(0.00554)	(0.02825)

0.000000	1.000000	0.000000	-0.040982	0.181704
			(0.01088)	(0.05549)
0.000000	0.000000	1.000000	0.620315	-5.130256
			(0.11982)	(0.61113)

Adjustment coefficients (standard error in parentheses)

D(BRAZIL)	0.126175	-0.290468	-0.011034
	(0.07676)	(0.10983)	(0.00770)
D(CHINA)	0.122300	-0.094181	-0.005027
	(0.03370)	(0.04823)	(0.00338)
D(INDIA)	1.756315	-6.475575	-0.495609
	(1.21163)	(1.73367)	(0.12150)
D(RUSSIA)	8.780797	-5.357656	-0.485435
	(2.07660)	(2.97132)	(0.20824)
D(S__AFRICA)	1.201634	-1.202996	-0.064907
	(0.26616)	(0.38083)	(0.02669)

4 Co-integrating Equation(s):	Log likelihood	-18.45448

Normalized Co-integrating coefficients (standard error in parentheses)

BRAZIL	CHINA	INDIA	RUSSIA	S__AFRICA
1.000000	0.000000	0.000000	0.000000	1.443717
				(0.56281)
0.000000	1.000000	0.000000	0.000000	3.093111
				(1.05436)
0.000000	0.000000	1.000000	0.000000	-49.19856
				(15.9517)
0.000000	0.000000	0.000000	1.000000	71.04180
				(25.8243)

Adjustment coefficients (standard error in parentheses)

D(BRAZIL)	0.101558	-0.279123	-0.011036	0.002447
	(0.10283)	(0.11416)	(0.00769)	(0.00331)
D(CHINA)	0.109395	-0.088233	-0.005028	-0.001844
	(0.04513)	(0.05010)	(0.00337)	(0.00145)
D(INDIA)	1.803532	-6.497334	-0.495605	-0.080315
	(1.62499)	(1.80403)	(0.12150)	(0.05235)
D(RUSSIA)	6.844672	-4.465405	-0.485574	-0.262305
	(2.75840)	(3.06232)	(0.20624)	(0.08886)
D(S__AFRICA)	1.422411	-1.304740	-0.064891	-0.018054
	(0.35426)	(0.39329)	(0.02649)	(0.01141)

Interpretation for Co-integration tests:

FDI interpretation

At LAG 1:

 Trace test indicates 4 Co-integrating equation(s) at the 95% Confidence

At LAG 2:

 Trace test indicates 4 Co-integrating equation(s) at the 95% Confidence

FOREX Interpretation

At LAG 1:

 Trace test indicates 1 Co-integrating equation(s) at the 95% Confidence

At LAG 2:

 Trace test indicates 1 Co-integrating equation(s) at the 95% Confidence

Findings & Recommendation

The study has assessed and concluded that the FDI patterns in the BRICS Countries are not regress-able at individual levels. The patterns do not follow the economic theory necessarily. Thus it is concluded that there are other variable that need to be taken into account for a regression model to be accepted.

The study also shows that the FDI as well as FOREX for the countries are highly co-integrated, though the FOREX is co-integrated at most by one equation and the FDI by as many as 4 equations. This helps us understand that the FDI is a variable that shows high flux and sudden change upon the reduction of the FOREX of the countries respectively, but the reduction in forex of one of the countries will not lead to higher inflows in the country through the other four countries of the group.

Below are the main points of study:-

Countries pertains to the BRICS Nations are the emerging economies in the world. These five countries have about 56.5 percent population of the World. This study was conducted to examine the impact of exchange rate on foreign direct investment in Brazil, Russia, India China and South Africa. For analyzing impact of exchange rate on FDI the correlation regression and Co Integration analysis techniques have been used. It observed that the during 2010 to 2015 foreign direct investment in Brazial decreased by 12.31%, Russia Increased by 7 %India increased by 60 %, China increased by 30% & South Africa by 590 % in absolute terms during the same period. The exchange rate shows the 92 % increased in Brazil, 103 % Increased in Russsia, 40.91 % Increased in India, 7 % Decreased in China and 76.94 % Increased in South Africa during the study period. It is found that there is positive correlation between FDI and exchange rate in all the 03 BRICS Nations (Russia, India, South Africa).

In case of Brazil sudden spurt observed in Foreign Direct Investment, China is more or less in a consistent position.
The P value low indicates that the coefficient of exchange rate variable is highly significant with FDI in case India and South Africa. The P value high indicates that the exchange rate variable does not exert significant influence of FDI in case of Brazil, Russia and China. This study observes that the exchange rate highly

correlated to FDI in India. So it is suggested that Brazil, Russia and China should adopt fluctuated exchange rate policy like India.

Result shows that FDI in India increased by 60 % so it is clearly stated that India adopted effective policy measures to attract FDI for generating new employment for educated youths.

Therefore, one may perceive that the right time for investing in a country may not be based on the FOREX alone, but also the other indicators of the economy

Chapter 5

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Chapter 6
Annexure

Appendix lists the tables for the analyzed data.

Brazil Data Table

Date	FDI (US$ MN)	Forex (Brazil Real to US $)
Jan-10	1322.4	1.885
Feb-10	4777.1	1.8072
Mar-10	5594.6	1.7836
Apr-10	5375.4	1.7375
May-10	6561.4	1.82
Jun-10	3384.3	1.8039
Jul-10	5901.6	1.754
Aug-10	6272	1.755
Sep-10	8849	1.6876
Oct-10	11499.4	1.7012
Nov-10	8487.8	1.715
Dec-10	20427	1.6596
Jan-11	4481.9	1.6675
Feb-11	9668.9	1.6638
Mar-11	10082.5	1.632
Apr-11-['	8002.1	1.5775
May-11	7131.5	1.58
Jun-11	8505.8	1.5622
Jul-11	9497.7	1.549
Aug-11	8160.6	1.5892
Sep-11	9729.6	1.879
Oct-11	10417.7	1.7172
Nov-11	6585.9	1.8083
Dec-11	8893.7	1.8632
Jan-12	6705.5	1.7472
Feb-12	4014.6	1.7174
Mar-12	13436.6	1.8264
Apr-12	6383.4	1.9088
May-12	4953.7	2.0226
Jun-12	6752.2	2.0095
Jul-12	9121.7	2.0567
Aug-12	5934.5	2.0293
Sep-12	5209.2	2.0257
Oct-12	8965.4	2.0309
Nov-12	8790.8	2.1361
Dec-12	6338.9	2.0485
Jan-13	2857.1	1.9908
Feb-13	2182.4	1.9803

Mar-13	6175	2.0242
Apr-13	6464	2.0017
May-13	11360.7	2.1423
Jun-13	9843.5	2.2321
Jul-13	4463.5	2.2771
Aug-13	2904.5	2.3862
Sep-13	4348.6	2.2162
Oct-13	6057	2.2401
Nov-13	8876.1	2.3358
Dec-13	3649.1	2.3621
Jan-14	5765.4	2.4127
Feb-14	3121.3	2.3384
Mar-14	4261.8	2.2721
Apr-14	5776	2.233
May-14	6610.4	2.2407
Jun-14	5396.7	2.2144
Jul-14	5992.7	2.2639
Aug-14	5250.3	2.236
Sep-14	6037.3	2.4461
Oct-14	6711.7	2.4783
Nov-14	4940	2.5659
Dec-14	15211	2.6575
Jan-15	4261.8	2.6824
Feb-15	5776	2.839
Mar-15	6610.4	3.1958
Apr-15	5396.7	3.0145
May-15	5992.7	3.1798
Jun-15	5250.3	3.1031
Jul-15	6037.3	3.4213
Aug-15	6711.7	3.6193
Sep-15	4940	3.9491
Oct-15	15211	3.8564
Nov-15	5454.7	3.869
Dec-15	5920.4	3.9608

Russia Data

Date	FDI (US$ MN)	Forex (Russian Ruble to US $)
Jan-10	2717.67	30.371
Feb-10	2717.67	29.935
Mar-10	2717.67	29.434
Apr-10	3827.67	29.229

May-10	3827.67	30.889
Jun-10	3827.67	31.262
Jul-10	3827.67	30.265
Aug-10	3827.67	30.83
Sep-10	3827.67	30.584
Oct-10	3827.67	30.848
Nov-10	3827.67	31.535
Dec-10	3827.67	30.577
Jan-11	3827.67	29.8
Feb-11	3827.67	28.876
Mar-11	3827.67	28.445
Apr-11	3827.67	27.407
May-11	3827.67	27.969
Jun-11	3827.67	27.926
Jul-11	3827.67	27.638
Aug-11	3827.67	28.843
Sep-11	3827.67	32.194
Oct-11	3827.67	30.23
Nov-11	3827.67	30.732
Dec-11	3827.67	32.204
Jan-12	3827.67	30.31
Feb-12	3827.67	29.085
Mar-12	3827.67	29.32
Apr-12	3827.67	29.368
May-12	3827.67	33.401
Jun-12	3827.67	32.395
Jul-12	3827.67	32.211
Aug-12	3827.67	32.25
Sep-12	3827.67	31.185
Oct-12	3827.67	31.343
Nov-12	3827.67	30.865
Dec-12	3827.67	30.558
Jan-13	3827.67	30.03
Feb-13	3827.67	30.65
Mar-13	3827.67	31.078
Apr-13	3827.67	31.128
May-13	3827.67	31.922
Jun-13	3827.67	32.835
Jul-13	3827.67	32.96
Aug-13	3827.67	33.268
Sep-13	3827.67	32.393
Oct-13	3827.67	32.083
Nov-13	3827.67	33.149

Dec-13	3827.67	32.895
Jan-14	3827.67	35.176
Feb-14	3827.67	36.05
Mar-14	3827.67	35.047
Apr-14	3827.67	35.634
May-14	3827.67	34.92
Jun-14	3827.67	33.988
Jul-14	3827.67	35.725
Aug-14	3827.67	37.057
Sep-14	3827.67	39.604
Oct-14	3827.67	43.013
Nov-14	3827.67	50.385
Dec-14	3827.67	58.048
Jan-15	3827.67	69.234
Feb-15	3827.67	61.705
Mar-15	3827.67	58.21
Apr-15	3827.67	51.585
May-15	3827.67	52.375
Jun-15	3827.67	55.305
Jul-15	3827.67	61.746
Aug-15	3827.67	63.863
Sep-15	3827.67	65.326
Oct-15	3827.67	64.05
Nov-15	3827.67	66.35
Dec-15	3827.67	72.9995

India Data

Date	FDI (US$ MN)	Forex (India Rupees to US $)
Jan-10	2042	46.125
Feb-10	1717	46.105
Mar-10	1209	44.825
Apr-10	2179	44.275
May-10	2213	46.365
Jun-10	1380	46.445
Jul-10	1785	46.405
Aug-10	1330	47.065
Sep-10	2118	44.57
Oct-10	1392	44.325
Nov-10	1682	45.8
Dec-10	2014	44.712
Jan-11	1042	45.825

Feb-11	1274	45.265
Mar-11	3021	44.535
Apr-11	2781	44.255
May-11	4073	45.06
Jun-11	5316	44.7
Jul-11	149	44.21
Aug-11	5206	45.8
Sep-11	967	49.02
Oct-11	2619	48.695
Nov-11	1647	52.13
Dec-11	780	53.015
Jan-12	871	49.515
Feb-12	484	49.11
Mar-12	219	50.875
Apr-12	1542	52.665
May-12	1133	56.04
Jun-12	1220	55.51
Jul-12	1570	55.56
Aug-12	3010	55.525
Sep-12	4111	52.855
Oct-12	685	53.805
Nov-12	1424	54.265
Dec-12	1285	54.995
Jan-13	3122	53.275
Feb-13	2577	54.37
Mar-13	1344	54.285
Apr-13	2802	53.685
May-13	1917	56.58
Jun-13	2129	59.533
Jul-13	1696	60.855
Aug-13	1661	65.705
Sep-13	3290	62.59
Oct-13	1755	61.624
Nov-13	2381	62.399
Dec-13	1861	61.81
Jan-14	436	62.685
Feb-14	-60	61.795
Mar-14	2133	60.015
Apr-14	2001	60.345
May-14	4753	59.195
Jun-14	2197	60.06
Jul-14	3562	60.555
Aug-14	2514	60.52

Sep-14	2897	61.94
Oct-14	2806	61.405
Nov-14	1767	62.21
Dec-14	3968	63.035
Jan-15	4687	62.02
Feb-15	3793	61.659
Mar-15	1714	62.291
Apr-15	2721	63.529
May-15	509	63.743
Jun-15	1749	63.604
Jul-15	1943	63.988
Aug-15	2226	66.412
Sep-15	2877	65.517
Oct-15	5035	65.423
Nov-15	2701	66.462
Dec-15	3743	66.208

China Data

Date	FDI (US$ MN)	Forex (China Yuan to US $)
Jan-10	81.29	6.8269
Feb-10	140.24	6.8261
Mar-10	234.43	6.8259
Apr-10	307.89	6.8252
May-10	389.21	6.8278
Jun-10	514.3	6.7817
Jul-10	583.54	6.774
Aug-10	659.56	6.8075
Sep-10	743.4	6.6917
Oct-10	820.03	6.6707
Nov-10	917.07	6.667
Dec-10	1057.35	6.5906
Jan-11	100.28	6.6049
Feb-11	178.23	6.5716
Mar-11	303.4	6.5486
Apr-11	388.03	6.491
May-11	480.28	6.4795
Jun-11	608.91	6.4642
Jul-11	691.87	6.437
Aug-11	776.34	6.379
Sep-11	866.79	6.3822
Oct-11	950.12	6.3552

Nov-11	1037.69	6.3788
Dec-11	1160.11	6.2939
Jan-12	99.97	6.309
Feb-12	177.23	6.2938
Mar-12	294.8	6.298
Apr-12	378.81	6.3099
May-12	471.1	6.3688
Jun-12	590.89	6.3537
Jul-12	666.69	6.362
Aug-12	749.94	6.3485
Sep-12	834.23	6.2845
Oct-12	917.36	6.2373
Nov-12	1000.22	6.2267
Dec-12	1117.16	6.2303
Jan-13	92.7	6.2188
Feb-13	174.84	6.2214
Mar-13	299.05	6.2108
Apr-13	383.4	6.165
May-13	475.95	6.1348
Jun-13	619.84	6.1376
Jul-13	713.92	6.1289
Aug-13	797.7	6.1195
Sep-13	886.09	6.1215
Oct-13	970.26	6.0945
Nov-13	1055.06	6.0932
Dec-13	1175.86	6.054
Jan-14	107.63	6.061
Feb-14	193.1	6.1451
Mar-14	315.49	6.2172
Apr-14	402.69	6.2594
May-14	489.09	6.2479
Jun-14	633.26	6.2038
Jul-14	711.39	6.174
Aug-14	783.44	6.1433
Sep-14	873.55	6.1385
Oct-14	958.81	6.1127
Nov-14	1062.41	6.1432
Dec-14	1195.62	6.2061
Jan-15	139.23	6.25
Feb-15	224.84	6.2696
Mar-15	348.83	6.1995
Apr-15	444.94	6.2028
May-15	538.29	6.1983

Jun-15	684.11	6.201
Jul-15	766.31	6.2097
Aug-15	853.43	6.3764
Sep-15	949.03	6.3571
Oct-15	1036.8	6.3181
Nov-15	1140.4	6.3982
Dec-15	1262.7	6.4936

South Africa Data

Date	FDI (US$ MN)	Forex (South Africa Rand to US$)
Jan-10	756.6622	7.6238
Feb-10	765.9123	7.717
Mar-10	723.1554	7.2862
Apr-10	733.1796	7.3872
May-10	761.7338	7.6749
Jun-10	761.4956	7.6725
Jul-10	724.2471	7.2972
Aug-10	732.4154	7.3795
Sep-10	691.7725	6.97
Oct-10	694.6408	6.9989
Nov-10	705.5484	7.1088
Dec-10	656.9854	6.6195
Jan-11	777.7727	7.1905
Feb-11	753.2188	6.9635
Mar-11	732.5157	6.7721
Apr-11	710.8607	6.5719
May-11	736.2583	6.8067
Jun-11	732.4508	6.7715
Jul-11	723.9056	6.6925
Aug-11	756.9722	6.9982
Sep-11	875.7501	8.0963
Oct-11	860.1632	7.9522
Nov-11	878.1189	8.1182
Dec-11	875.0578	8.0899
Jan-12	905.2349	7.815
Feb-12	869.3035	7.5048
Mar-12	888.7287	7.6725
Apr-12	899.7676	7.7678
May-12	985.5072	8.508
Jun-12	945.7764	8.165
Jul-12	956.6416	8.2588

Aug-12	972.9972	8.4
Sep-12	962.6996	8.3111
Oct-12	1004.492	8.6719
Nov-12	1031.331	8.9036
Dec-12	979.646	8.4574
Jan-13	1191.228	8.9566
Feb-13	1200.325	9.025
Mar-13	1228.428	9.2363
Apr-13	1192.771	8.9682
May-13	1342.17	10.0915
Jun-13	1314.04	9.88
Jul-13	1312.444	9.868
Aug-13	1367.24	10.28
Sep-13	1333.684	10.0277
Oct-13	1336.637	10.0499
Nov-13	1353.275	10.175
Dec-13	1396.101	10.497
Jan-14	6158.028	11.1222
Feb-14	5956.769	10.7587
Mar-14	5831.529	10.5325
Apr-14	6029.679	10.523
May-14	6057.183	10.571
Jun-14	6095.574	10.638
Jul-14	6120.585	10.7065
Aug-14	6096.575	10.6645
Sep-14	6451.296	11.285
Oct-14	6196.913	11.0395
Nov-14	6219.928	11.0805
Dec-14	6495.265	11.571
Jan-15	6285.429	11.6468
Feb-15	6296.87	11.668
Mar-15	6546.467	12.1305
Apr-15	6381.437	11.913
May-15	6511.337	12.1555
Jun-15	6519.05	12.1699
Jul-15	6861.214	12.6745
Aug-15	7188.346	13.2788
Sep-15	7500.591	13.8556
Oct-15	0	13.8247
Nov-15	0	14.4529
Dec-15	0	15.4765