

DETERMINANTS OF FOREIGN DIRECT INVESTMENT IN BRICS COUNTRIES

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Abstract: *This paper explores the determinants of FDI inflows for BRICS countries (Brazil, Russia, India, China, and South Africa). A Fixed Effects model is employed on the panel data set consisting of annual time series data for the period 2002 - 2014 to inform analytical and policy debates. Consistent with the prediction of the market size hypothesis, real GDP per capita is found to have a significant positive impact on FDI inflows. This particular result indicates that FDI in BRICS is motivated by market-seeking purpose. However, not as expected, trade openness is found to have a significant negative impact on FDI inflows. From a policy point of view, the results suggest that the more restrictive policies attract more FDI. On the other hand, higher political risks discourage FDI inflows. Interestingly, the results seem to suggest that economic stability in BRICS tends to play a lesser role in attracting FDI to BRICS countries.*

JEL Classification: C33; F21; O16; O53

Keywords: *Foreign Direct Investment, BRICS, Panel Data*

INTRODUCTION

Over the last decades, Foreign Direct Investment (FDI) has grown rapidly, especially in what concerns the investment inflows and outflows of emerging countries. BRICS is an association of five major emerging countries namely Brazil, Russia, India, China and South Africa. The grouping was originally known as "BRIC" before the inclusion of South Africa in 2010. As of 2015, the BRICS countries represent 42 percent of the world population and approximately 20 percent of the world GDP. FDI in emerging countries has contributed to the overall economic growth of a country. In 2010 emerging countries together attracted more than half of global FDI inflows (World Investment Report, 2011). During the last decades, the BRICS countries have been the predominant recipients of FDI. In 2014, the share of FDI to the BRICS countries was around 20 percent of global FDI inflows. The absolute and relative economic importance of BRICS is expected to continue to rise for the foreseeable future. The BRICS countries may be the largest economies in the upcoming decades. The purpose of this paper is to provide

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an overview of FDI inflows in this region and to analyze the determinants of FDI inflows in this region.

FDI INFLOWS IN BRICS

Until 1984, Brazil was the major FDI recipient country among the BRICS, overtaken by China in 1985, and since then China continues to be a major recipient country. Figure 1 shows that FDI inflows to BRICS countries increased rapidly from 2002 to 2008. In 2009, there was a sharp decline in FDI inflows to BRICS countries because of the global financial crisis. FDI inflows to BRICS increased 20.48 per cent to US\$ 447.33 in 2011, surpassing the 2005–2007 precrisis level for the first time, despite the continuing effects of the global financial and economic crisis of 2008–2009. FDI inflows to BRICS fell by 11.35 per cent to US\$ 396.53 billion in 2012 because of the economic fragility and policy uncertainty in a number of major economies. FDI inflows to BRICS fell by 6.05 per cent to US\$ 448.49 billion in 2014, mostly because of the fragility of the global economy, elevated geopolitical risks and policy uncertainty for investors. However, foreign investment flows unevenly into individual countries in BRICS (figure 2). Brazil, Russia, India and China have emerged as major destination for FDI, resulting BRIC. In 2014, China became the world's largest recipient of FDI while Russia dropped from 5th to 16th place as a recipient country (World Investment Report, 2015). Although, South Africa - an emerging country does not possess the characteristics of BRIC countries in term of territorial extension and the size of the population, yet it plays an important economic and political role in the African continent.

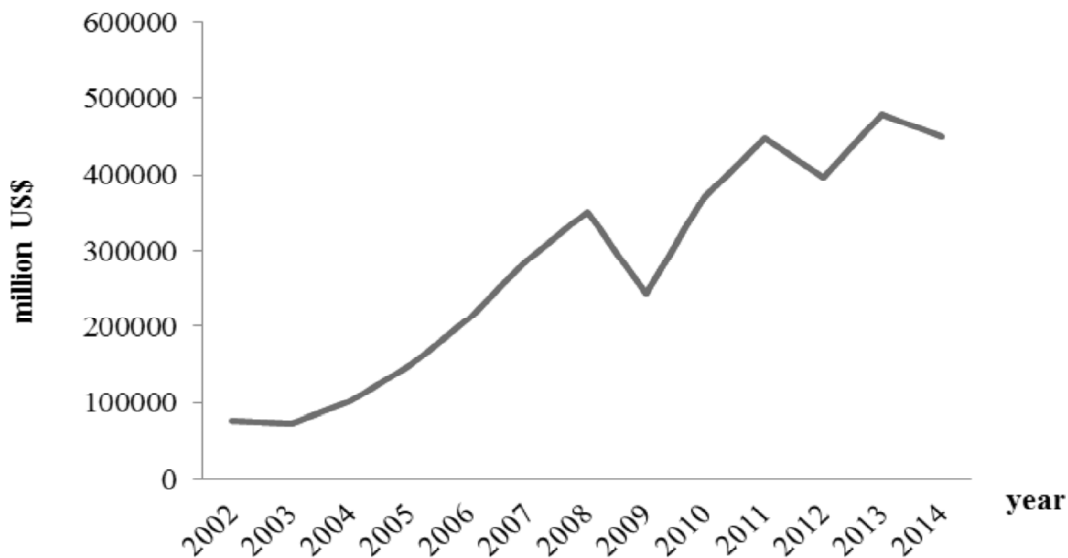


Figure 1. FDI Inflows in BRICS

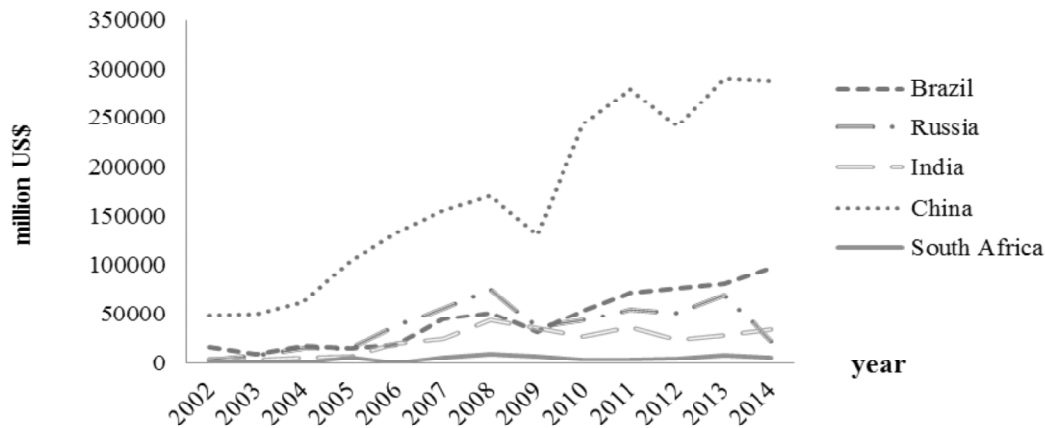


Figure 2. Individual FDI Inflows in BRICS

REVIEW OF LITERATURE

There are very few empirical studies of the determinants of FDI in BRICS countries.

Akpan *et al.* (2014) employs panel analysis to examine the determinants of FDI in BRICS and MINT (Mexico, Indonesia, Nigeria and Turkey) using data for the period from 2001 to 2011. The results show that infrastructure availability, market size and trade openness play the most significant roles in attracting FDI to BRICS while the roles of availability of natural resources and institutional quality are insignificant.

Jadhav (2012) explores the role of economic, institutional and political factors in attracting FDI in BRICS. The study uses panel data for the period from 2000 to 2009. Analysis has been done using panel unit-root test and multiple regressions. Findings indicate that economic factors are more significant than institutional and political factors in BRICS countries. Coefficients of market size, trade openness are positive while natural resource availability has a negative effect on inward FDI.

Ranjan and Agrawal (2011) explore FDI inflow determinants in BRICS. A random effect model is employed on the panel dataset consisting of 35 years from 1975 to 2009. The results show that trade openness, market size, labour cost, infrastructure facilities and macroeconomic stability and growth prospects are potential determinants of FDI inflow where gross capital formation and labour force are insignificant, although macroeconomic stability and growth prospects have very little impact.

Vijayakumar *et al.* (2010) examines the factors determining FDI inflows of BRICS using an annual dataset from 1975 to 2007. The study employs panel data analysis and finds that market size, labour cost, infrastructure, currency value and gross capital formation as the potential determinants of FDI inflows. Economic stability and growth prospects, trade openness seem to be insignificant determinants of FDI inflows.

VARIABLES AND METHODOLOGY

Based on theoretical models and previous studies, our study gauges a set of potential determinant variables that influence the FDI inflows to the host country. These variables may be aggregated into the following broad categories: political risks, inflation rate, real interest rate, trade openness and market size.

Political risks: political instability and the frequent occurrences of disorder “create an unfavorable business climate which seriously erodes the risk-averse foreign investors’ confidence in the local investment climate and thereby repels FDI away” (Schneider and Frey, 1985).

Inflation rate: Inflation rate is one indicator reflecting the stability of the economy. Usually, high inflation rate could reduce the return on investment and is the indicator of the instability of the economy. Investors have to spend more money in the host country with high inflation rate. The lower inflation rate (the more stable environment) will encourage more FDI. This study expects a negative effect of inflation on FDI.

Real interest rate: If MNCs borrow money from Home and invest for other reasons than higher returns on capital. Higher interest rate could reflect higher market risk, thus reducing FDI. The higher the interest rate, the less FDI is likely to be received. Therefore, a negative relationship between FDI inflows and inflation is hypothesized.

Trade openness: Trade openness is one of the traditional variables to explain FDI. Openness is defined as the ratio of total trade (import plus export) to GDP and is also interpreted as a measure of trade restriction. MNCs always invest in countries they already trade with. The more openness of the economy, the more attractive it is for FDI. This variable is important for the foreign investors who are motivated by the export market. MNCs associated with export oriented investment prefer to invest in a more open economy since decreased imperfections generally imply lower transaction costs associated with exporting. However, the expected effect of openness on FDI is ambiguous since the openness is not only attracting more FDI to the host country but also increasing the competition between the foreign and domestic firms. The expected effect of trade openness on FDI also differs according to the type of FDI. FDI inflows will be lower in the highly restrictive countries while not necessarily for the vertical FDI. However, if there is less restriction to export or to re-export to home country or third countries, vertical FDI could also be high. Nevertheless, openness is generally hypothesized as having a positive association with FDI.

Market size: Market size of the host country is usually measured by GDP or per capita income. This study uses GDP per capita as proxy for market size. The size of the market is the indicator of the potential domestic demand and the host country’s economic condition. The larger host country reduces the cost of supplying the market because of economies of scale and lower average fixed cost. The larger host market should attract more market-oriented FDI because it provides more opportunity for local sales, greater profitability of local sales to export sales (Pfefferman and Madarassy,

1992). The market size of the host countries is important even for the nonmarket-oriented FDI because larger economies can provide larger economies of scale (OECD, 2000).

In connection with discussions above, we propose an estimation model as follows, where the selected variables are expected to determine the FDI inflows:

$$FDI_{it} = a + b_1 pol_{it} + b_2 inf_{it} + b_3 r_{it} + b_4 O_{it} + b_5 S_{it} + u_{it} \quad (1)$$

where FDI_{it} is inflows of FDI for country i at time t ; pol_{it} is the political risks (political instability and/or politically-motivated violence, including terrorism for country i at time t ; inf_{it} is the inflation rate for country i at time t and is the measure of economic stability of the country; r_{it} is the real interest rate for country i at time t ; O_{it} is the trade openness for country i at time t and is computed as a ratio of export of goods and services plus import of goods and services divided by GDP; S_{it} is the GDP per capita for country i at time t and is the measure for market size and u_{it} is the error term over the time t .

The panel data estimation is employed in this study. The use of panel data techniques allows us to determine the temporal evolution of groups of countries rather than analyzing the temporal behavior of each country. This technique takes into account the individual heterogeneity, allows a larger number of data observations to increase the degrees of freedom and improves the efficiency of the estimates.

Technically, the panel data may exist group effects, time effects or both. These effects can be Fixed Effects or Random Effects. The Hausman test (Hausman, 1978) is performed to find whether the Fixed Effects model or the Random Effects model is appropriate.

RESULTS

The estimates through panel data analysis including OLS pooled regression (Common constant method), Random Effects method and Fixed Effects method for the selected study period. Since, the results of OLS pooled regression and Random Effects parameter coefficients sign and their significance levels are similar, we choose Random Effects model to check the robustness with Fixed Effects model. To ascertain the appropriate specification (i.e. Fixed Effects or Random Effects), we carry out the Hausman test under the null hypothesis that the individual effects are uncorrelated with the other regressors in the model (i.e. estimates from the Random Effects model are consistent and efficient). The p -values (0.0000) of the chi-square statistic (297.55) from the Hausman specification test is less than 0.05 indicating that the null hypothesis be rejected. Consequently, the Fixed Effects model is employed to estimate the panel model. The estimate results of both Fixed Effect and Random Effects model are presented in table 1. However, we show both results but we discuss only the results of Fixed Effects model. The empirical results obtained from the Fixed Effects model shows that regression model with dependent variable FDI fits well with independent

determinant variables as value of $\text{adj.}R^2$ is 0.8984. The results of Fixed Effects model confirm the significance of political risks (pol) and market size (S) at 5 percent and 1 percent level of significance, respectively. The co-efficient signs for these variables are as expected, negative for political risks and positive for market size. The coefficient of real interest rate (r) is negative, as expected, but not statistically significant which indicates that this determinant might not be important determinant in this case. Thus, the size of the domestic market is an important factor in attracting FDI inflows to BRICS countries. We find significantly positive relationship between FDI and inflation (inf), which is a contradictory result as expected. The result seems to suggest that economic stability in BRICS tends to play a lesser role in attracting FDI to BRICS countries.

An important factor in choosing investment destinations for MNCs is the more liberal policies. However, not as expected, the coefficient of the trade openness is negative and significant at 1 percent level. Theoretically, trade openness could affect FDI inflows positively or negatively. The impact of openness on FDI depends on the types of investment. When investments are export-oriented, i.e., goods are produced in the host country but sold abroad, trade openness has a positive impact on FDI. In contrast, MNCs engaged in market-seeking, i.e., goods are produced in the host country and sold in the domestic market, trade openness can have a negative impact on FDI.

Table 1
Panel Data Estimation Results based on Fixed Effects (FE) and Random Effects (RE) Models

| Explanatory Variables | FE | | | RE | | |
|-------------------------|----------|---------|---------|----------|---------|---------|
| | Coeff. | t-value | p-value | Coeff. | t-value | p-value |
| pol | -42926 | -2.24 | 0.029 | 18617 | 0.65 | 0.517 |
| inf | 5822.03 | 4.41 | 0.000 | -6140.11 | -1.93 | 0.053 |
| r | -843.83 | -1.32 | 0.193 | -2794.51 | -1.93 | 0.054 |
| O | -1630.13 | -2.75 | 0.008 | -2274.84 | -1.64 | 0.102 |
| S | 17.99 | 11.15 | 0.000 | 1.20 | 0.71 | 0.476 |
| Adjusted R ² | | 0.8984 | | | 0.1466 | |

Note: A constant term is included but not reported

CONCLUSION

The results indicate that the market size and trade - restriction policies are the factors that are expected to enhance the attractiveness of FDI inflows while the political risks are expected to deter the FDI inflows. The study expects the coefficient of inflation to be negative but the result yields a positive and significant. However, real interest rate seems to have no statistically significant impact on FDI inflows.

The challenge for the BRICS countries are how to sustain their performance and trend in FDI inflows and how to form their policies to attract more FDI in the future. Based on empirical findings, it is suggested that the strategic orientation of BRICS countries in attracting FDI is to enlarge GDP per capita. In addition, improving the

political stability is also crucial as part of future policy strategy to further attract new FDI inflows into the region.

References

- Akpan, Uduak, Isihak, Salisu and Asongu, Simplice (2014), "Determinants of Foreign Direct Investment in Fast-Growing Economies: A Study of BRICS and MINT". *African Governance and Development Institute Working Paper WP/14/002*.
- Chenery, H.B., Robinson, S. and Syrquim. M., (1986), *Industrialization and Growth: Comparative Study*, New York: Oxford University Press
- Hausman, J. (1978), Specification Tests in Econometrics. *Econometrica*, 46(6), 1251-1271.
- Ismail, Norma Wana (2009), "The Determinant of Foreign Direct Investment in ASEAN: A Semi Gravity Approach". *Transition Studies Review* 16(3): 710-722.
- Jadhav, Pravin (2012), "Determinants of Foreign Direct Investment in BRICS economies: Analysis of Economic, Institutional and Political Factor". *Procedia - Social and Behavioral Sciences* 37: 5-14.
- OECD (2000), "Main Determinants and Impacts of Foreign Direct Investment on China's Economy", Working papers on International Investment.
- OECD (2013). AMNE Database-Activity of Multinational Enterprises.
- Pfefferman, G.P. and Madarassy, A (1992), "Trends in Private Investment in Developing Countries". International Finance Cooperation, Discussion Paper No. 14, Washington D.C.
- Ranjan, Vinit and Argrawal, Gaurav (2011), "FDI Inflow Determinants in BRICS Countries: A Panel Data Analysis". *International Business Research*. 4(4): 255-263.
- UNCTAD (2013), Inward and Outward Foreign Direct Investment Flows, UNCTAD Stat. available for downloading at <http://unctadstat.unctad.org/TableView/tableView.aspx?ReportId=88>.
- World Investment Report (2011), Non-Equity Modes of International Production and Development, UNCTAD.
- World Investment Report (2012), Towards a New Generation of Investment Policies, UNCTAD.
- World Investment Report (2015), Reforming International Investment Governance, UNCTAD.

