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Analysis of Foreign Direct Investment Inflows of BRICS Countries for Pre-Pandemic Period and during Pandemic Crisis

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Abstract: In the summit held in 2009, the leaders of Brazil, Russia, India China, and South Africa decided to identify themselves as a formal institution, and BRICS was declared as a formal institution in the year 2010. According to the UNCTAD report, these nations are identified as favored destinations for investments in FDI (Supachai, 2009). BRICS countries being recognized for their plenary FDI are also facing difficulty in attracting FDI inflows due to pandemic crises. FDI boosts entrepreneurship and is a great source of employment to millions. Thus there is a necessity to focus on the growth of FDI Inflows. The main purpose of this research is to study the growth trend of Foreign Direct Investment inflows of Brazil, Russia, China, India, and South Africa. The Study concentrated on seven years' data (2014-2020) of FDI inflows collected from the statistics published by the Organisation for Economic Co-operation and Development (OECD) and International Monetary Fund (IMF). The data were analysed using Trend Percentages, CAGR (Compound Annual Growth Rate), Mean Scores, ANOVA, and LSD Post Hoc test. The results of the analysis showed that China bags the first rank in attracting FDI and South Africa stands last in attracting FDI among BRICS countries. The study also revealed that there is a significant difference in the FDI inflows amongst BRICS Countries.

Keywords: FDI Inflows, BRICS, OECD, IMF, UNCTAD, FDI Determinants.

1 Introduction

COVID 19 pandemic took its birth in Wuhan, China in December 2019 and spread like a wildfire across the Planet. It is considered a global crisis which has jeopardized the activities of the world economy (1, 2, 4, 7, 8). Foreign direct investment inflows which are the major drivers of the economy suffered too. It has reduced drastically from \$ 1.5 trillion in 2019 to 1 trillion in 2020 [19]. BRICS nations were not exceptions in this regard. Since BRICS nations have emerged as the most powerful nations and have the potential to change the world scenario, the study of the FDI inflow in these nations is of great significance. Thus this research paper aims to answer the following questions

1. What are the determinants of FDI inflows in BRICS Nations? (This questions has been answered through extensive literature review)

2. What is the growth trend of FDI inflows in BRICS nations (This question has been answered by calculating trend percentages)
3. Which BRICS nation ranks highest and the least in attracting FDI Inflows for pre-pandemic and during the pandemic period? (This question has been answered through calculating Mean Scores of FDI inflows of BRICS nations).
4. Is there a significant difference in the FDI inflows of the BRICS countries? (This question has been answered using ANOVA)
5. What are the factors that led to the decline of FDI in BRICS nations?

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2 Literature Review

[1] focused on economic indicators and variables of FDI in BRICS countries, the authors identified FDI determinants through classifications such as economic factors (market size, quality, and cost of primary factors of production and GNP), Infrastructure variables (transport services, communications, financial institutes), Economic policy, Ease of doing business and Geographical characteristics of the market. Data were collected from World Bank data base for a period of 5 years (2007-2012). Data were analysed using regression and pair correlation and the results revealed that FDI determinants cannot be unified for each country and explained that the economic indicators have significant effect on FDI. The authors suggested that if the determinants are properly managed every country can increase FDI inflows consistently. [13] concentrated on analysing the FDI flows of BRICS economy. Data were collected for a period of 15 years from 2000-2013 based on UNCTAD report. Trend analysis was used to analyse the data. Authors considered young labour force, cheap labour, natural resources and big markets as the determinants of FDI of BRICS, results of the analysis showed that these variables had significant impact on the development of BRICS Economy. Khatoon [9] conducted a Study on FDI inflows to India for a period of 10 years from 2004 to 2014. The author studied the FDI inflows into the sectors such as Services Sector, Construction Development, Telecommunications, Computer Hardware & Software, Drugs & Pharmaceuticals, Automobile Industry, Chemicals other than fertilizers, Power Sector, Metallurgical Industries. Data were analysed using trend percentages and results of the analysis concluded that India to provide additional incentives to foreign investors, government to check red-tapism and corruption to boost FDI inflows. [6] conducted their research on trends and patterns of FDI inflows in BRICS from 1990 – 2015. Data were analysed using trend analysis and results reveal that developed countries eat out a big share of FDI inflows, emerging markets can continue to attract FDI inflows and concluded that policy makers to realize the problems in attracting FDI and suggested to liberalise policies to achieve maximum results. [4] examined the direction of FDI between investing country and host country. This Study reveals the direction of FDI to BRICS and MINT (Mexico, Indonesia, Nigeria, and Turkey) countries for 11 years (2001 -2011). Data were analysed using pooled time series cross sectional analysis, panel data analysis and fixed effects approach and the result revealed that market size, infrastructure, and trade openness are important determinants in gaining the attention of FDI to BRICS and MINT countries, and concluded that to attract and retain FDI, these countries (MINT & BRICS) need to offer a level playing field for investors and political stability, increase the investment in labour force and promote long term economic growth. [12] conducted a Study during pandemic crisis, to find out the macroeconomic variable in determining FDI inflows to

BRICS. Data were collected from IMF. Pooled Mean Group (PMG) and Auto-Regressive Distributive Lag (ARDL) methods were used for the analysis of data set over the period 1994 to 2018. Results of the analysis revealed the FDI determinants in BRICS nations as GDP, trade openness, exchange rate, gross capital formation, infrastructural facilities and specified that these determining FDI variables differ in each country. The availability of infrastructure facilities is significant and plays important role in BRICS. The authors suggested that due to pandemic there arises the need for policy liberalisation to attract more FDI inflows.

[14] examined the impact of FDI on environmental dilapidation in BRICS nations. They used data for the period 1992 to 2014. They documented that FDI has a significant effect on gross domestic product and in decreasing the CO₂ emanations in the BRICS nations. [1] studied FDI and Unemployment in the BRICS nations. The author adopted time series data for the period of 1992 through 2018. He found an insignificant association between unemployment and FDI inflows of BRICS nations. Moreover, [5] examined the determinants of FDI in BRICS and how the relationship has affected renewable and non-renewable energy. They used annual time series data for the period 1990 through 2018. They found a positive significant effect between FDI and GDP. However, [11, 16, 17, 18] have argued that FDI has greater influence on economic growth.

3 Research Methodologies

FDI boosts entrepreneurship and a great source of employment to millions. Thus there is a necessity to focus on the growth of FDI Inflows. This Study is descriptive in nature and purely based on secondary data collected from the sources published by Organisation for Economic Co-operation and Development (OECD) and International Monetary Fund (IMF) for a period of seven years from 2014 to 2020. The authors have tried to study the growth of FDI Inflows of BRICS Countries during pre-pandemic period and during pandemic crisis and also compare the total and Average FDI Inflows within the BRICS nations. The statistical tools applied are Trend Percentages, CAGR, Mean Scores, ANOVA and LSD Post Hoc Test. Trend Percentages have been used to study the growth trend of FDI in BRICS countries. CAGR (Compound Annual Growth Rate) has been used to measure the compound growth rate of FDI in BRICS Countries. Mean Scores have been used to find out the average FDI Inflows in BRICS Nations. ANOVA is used to test Hypothesis and LSD Post Hoc Test was conducted to find which BRICS Countries were showing different FDI inflows. One prominent potential contribution of this study is that it extends extant literature by providing a motivational and integrative explanation on determinants of FDI and the ways of improvising the inflows of FDI in BRICS countries. The scope of the study is restricted to the study of FDI inflows in BRICS from 2014 – 2020.

The Table 1 below shows the total FDI inflows and their trend percentages for BRICS countries for the periods 2014-2020. It could be observed that the FDI inflows of Brazil (which is a part of BRICS country) are the highest (66,585 USD Millions) in the year 2017 and it is least (24,778 USD Millions) in the year 2020.

It could be inferred that the reason for lowest FDI inflows in the year 2020 is due to the pandemic situation. In case of Russia FDI has increased from 29,152 USD Millions (100%) in 2014 to 37176 USD Millions (128%) in 2016 and from there onwards there is a gradual decrease in FDI trend. It has further enormously fallen to 33% in the year 2020. Furthermore COVID 19 pandemic is one of the major causes for the decline. With respect to FDI inflows in India it has grown from 34577 USD Millions in 2014

FDI inflows of India. It is also reflected from the above Table the FDI inflows of China. The FDI inflows for the year 2014 are 268,097 USD Millions which is the highest figure and it is the least for the year 2017 (166,084 USD Millions). But the FDI inflows of China are the highest in comparison with other BRICS nation. We can also see the FDI inflows of Africa from the Table 1 below. The FDI inflows for the year 2014 are 2772 USD Millions (100%) and it has shrunk enormously to 1729 USD Millions (30%) in 2015 and from 2016 onwards it has shown an increasing trend. The overall growth trend is not satisfactory.

Analysis of FDI of BRICS Countries

Table 1: Trend Percentages of FDI in BRICS Countries.

Year	Brazil		Russia		India		China		South Africa	
	Amount In USD Millions	Trend Percentage	Amount In USD Millions	Trend Percentage	Amount In USD Millions	Trend Percentage	Amount In USD Millions	Trend Percentage	Amount In USD Millions	Trend Percentage
2014	63846	100%	29152	100	34577	100	268097	100%	5772	100%
2015	49961	78	11858	41	44009	127	242489	90	1729	30
2016	53700	84	37176	128	44459	129	174750	65	2235	39
2017	66585	104	25954	89	39966	116	166084	62	2007	35
2018	59802	94	13228	45	42117	121	235365	88	5447	94
2019	65386	102	32076	110	50610	146	187170	70	5125	89
2020	24778	38	9679	33	64351	186	212476	79	3106	54
Total	384058		159123		320089		1486431		25421	

Source: OECD and IMF

Table 2: CAGR (Compounded Annual Growth Rate) of FDI in BRICS Countries (In USD Millions).

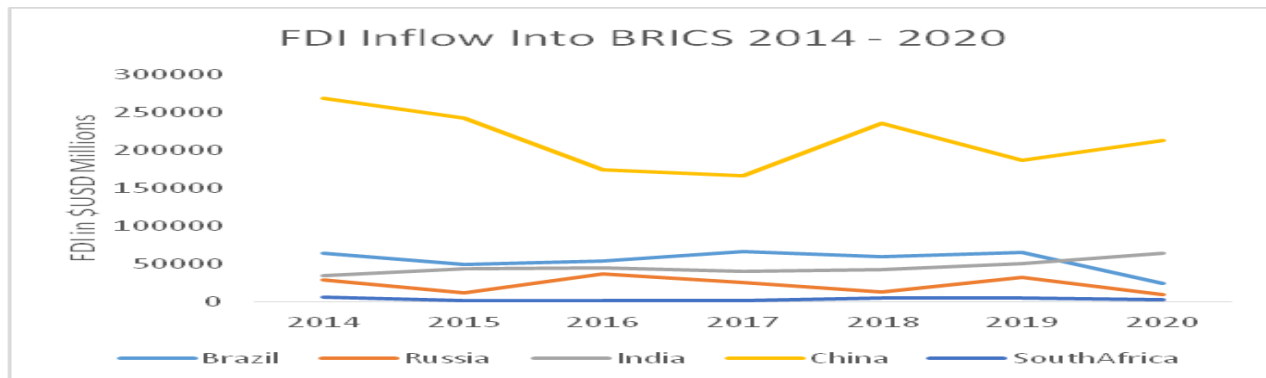
Year	Brazil	Russia	India	China	South Africa
2014	63846	29152	34577	268097	5772
2015	49961	11858	44009	242489	1729
2016	53700	37176	44459	174750	2235
2017	66585	25954	39966	166084	2007
2018	59802	13228	42117	235365	5447
2019	65386	32076	50610	187170	5125
2020	24778	9679	64351	212476	3106
CAGR	-13%	-15%	9%	-3%	-8%

Source: OECD & IMF

(100%) to 64351 USD Millions (186%) in the year 2020. It is inferred from the statistics that pandemic has not affected

Table 2 above indicates that the CAGR (Compounded Annual Growth Rate) of only India is Positive with 9% and

the rest are all negative with China having the lowest growth which is -15%. We can observe the same from the chart shown below. In 2019 India overtook Brazil in the FDI Inflows. India is currently the Number 2 in BRICS and number 5 in the world, with US and China being the first two.



Source: OECD and IMF

Figure 1: FDI Inflow Into BRICS 2014-2020

Table 3: Descriptive Statistics of FDI in BRICS Nations

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Brazil	7	54865.43	14627.12	5528.53	41337.60	68393.26	24778	66585
Russia	7	22731.86	11003.69	4159.01	12555.14	32908.58	9679	37176
India	7	45727.00	9537.65	3604.89	36906.15	54547.85	34577	64351
China	7	212347.29	38153.48	14420.66	177061.2	247633.37	166084	268097
South Africa	7	3631.57	1760.36	665.35	2003.51	5259.63	1729	5772
Total	35	67860.63	77685.02	13131.17	41174.89	94546.37	1729	268097

Source: OECD & IMF

Table 4: Total and Average FDI Inflows for BRICS Countries (2014-2020).

BRICS Countries	Total Amount in USD Millions	Mean Scores	Ranking
Brazil	384058	54865	II
Russia	159123	22731	IV
India	320089	45727	III
China	1486431	212347	I
South Africa	25421	3632	V

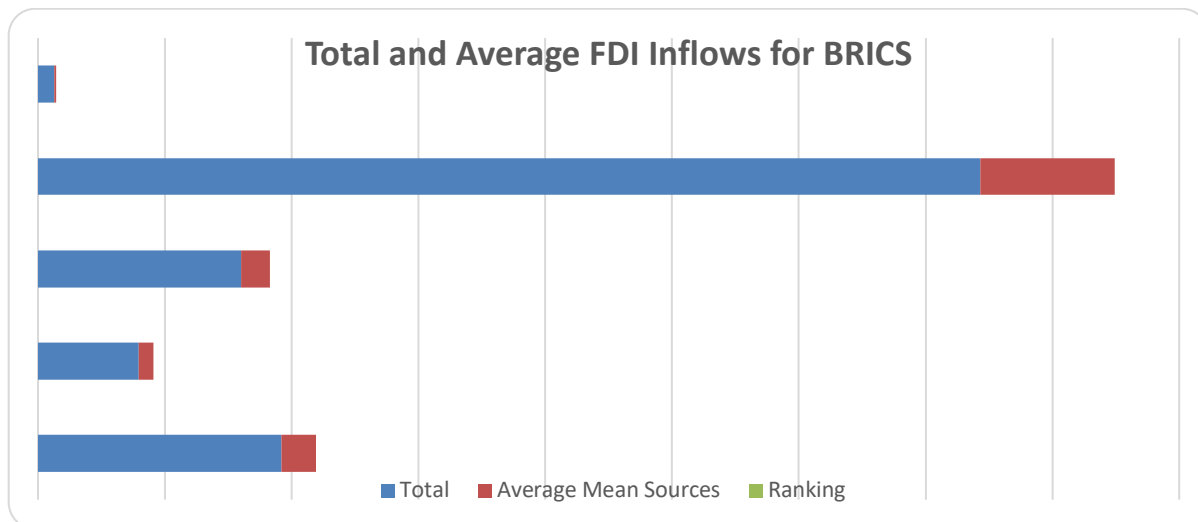
Source: OECD & IMF

From the above Table, it is evident that China has first rank and South Africa the last rank with respect to FDI inflows.

Table 5: ANOVA FDI in USD Million.

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	193880012348.46	4	48470003087.11	128.58	.000
Within Groups	11308725897.71	30	376957529.92		
Total	205188738246.17	34			

Source: OECD & IMF



Source: OECD and IMF

Figure 2: Total and Average FDI Inflows for BRICS

Table 6: Dependent Variable: FDI in USD Million

LSD

(I) Country	(J) Country	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Brazil	Russia	32133.571*	10377.965	.004	10938.94	53328.20
	India	9138.429	10377.965	.386	-12056.20	30333.06
	China	-157481.857*	10377.965	.000	-178676.49	-136287.23
	South Africa	51233.857*	10377.965	.000	30039.23	72428.49
Russia	Brazil	-32133.571*	10377.965	.004	-53328.20	-10938.94
	India	-22995.143*	10377.965	.034	-44189.77	-1800.51
	China	-189615.429*	10377.965	.000	-210810.06	-168420.80
	South Africa	19100.286	10377.965	.076	-2094.35	40294.92
India	Brazil	-9138.429	10377.965	.386	-30333.06	12056.20
	Russia	22995.143*	10377.965	.034	1800.51	44189.77
	China	-166620.286*	10377.965	.000	-187814.92	-145425.65
	South Africa	42095.429*	10377.965	.000	20900.80	63290.06
China	Brazil	157481.857*	10377.965	.000	136287.23	178676.49
	Russia	189615.429*	10377.965	.000	168420.80	210810.06
	India	166620.286*	10377.965	.000	145425.65	187814.92
	South Africa	208715.714*	10377.965	.000	187521.08	229910.35
South Africa	Brazil	-51233.857*	10377.965	.000	-72428.49	-30039.23
	Russia	-19100.286	10377.965	.076	-40294.92	2094.35
	India	-42095.429*	10377.965	.000	-63290.06	-20900.80
	China	-208715.714*	10377.965	.000	-229910.35	-187521.08

*. The mean difference is significant at the 0.05 level.

Source: OECD & IMF

Hypothesis

Ho: There is no significant difference in the FDI inflows of the BRICS countries

H1: There is significant difference in the FDI inflows of the BRICS countries

The ANOVA Table above shows that the F statistics is 128.58 with degrees of freedom 4 and 30 and a P value of 0.000. Since P value is less than the level of Significance (0.05) we reject the Null Hypothesis at the level of significance of 0.05. We therefore conclude that there is significant difference in the FDI amongst the BRICS countries.

An LSD post hoc test was conducted to find which BRICS countries were showing different FDI flows. From the Table 6 above it can be seen that Brazil and India are similar so are Russia and South Africa the P Value being 0.39 and 0.08 respectively. All other countries show different FDI flows.

4 Discussions

1. From Table 2 it is evident that India is the only country whose FDI has grown by CAGR of 9%. All other countries have shown negative CAGR. The FDI of China is far above all the other Countries with average FDI in the study period is \$212347 Million and the lowest being South Africa \$3632 Million. In 2019 India has overtaken Brazil in the FDI Inflows.
2. From the Table it is evident that there is increase in India's and China's FDI in spite of the pandemic situation. From Table 3 above it is clear that the average FDI of China is far above all the other Countries with an average FDI in the study period is \$ 212347 Million and the lowest being South Africa with \$ 3632 Million, and India being second with \$45727 Million.
3. Table 4 portrays total FDI and the averages of all the BRICS nations. It is in fact a comparative statement of FDIs of the BRICS nations. Amongst all the BRICS nations, China ranks first in attracting highest amount of FDI and South Africa has a least ranking. Brazil ranks second, India ranks third and Russia ranks fourth.
4. From the ANOVA Table 5 it can be observed that the P value is 0.000 which is less than the level of significance of 0.05. Hence Null Hypothesis is rejected. It means there is significant difference in the FDI inflows amongst BRICS Countries.
5. From Table 6, the LSD Post Hoc results of SPSS it is seen that the FDI inflows of Brazil and India is similar and that of Russia and South Africa are similar.

5 Conclusions

From the literature review it is observed that FDI plays a pivotal role in the economic development of any nation. It results in capital formations enhances employment opportunities, transfer of technology, highest standard of living, access to global managerial skills and aids in the optimum utilisation of human and natural resources. This study aimed at measuring the growth of FDI inflows over a period of 7 years ranging from 2014 to 2020. The study made use of Trend Percentages, CAGR, Mean Scores, ANOVA and LASD Post Hoc test. From the statistics it is observed that the total FDI inflows (2014-2020) are the highest in China (1,486,431 USD Millions) and it is the least in case of South Africa (25,421 USD Millions). The Study also indicates that there is significant difference in FDI inflows among BRICS nations. With respect to the variable which caused decline in FDI inflows is the havoc caused by COVID 19 pandemic. To contain the situation, the government had to take necessary measures such as lockdowns, restrictions on the movement etc. Ineffective public health system and economic policies further aggravated the decline in FDI inflows.

BRICS nations account for over 40% of world population and their contribution to the Global GDP in 2019 stands at 33%. (<http://infobrics.org>). In terms of total geographical area, Russia tops the BRICS nations and South Africa is the smallest country. BRICS countries contribute 22% of listed companies to the listed companies of the world. BRICS countries are most favoured as they are good destinations for investors. Investors derive more economic value by investing in these countries. The corruption control is weak in Brazil, Russia, India and China whereas it is strong in South Africa. BRICS nations occupy top 80th positions on the global Competitive Index. All the BRICS nations have strong trade relationships. In spite of many ups and downs they are expected to bring about a dynamic change in the world [15]. International Monetary Fund estimates that the BRICS countries will account for over 50% of GDP by 2030. In the year 2016 Russia became the largest exporter of wheat in the world. China has world's largest industrial and manufacturing capacity. India's strength lies in scientific, technological and pharmaceutical fields. Brazil is endowed with plenty of minerals and water resources, biological and ecological resources. South Africa is gifted with natural resources. Keeping into consideration the above factors, the BRICS nations deserve better FDI inflows and these factors act as motivation to the foreign investors.

Conflict of interest: The authors declare that there is no conflict regarding the publication of this paper.

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