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Selected Factors Governing International Financial Integration – Special Reference to Indian Economy with BRICS

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Abstract--- *BRICS have been growing tremendously among all other countries. 2008 financial crisis has created an impact on cross border investment with respect to focusing towards exchange rate fluctuations and investment decision making. The impact of exchange rate determination on both the interest rate and inflation rate together leading to major factor of International Financial Integration has been professionally reviewed and empirically proved as a basic factor by various authors in different areas of study. Apart from interest rate and inflation rates, crude oil prices have also equally influenced the country's economy. International Financial Integration is one of the major factors influencing the country's economic development and financial status. A selected factor such as, Purchasing power parity, Interest rate parity, crude oil prices have been considered to analyze the financial integration with a special reference to Indian Economy with BRICS. This paper argues about selected crucial factors governing International financial integration of Indian economy along with BRICS for a period of 10 years (2008 – 2017). The study is carried out by ex post – Facto type research design. The objective of the study is to identify the Inflation rate, Interest rate and crude oil price fluctuation of India along with BRICS. The study uses Trend analysis as a statistical tool and Hypothesis testing to prove the financial integration on Indian Economy with respect to selected countries. The findings will act as a catalyst towards promoting the International Financial Integration effectively.*

Keywords--- *BRICS, Investment Decisions, Exchange Rate Fluctuations, Purchasing Power Parity, Interest Rate Parity, Inflation Rate, Crude Oil.*

I. INTRODUCTION

The concept of Interest rate and inflation rate has been into practice from the past several decades. The importance and usage of interest rate and inflation in different areas is considered crucial and its impact on economic development of a country matters a lot. Subsequently country's inflation rate which is equally considered important factor with respect to cross border investment needs a special focus / attention. Financial Integration is achieved when domestic financial markets become part of the world thus synchronizing interest rate movements, savings and investment activities and the accumulation of physical capital stocks.

Exchange Rate Determination

The exchange rate depends upon the forces of supply and demand that In turn depend upon the macroeconomic

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variables, such as interest rate, rate of inflation, etc. The question of day-to-day exchange rate determination does not arise in a fixed-rate regime but in a system of floating exchange rate, this question is very important.

Purchasing Power Parity (PPP)

Purchasing power parity (PPP) is a theory which states that exchange rates between currencies are in equilibrium when their purchasing power is the same in each of the two countries. Using that PPP rate for hypothetical currency conversions, a given amount of one currency thus has the same purchasing power whether used directly to purchase a market basket of goods or used to convert at the PPP rate to the other currency and then purchase the market basket using that currency.

Interest Rate Parity [IRP]

Interest rate parity plays an essential role in foreign exchange markets, connecting interest rates, spot exchange rates and foreign exchange rates. Interest rate parity refers to the fundamental equation that governs the relationship between interest rates and currency exchange rates. Interest rate parity is a no-arbitrage condition representing an equilibrium state under which investors will be indifferent to interest rates available on bank deposits in two countries. Each form of the parity condition demonstrates a unique relationship with implications for the forecasting of future exchange rates: the forward exchange rate and the future spot exchange rate.

Crude Oil

Crude oil is considered to be a need and most demanded resource in most of the countries, because of its non availability of resources. As a result of this it becomes mandatory to import from various countries because of which crude oil prices cannot be bargained. This completely depends upon the demand in a given region for a specific period of time over a year.

II. Review of Literature and Research Methodology

Review of Literature

Hirschman (1958) warned that in the absence of linkages, foreign investments can have negative effects on the economy. More generally researchers have argued that in the presence of pre-existing distortions and weak institutional settings, international capital mobility can increase the likelihood of financial crisis, higher volatility and risk can reduce entrepreneurship and innovation efforts in a country.

The **Lucas e Schultz paradox Robert E. Lucas, Jr. (1990)** in an article of the same title asks the question ‘‘Why doesn’t capital flow from rich to poor countries?’’ It does not, he says, but should since such poor countries lack capital when viewed by rich-country standards and, therefore, has both high marginal products of capital and correspondingly high rates of return to investment. Lucas cites India as a case in point. By his calculations India has a marginal product of capital that is anywhere from a high of 58 times to 5 times that of the United States, depending upon whether one allows for differences in stocks of human capital given Lucas’ example of India versus the United States, Schultz supported this contention with data for Senapur, India.

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Financial integration is believed to date back to the 1690s and was briefly interrupted at the start of the French revolution **(Neal, 1990)**. At the end of the 17th century, the world's dominant commercial empire was the Dutch Republic with the most important financial center located in Amsterdam where Banking, foreign exchange trading, stock trading and bullion trading were situated. It was also in this period that London and Amsterdam were closely integrated financially **(Eagly and Smith, 1976;Neal, 1990);** Amsterdam assumed the role as the senior partner in acting as the stabilizing force for London during times of English financial crisis.

As an empirical matter, however, we do not find a tendency toward convergence in this absolute sense, but only a form of relative convergence **(Barro and Sala-i-Martin, 1992).** In addition, **Boyd and Smith (1992)** argue that capital outflows can journey from capital-poor countries with weak institutions and policies to capital-rich countries with higher institutional quality and sound policies. Consequently, financial integration actually hurts capital-scarce countries with poor institutional quality and lousy policies.

Levine (2001) shows that financial integration helps strengthen domestic financial sector allowing for more efficient capital allocation and greater investment and growth opportunities. As a result of financial integration, efficiency gains can also be generated among domestics firms because they have to compete directly with foreign rivals; this competition can lead to better corporate governance **(Kose et al., 2006).** Financial integration can also have adverse effects. For example, a higher degree of financial integration can generate a severe financial contagion in neighboring, regional and/or global economies.

Daniel Peter Fedeyko (2005) uses the Fraser Institute's Index of the Economic Freedom of the World (EFW) that I use below to investigate the role of country risk in this data set. He finds a significant positive relation between EFW and the spreads between less-developed-country and developed-country real interest rates over the period 1995-2002 (Economic Freedom of World)

Bhatt and Virmani (2005) have tested for UIP and CIP in India using regression. They conducted a regression of 3 month forward premium on 3 month TB rate differential between Indian TB rate and the US TB rate, for the period covering April 1993 to March 2003, to calculate CIP. They found that the coefficient was 0.65 and accepted the null hypothesis at 55% level of significance. Hence they concluded that CIP holds for that period.

Sharma and Mitra (2006) studied the factors that drive the forward premium in India. They observed a peculiar phenomenon in the forward market in the year 2003-04. The Indian premium which was usually positive became negative during that period.

III. RESEARCH METHODOLOGY

Statement of Problem and Title of the Paper

Broadly this study is to examine factors governing financial integration of BRIC Nations (Brazil, Russia, India, China and South Africa) and their impact on the country economy. The researcher was interested in studying and ascertaining the factors that are solely responsible towards country economy (GDP). Hence, this research paper is titled as **"Selected Factors Governing International Financial Integration – Special reference to Indian Economy with BRICS".**

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Need for the Study

BRICS nations ((Brazil, Russia, India, China and South Africa), though they are grouped under the umbrella 'BRICS', they behave differently in terms of various socio economic indicators and economic parameters. Analyzing each country's performance on economic related parameters is very important to measure the country growth and perform comparisons among them. The image of each country among all other international countries depends on how they perform well in their country economic parameters. In this regard, this study is aimed to identify the crucial factors that are important for country economy.

Scope of the Study

The scope of the study is restricted only for a period of 10 years with respect to 5 countries (Brazil, Russia, India, China and South Africa), analyzing some selected economic parameters. The study can be further extended by including Balance of current account and balance of capital account. The outcome of the research will be beneficial to the respective Government to understand the impact of various factors on their country economy.

Objectives of the Study

The following objectives were set for this research study:

Primary Objective: To study and ascertain the crucial factors that governs country economy (GDP) of BRIC countries for the period of 10 years.

Secondary Objectives

1. To study and ascertain the impact of Purchasing Power Parity on GDP of BRIC nations.
2. To study and ascertain the impact of Interest Rate Parity on GDP of BRIC nations.
3. To study and ascertain the impact of Crude oil Prices on GDP of BRIC nations.

Hypotheses of the Study

Hypotheses formulated for achieving the objectives of the study were as follows:

Hypothesis 1: There is a significant impact of Purchasing Power Parity on country GDP

Hypothesis 2: There is a significant impact of Interest Rate parity on country GDP

Hypothesis 3: There is a significant impact of Crude Oil Prices on country GDP

Research Methodology and Design

This study is fully based on secondary research data collected from government statistical data, government publications, internet and web resources, printed statistical reports, industry publications, country economics statistics data (from statistics ministry), journal articles and relevant text books. This study does not involve any primary research, collecting data using structured questionnaire as there is no relevance for the same and the required data are collected from secondary research data sources. The data collected are full of quantitative in nature however there are expert's opinion collected from the published sources in a qualitative information format.

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The research design is the blue print which specifies the research approach, target countries, data sampling period, manual data collection and consolidation, data verification and validation, major information areas covered in the study, different data analysis performed, report structure etc. This ensures that the research problem is addressed effectively.

The data focus includes the following major topics:

- Purchasing Power Parity
- Interest Rate Parity
- Crude oil Prices
- Gross Domestic Product (GDP)

Target Groups

The target group is that the data collected from Brazil, Russia, India, China and South Africa.

Sample Size

There is no sampling involved in this study as there is no primary research survey involved, but only based on the secondary published data from various countries. The data period selected is from the year 2008 to 2018.

Data Collection

The data collection was carried out for each country separately. Wherever required, cross validation on data has been performed to ensure the authenticity of data collected.

Data Analysis

The collected data was entered into an MS-Excel Database. After the data entry, data validations were carried out. The data analysis was done with the help of Statistical Package for Social Sciences (SPSS Ver.20). Following analysis are performed to achieve the research objectives and test the hypotheses framed:

- Descriptive Analysis (Mean, Standard deviation and Percentage analysis)
- Correlation analysis (impact analysis)
- Regression Analysis
- Hypothesis testing

The specific analyses performed that support the objectives of the study are as follows:

- Year on Year growth and trends on Purchasing Power Parity
- Year on Year growth and trends Interest Rate parity
- Year on Year growth and trends Crude Oil Prices
- Relationship examination on these various parameters with country economy GDP.

Data Validation and Reliability

There is no questionnaire based data collection involved in this study, hence there is no data reliability checks were required (using Cronbach's Alpha Test). The data collected is fully based on government approved and government published sources. Hence, such reliability tests were not conducted.

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IV. ANALYTICS TECHNIQUES USED IN THIS RESEARCH

Correlation Analysis

Correlation analysis is used to examine the impact of one variable into another variable(s) by examining the internal relationship among the variables. It is indicated by correlation coefficients.

Linear Regression Analysis

Regression analysis is the estimation of the linear relationship between a dependent variable and one or more independent variables. The regression results provide the strength of relationship and contribution weight of each independent variable. From here, the importance level contributed by each variable towards an overall level measure is arrived. Before conducting this regression analysis, required correlation analyses are performed.

Hypothesis Testing

This study measures the impact of various economic related aspects with the GDP mainly. Within the correlation analysis, whether the impact is significant or not has been tested through suitable hypothesis framing and testing.

Limitations of the Study

- The study is restricted only to 5 countries for a period of 10 Years.
- The research and analysis findings can be used only for these five countries, and cannot be generalized to other nearby countries.

V. DATA ANALYSIS AND FINDINGS

Introduction

Data analysis and findings are the major steps in any research process. The collected and consolidated data is further analyzed for achieving the objectives set for the study. In this chapter, a detailed analysis of the collected data has been carried out as per the objectives stated earlier. Data analysis is to get further details inside the collected data so that they can be better presented and interpreted. The formulated hypotheses were also tested and based on the findings of the study, interpretations and conclusions were drawn.

Data Points

The following data points are collected for the past 10 years (Brazil, Ruzzia, India, China, and South Africa)

- Purchase Power Parity
- Inflation rate
- Interest rate
- Crude Oil prices
- Gross Domestic Product

Purchase Power Parity (PPP)

The Purchase Power Parity (PPP) data are collected as supporting data for analysis. This measure equalizes the purchase power of different countries (say currencies), by removing the differences among the countries in the price

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levels. This indicator is measured on the respective country currency per US dollar.

Table 1.1: Purchase Power Parity (PPP) of BRIC Countries: 2008-2017

Sr. No.	***Year***	***Brazil (Real)***	***Russia (Ruble)***	***India (Rs.)***	***China (Yuan Renminbi)***	***South Africa (Rand)***
1	2008	1.215	14.341	12.536	3.159	4.080
2	2009	1.294	14.017	13.196	3.131	4.353
3	2010	1.386	15.821	14.208	3.308	4.574
4	2011	1.471	17.346	15.109	3.506	4.774
5	2012	1.559	18.461	16.013	3.524	4.935
6	2013	1.649	19.421	16.734	3.546	5.156
7	2014	1.747	21.015	16.986	3.512	5.346
8	2015	1.859	23.588	17.152	3.478	5.559
9	2016	1.985	24.361	17.523	3.473	5.861
10	2017	2.024	24.342	17.729	3.550	6.076

The above table shows that the Purchase Power Parity (PPP) information is different for each country, as their respective currencies are different. Following are further analysis based on the above data.

Table 1.2: Purchase Power Parity (PPP) – Descriptive Analysis

Economic Measure	*No. of years (2008-2017)*	*Minimum*	*Maximum*	*Average*	*Std. Deviation*
Brazil Purchase Power Parity (Real)	10	1.22	2.02	1.62	0.28
Russia Purchase Power Parity (Ruble)	10	14.02	24.36	19.27	3.97
India Purchase Power Parity (Rs.)	10	12.54	17.73	15.72	1.86
China Purchase Power Parity (Yuan)	10	3.13	3.55	3.42	0.16
South Africa Purchase Power Parity (Rand)	10	4.08	6.08	5.07	0.65

The PPP for Brazil: In the last ten years, Brazil had a minimum PPP value as 1.22 Real, maximum value as 2.02 Real. The last ten years average PPP for Brazil stood at 1.62 Real with a standard deviation of 0.28. Comparatively the standard deviation is lesser, hence it is concluded that the PPP of Brazil in the last ten years were consistent with minor increases and decreases. The PPP for Russia: Russia had a minimum PPP value as 14.02 Ruble and maximum with 24.36 Ruble in the last ten years. The average PPP for Russia stood at 19.27 Ruble with a standard deviation of 3.97. Comparatively the standard deviation is considerable amount, it is concluded that the PPP of Russia had considerable amount of ups and down in the PPP over last ten years.

The PPP for India: The country's minimum PPP value is Rs.12.54 and maximum PPP is Rs. 17.73. The average PPP value for India is Rs. 15.72 with a standard deviation of 1.86. In India too, there are some instances of increases and decreases in the last ten years. The PPP for China: In the last ten years, the country's minimum PPP value is 3.13 Yuan, while the maximum PPP value is 3.55 Yuan. The average PPP for China is 3.42 Yuan with a standard deviation of 0.16. Comparatively the standard deviation is lesser; it shows that the PPP for China has been more or less consistent in the last ten years.

The PPP for South Africa: In the last ten years, the country's minimum PPP value is 4.08 Rand, while the maximum PPP value is 6.08 Rand. The average PPP for South Africa is 5.07 Yuan with a standard deviation of 0.65. Comparatively the standard deviation is lesser; it shows that the PPP for South Africa has been more or less consistent in the last ten years. However, in the recent years, there are increased PPP values reported.

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Inflation Rate (%)

The inflation rate (in %) for the years 2008 to 2017 for the five countries are presented in the following table.

Table 1.3: Inflation Rate (%) of BRIC Countries: 2008-2017

Sr. No.	***Year***	***Brazil***	***Russia***	***India***	***China***	***South Africa***
1	2008	5.70	14.10	9.10	5.90	11.00
2	2009	4.90	11.70	12.30	-0.70	7.10
3	2010	5.00	6.90	9.50	3.30	4.30
4	2011	6.60	8.40	9.50	5.40	5.00
5	2012	5.40	5.10	10.00	2.60	5.60
6	2013	6.20	6.80	9.40	2.60	5.80
7	2014	6.30	7.80	5.80	2.00	6.10
8	2015	9.00	15.50	4.90	1.40	4.60
9	2016	8.70	7.10	4.50	2.00	6.30
10	2017	3.40	3.70	3.60	1.60	5.30

Table 1.4: Inflation Rate–Descriptive Analyses

Economic Measure	*No. of years (2008-2017)*	*Minimum*	*Maximum*	*Average*	*Std. Deviation*
Brazil Inflation Rate (%)	10	3.40	9.00	6.12	1.70
Russia Inflation Rate (%)	10	3.70	15.50	8.71	3.84
India Inflation Rate (%)	10	3.60	12.30	7.86	2.91
China Inflation Rate (%)	10	-0.70	5.90	2.61	1.92
South Africa Inflation Rate (%)	10	4.30	11.00	6.11	1.91

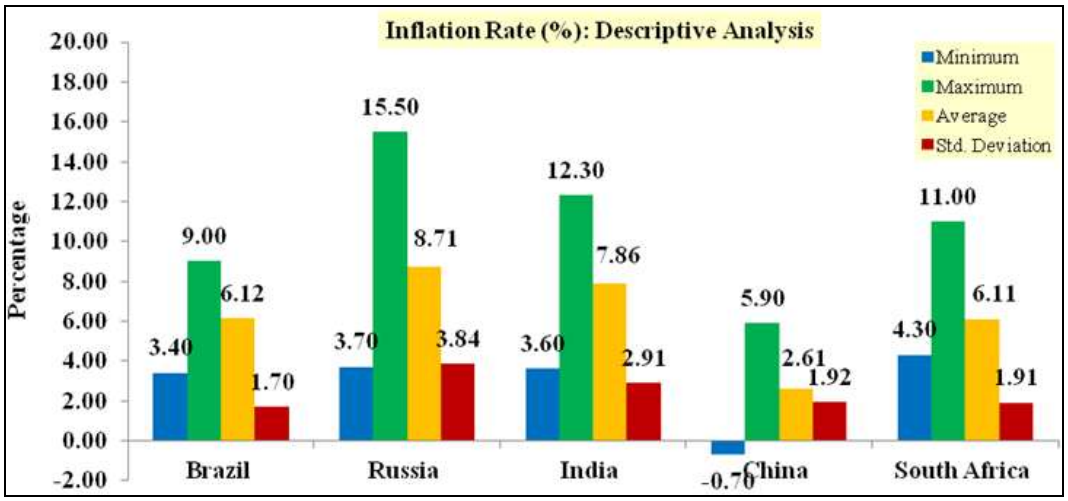

Chart 1.1: Inflation Rate–Descriptive Analyses

The minimum inflation rate is negative for china (happened in the year 2009). The maximum inflation rate is reported for Russia with 15.50% (in the year 2015), followed by India with 12.30% (in the year 2009). The ten year average inflation rate is higher for Russia at 8.71%, followed by South Africa with 6.11%. The average inflation rate is very low for China, having 2.61%. Russia reported inconsistent inflation rate (standard deviation is 3.84), while Brazil maintained more or less same level of inflation in the last ten years.

Interest Rate (%)

The interest rate (in %) for the years 2008 to 2017 for the five countries are presented in the following table.

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Table 1.5: Interest Rate (%) of BRIC Countries: 2008-2017

Sr. No.	***Year***	***Brazil***	***Russia***	***India***	***China***	***South Africa***
1	2008	35.36	-4.86	4.28	-2.33	5.78
2	2009	34.79	13.05	5.77	5.45	3.91
3	2010	29.13	-2.95	-0.60	-1.06	3.27
4	2011	32.85	-12.28	1.50	-1.47	2.32
5	2012	26.60	0.29	2.47	3.52	3.29
6	2013	18.51	3.85	3.87	3.69	2.21
7	2014	22.41	3.39	6.70	4.73	3.39
8	2015	33.83	6.80	7.78	4.25	4.09
9	2016	40.65	8.74	6.00	3.18	3.45
10	2017	41.55	5.10	6.24	0.28	4.58

Table 1.6: Interest Rate–Descriptive Analysis

Economic Measure	*No. of years (2008-2017)*	*Minimum*	*Maximum*	*Average*	*Std. Deviation*
Brazil Interest Rate (%)	10	18.51	41.55	31.57	7.44
Russia Interest Rate (%)	10	-12.28	13.05	2.12	7.28
India Interest Rate (%)	10	-0.60	7.78	4.40	2.62
China Interest Rate (%)	10	-2.33	5.45	2.02	2.87
South Africa Interest Rate (%)	10	2.21	5.78	3.63	1.05

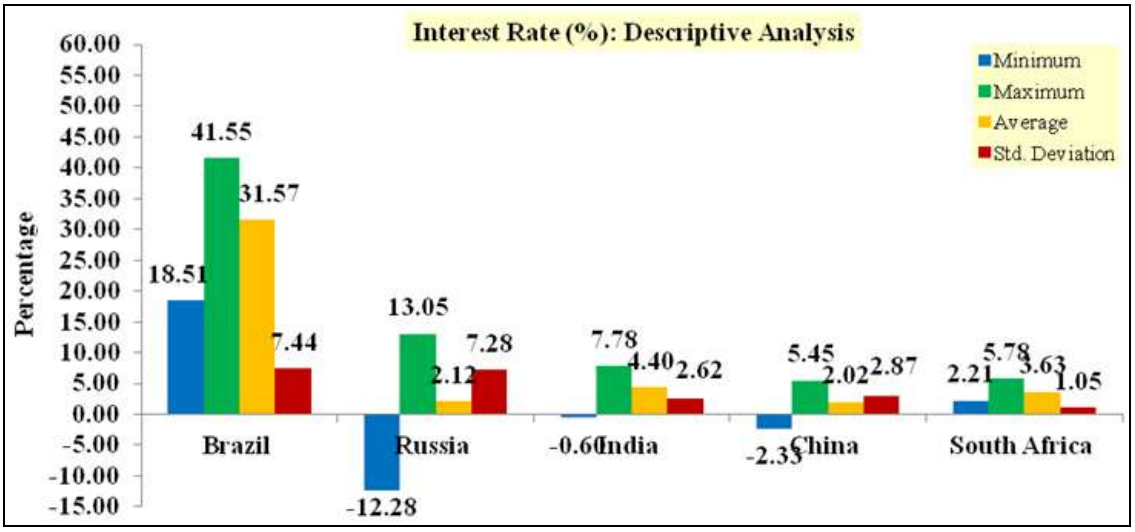

Chart 1.2: Interest Rate–Descriptive Analysis

The minimum interest rate is high for Brazil with 18.51%) (Happened in the year 2013). The maximum interest rate is reported for Brazil with 41.55% (in the year 2017). The ten year average interest rate is higher for Brazil at 31.57%. The average interest rate is very low for China, having 2.02%. Brazil and Russia have reported inconsistent interest rate (standard deviation is > 7.00), while South Africa maintained more or less same level of interest rate in the last ten years.

Gross Domestic Product (GDP)

The Gross Domestic Product (GDP) values at current prices for the BRIC countries and the GDP growth rates are summarized as below in the following tables.

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Table 1.7: Gross Domestic Product (GDP) Values of BRIC Countries-2008-2017

Sr. No.	***Year***	***Brazil (Bn. US$)***	***Russia (Bn. US$)***	***India (Bn. US$)***	***China (Bn. US$)***	***South Africa (Bn. US$)***
1	2008	1695.82	1660.85	1198.90	4594.31	286.77
2	2009	1667.02	1222.64	1341.89	5101.70	295.94
3	2010	2208.87	1524.92	1675.62	6087.16	375.35
4	2011	2616.20	2051.66	1823.05	7551.50	416.42
5	2012	2465.19	2210.26	1827.64	8532.23	396.33
6	2013	2472.81	2297.13	1856.72	9570.41	366.64
7	2014	2455.99	2059.98	2039.13	10438.53	350.64
8	2015	1802.21	1363.59	2103.59	11015.54	317.54
9	2016	1796.28	1282.72	2290.43	11137.95	295.75
10	2017	2053.59	1578.62	2652.55	12143.49	348.87

Table 1.8: Gross Domestic Product (GDP)-Growth Rate (%)-2008-2017

Year	*Brazil*	*Russia*	*India*	*China*	*South Africa*
2008	5.1%	5.2%	3.9%	9.7%	3.2%
2009	-0.1%	-7.8%	8.5%	9.4%	-1.5%
2010	7.5%	4.5%	10.3%	10.6%	3.0%
2011	4.0%	4.3%	6.6%	9.5%	3.3%
2012	1.9%	3.7%	5.5%	7.9%	2.2%
2013	3.0%	1.8%	6.4%	7.8%	2.5%
2014	0.5%	0.7%	7.4%	7.3%	1.8%
2015	-3.5%	-2.8%	8.2%	6.9%	1.2%
2016	-3.3%	-0.2%	7.1%	6.7%	0.4%
2017	1.1%	1.6%	6.7%	6.8%	1.4%

Table 1.9: Gross Domestic Products (GDP) at Current Prices - Descriptive Analysis

Economic Measure	*No. of years (2008-2017)*	*Minimum*	*Maximum*	*Average*	*Std. Deviation*
Brazil GDP (Bn. US$)	10	1667.02	2616.20	2123.40	366.03
Russia GDP (Bn. US$)	10	1222.64	2297.13	1725.24	398.03
India GDP (Bn. US$)	10	1198.90	2652.55	1880.95	427.18
China GDP (Bn. US$)	10	4594.31	12143.49	8617.28	2684.38
South Africa GDP (Bn. US$)	10	286.77	416.42	345.02	44.91

In the last ten years, the minimum GDP is achieved by South Africa (286.77 Bn. US$), while maximum GDP is achieved by China (12143.49 Bn. US$). In terms of average GDP, China still stand in top with 8617.28 Bn. US$ followed by Brazil with 2123.40 Bn. US$. China has reported considerable inconsistent GDP in the last ten years, while South Africa maintained more or less same level of GDP in the last ten years.

In the last ten years, Brazil had a minimum GDP value as 1667.02 Bn. US$, maximum value as 2617.20 Bn. US$. The last ten years average GDP value stood at 2123.40 Bn. US$. Russia had a minimum GDP value as 1222.64 Bn. US$, maximum value as 2297.13 Bn. US$. The last ten years average GDP value for stood at 1725.24 Bn. US$. For India, the minimum GDP is at 1198.90 Bn. US$, maximum GDP is at 2652.55 Bn. US$. The decade average for India is around 1880.95 Bn. US$. China has a minimum GDP value of 4594.31 Bn. US$, maximum GDP value of 12143.49 Bn. US$, and average GDP (last 10 years) of 8617.28 Bn. US$. GDP for South Africa, the minimum GDP value (286.77 Bn. US$), maximum GDP value (414.42 Bn. US$) and average GDP value is at 345.02 Bn. US$.

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Yearly Growth on Study Measures: Purchase Power Parity

The Year-on-Year growth in purchase power parity is analyzed here. The growth is calculated for a given year with respect to its previous year.

Formula used:

YOY Growth= [(current year value-previous year value)/absolute value of previous year value] x 100

Table 1.10: Purchase Power Parity: Year-on-Year Growth (%)

Year	*Brazil*	*Russia*	*India*	*China*	*South Africa*
2008	-	-	-	-	-
2009	7%	-2%	5%	-1%	7%
2010	7%	13%	8%	6%	5%
2011	6%	10%	6%	6%	4%
2012	6%	6%	6%	1%	3%
2013	6%	5%	4%	1%	4%
2014	6%	8%	2%	-1%	4%
2015	6%	12%	1%	-1%	4%
2016	7%	3%	2%	0%	5%
2017	2%	0%	1%	2%	4%

Brazil has reported consistent growth of PPP over the last ten years, except for the recent year 2017, where it showed some decreased growth. Russia has showed a higher growth of 13% during 2010 and 12% during 2015. India has reported around 8% growth in the year 2010, and reduced growth of PPP (-1%) in 2015 and 2017. Negative (-1%) reported by China in various instances (in 2009, 2014, 2015) and higher growth of 6% in 2010 and 2011. South Africa had consistent growth in PPP in the last eight years (2010 to 2017) at around 4 to 5 % every year.

Yearly Growth on Study Measures: Inflation Rate

The Year-on-Year growth of inflation rate is discussed here.

Formula used:

YOY Growth= [(current year value-previous year value)/absolute value of previous year value] x 100

Table 1.11: Inflation Rate: Year-on-Year Growth (%)

Year	*Brazil*	*Russia*	*India*	*China*	*South Africa*
2008	-	-	-	-	-
2009	-14%	-17%	35%	-112%	-35%
2010	2%	-41%	-23%	-571%	-39%
2011	32%	22%	0%	64%	16%
2012	-18%	-39%	5%	-52%	12%
2013	15%	33%	-6%	0%	4%
2014	2%	15%	-38%	-23%	5%
2015	43%	99%	-16%	-30%	-25%
2016	-3%	-54%	-8%	43%	37%
2017	-61%	-48%	-20%	-20%	-16%

Huge change in inflation rate happened for Brazil in the year 2015 (improved 43%) and 2017 (decreased to -61%). For Russia, nearly 100% improvement happened in the year 2015; however it got reduced heavily at -54% in the year 2016. India reported, huge improvement in 2009 (35%) and reported decrease (-38%) in 2014. China

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reported very huge decrease in the year 2010 and a positive improvement in the year 2011 (64%). In the year 2019, South Africa showed decreased growth (-39%) and during 2016 it showed better improvements in the inflation rate (37%).

Yearly Growth on Study Measures: Interest Rate

The Year-on-Year growth for the interest rate values are analyzed here.

YOY Growth= [(current year value-previous year value)/absolute value of previous year value] x 100

Table 1.12: Interest Rate: Year-on-Year Growth (%)

Year	*Brazil*	*Russia*	*India*	*China*	*South Africa*
2008	-	-	-	-	-
2009	-2%	369%	35%	334%	-32%
2010	-16%	-123%	-110%	-119%	-16%
2011	13%	-316%	350%	-39%	-29%
2012	-19%	102%	65%	339%	42%
2013	-30%	1228%	57%	5%	-33%
2014	21%	-12%	73%	28%	53%
2015	51%	101%	16%	-10%	21%
2016	20%	29%	-23%	-25%	-16%
2017	2%	-42%	4%	-91%	33%

Brazil has reported increased growth in interest rate during 2015 with 51% over the previous year. The country has reported a decrease of -30% in 2013. Russia has reported a very high growth during 2013, and a high decrease in 2011. In India, 2011 year showed better improvement over its previous year 2010. China reported huge improvements in 2012 and reported decrease in the growth in 2011. South Africa has reported 53% growth in 2014 and showed reduced growth (-33%) in 2013.

Impact Analysis: Hypothesis Testing

The following hypotheses are tested to achieve the hypotheses.

- Hypothesis: There is a significant impact of Purchase Power Parity on country GDP
- Hypothesis: There is a significant impact of Inflation Rate on country GDP
- Hypothesis: There is a significant impact of Interest Rate parity on country GDP

VI. CONCLUSION

The study reveals that inflation and interest rate are the crucial variables in bringing the imbalance between developing vs. developed economy, along with crude oil price movement. Thus it becomes necessary to bring the common platform where these economies can be made into one and the crucial variables which acts as common platform is non-other than the purchasing power and interest rate differentials. In order to bridge these gaps the principles of one price theory should be applied and the interest rate offered should be comparatively higher thus the domestic country can drive in more number of investors.

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