IMPACT OF OUTWARD FDI:
Evidence from Emerging Economies for Policy

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Abstract: *The study makes an attempt to contribute to the ongoing policy debate on whether OFDI has a complementary or substitution effect on domestic investment and hence, growth. For the purpose, the current paper uses panel data analysis to understand the impact of OFDI for 14 emerging economies in the period 1981-2019. We supplement the cross-country evidence with a time series analysis for India, given that FDI outflows from the country have been steadily increasing over the years. The results confirm the positive effect of OFDI on economic growth, but the substitution effect for domestic investment. This indicates that the OFDI positively affects growth through its effect on trade and other positive spillover effect, rather than domestic investment. However, in case of India, the findings support the complementary effect of OFDI on domestic investment.*

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I. Introduction

Over the past few decades, there has been an increase in outward foreign direct investment (OFDI) from emerging countries. In 1995, OFDI from developing countries constituted just 4% of global FDI flows, while in 2014 this share had reached a record 27% (Stephensen & Parea, 2018). OFDI enables such countries to access new markets, resources, technology transfers, knowledge and skills. Firms in developing countries are also exploring new locations for reducing their costs of production, diversifying their investment portfolio to mitigate risks and getting integrated into global value chains. All these positive spillovers can contribute to the economic growth of the investing countries. However, there has been considerable debate whether OFDI is always beneficial to the home country as OFDI from capital deficient countries may reduce domestic investment and thereby, growth. The debate whether OFDI has complimentary or substitution impact on growth and investment is imperative for policy concerns, particularly in the case of capital deficient countries. This is especially important given that the world economy has been experiencing low rates of investment (Sachs, 2016) since the Global Financial Crisis (GFC).

The exact impact of OFDI on the home country's economy tends to vary with the prevailing economic conditions in such countries, depending upon their business environment, financial sector development, absorptive capacities of domestic firms and international linkages. The 2007-08 GFC followed by the debt crisis lead to volatility in the growth experiences of different countries. This in turn affected their prospects of returns on investments, availability of financial resources and, access to global markets. Such developments have had an effect on the usual channels through which OFDI impacts the economy of the investing country. It is hypothesized that the changing conditions may have altered the direction and magnitude of OFDI's impact on domestic investment. Understanding OFDI's implications for domestic investment has become imperative, as the latter remains the focal point for not only raising productivity growth or overcoming secular stagnation, but can also lead to improved future prospects (Eberly, 2020). As a result there has been renewed interest among policymakers to settle the current debate on the OFDI-growth nexus. In this backdrop, our research seeks to address the following research questions: (i) whether OFDI leads to the complementary or substitution effect on domestic investment and, (ii) whether OFDI can contribute to the economic growth of the investing country. Addressing such questions can help in making key

policy decisions about resource allocation and financial liberalisation policies pertaining to OFDI.

The last two decades have witnessed a dramatic rise in cross border investment activities by enterprises in developing countries from a broad spectrum of industries (Khan, 2012; Sauvant *et al.*, 2010; Nayyar & Mukherjee, 2019). According to Narula and Nguyen (2011), Asian countries including newly industrialized countries (Korea, Singapore, Taiwan, and Hong Kong), Malaysia, Brazil, Russia, India and China have remained the key sources of OFDI[1]. This phenomenon warrants an empirical study establishing the relationship between OFDI and domestic investment and economic growth for countries actively involved in OFDI activities. Hence the present study relies on a sample of 14 emerging economies, to understand the relationship between OFDI and economic growth in the wake of changing global dynamics, especially post-GFC. To be specific, the paper uses panel data analysis to empirically investigate the effect of OFDI on domestic investment and economic growth for these countries in the period 1981-2019.

In addition, it also applies time series analysis to analyse the country specific effects of OFDI on India during the same period. India has been no exception to the changing landscape of OFDI, as its outward investment has increased from US$ 0.7 billion in 2000-01 to peak at US$ 18.5 billion in 2007-08 and, finally settle at a moderated level of US$ 12.6 billion in 2018-19 (Joseph, 2019)[2]. Interestingly, India's domestic investment rose constantly in the beginning of 21st century and peaked at 35.8% of GDP in 2007, but slowed gradually to 28.9% in 2018 (WDI, 2019). Hence India has been included as a special case study in the current paper, given that the investment outflows from India have been steadily increasing over the past two decades, though moderated in recent years, while its domestic investment rate has slowed since 2007-08. Therefore, assessing the impact of OFDI on its domestic investment and economic growth under a long run equilibrium framework can contribute towards the ongoing debate and has useful policy implications.

As such, the paper is divided into six sections. The next section gives a brief overview of the broader trends with regard to OFDI across the 14 emerging Asian countries. This is followed by a section presenting a literature review of earlier studies analysing the impact of OFDI on

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[1] However, Kose et al. (2017) have also noted the investment slowdown for emerging economies mostly pronounced among the large, so-called BRICS (Brazil, Russia, India, China, South Africa) economies and in commodity exporters.
[2] The number of Indian firms undertaking outward investment has also increased, rising from a mere 60 enterprises in the early 1980s to 7793 enterprises in 2014 (Pradhan, 2017).

domestic investment and growth. Section 4 discusses the panel data methodology and empirical findings for emerging economies. Section 5 describes the India specific empirical findings. Finally the study is summarised and concluded in Section 6.

II. Broad trends in OFDI flows

II.1. Cross country comparison of OFDI flows

Global OFDI has increased steadily from around USD 500 billion in the early nineties, reaching its peak at US$ 1540 billion in Triennium Ending (TE)[3] 2016 and finally settled at US$ 1300 billion during TE 2019 (Fig. 1A). The composition of the source countries of OFDI has also changed over time with developing countries, particularly from Asia, contributing more to global OFDI. The share of developing countries in global OFDI has increased from 10% to 32% between 1991 and 2019, mainly driven by Asian countries whose shares rose from 8% to 30% during the same period. In volume terms, OFDI from Asian countries has increased from USD 40 billion to USD 384 billion in this period (Fig 1B).

Within Asia, OFDI (as % of GDP) has significantly increased from newly industrialised economies such as Hong Kong, Singapore, Korea, China and India. Hong Kong had recorded OFDI to the tune of 15% of its GDP during 1990s which had increased to 32% during TE 2016. Singapore's OFDI share increased from 6.5% to 14.6% during the same period.

**Figure 1: OFDI Flows in Developed and Developing Countries Including Asia**
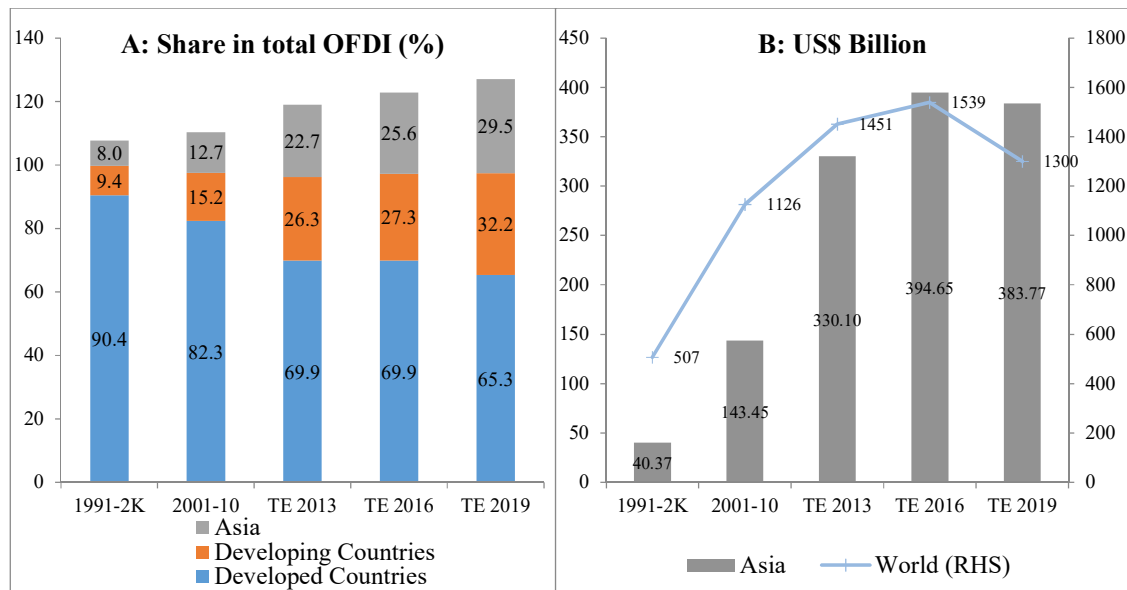
Source: Author's compilation from UNCTAD

The increase in OFDI shares of the other countries has been less dramatic as the shares for Malaysia increased from 3.4% to 3.9%, China increased from 0.4% to 0.9% and both Russia and Korea, increased from less than 1% to around 2% of their respective GDPs. India's OFDI as percentage of GDP has increased from 0.03% during the 1990s to 0.43% by TE 2019 (Fig-2). However, India continues to lag behind many of its Asian counterparts as outflows for Brazil, China, and Singapore were 0.79 %, 0.94%, and 10.4 % of their respective GDPs by TE 2019 . As the current study puts special emphasis on the Indian experience with regard to OFDI, the next sub-section traces the evolution of OFDI flows from India over the years. It provides an insight into the inter-temporal responses of OFDI to changes in policy regimes, especially after the introduction of economic and financial liberalisation policies in the early 1990s.

Figure 2: OFDI as % of GDP in Select Asian Countries
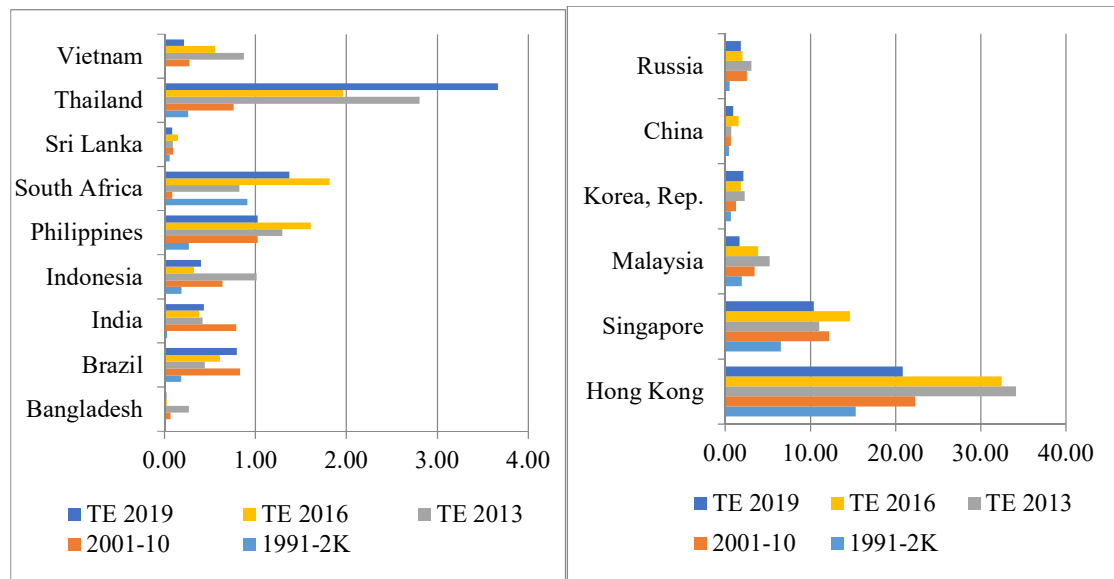
Source: Author's compilation from WDI 2020

II.2. Nature of OFDI flows from India

There has been a sharp increase in OFDI from India over the last two decades, though Indian companies have been investing abroad since the 1970s. India's approach towards OFDI has evolved over the years and as such, may be divided into three main phases. In the first phase - between 1975 and 1990 - Indian OFDI was largely geared towards acquiring limited ownership[4], mostly in manufacturing, in similarly placed neighbouring countries such as Thailand and Singapore. The factors determining the direction of investment from India during the period were mostly geographical proximity, historical relations and cultural ties with the

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[4] About 13% percent ownership of approved equity projects has acquired more than 80 % participation in foreign affiliates. Around 64% of approved projects had ownership with less than 50%.

host countries. In the 1990s, there was a slow shift in the Indian OFDI towards acquiring majority ownership[5] in its foreign affiliates, particularly in service-driven opportunities offered by the more advanced economies (Chaudhary *et al.*, 2018). The motivating factors for increasing ownership participation included improvements in the firm-specific capabilities as an outcome of modern in-house R&D, acquisitions of foreign-created assets and access to global capital markets (Pradhan, 2017).

The third phase - 2000 and 2015 – witnessed accelerated outward investment in services sector. As per Mahajan (2013), the major destinations of Indian OFDI were Mauritius, United States of America, United Kingdom, Netherlands and Singapore. During the period, there was a move away from low technology products, such as food and textiles, to more technology intensive industries, such as chemicals and pharmaceuticals products. The primary sector - though accounting for a smaller share of OFDI - remained important, mainly for the extraction of crude petroleum and natural gas (Pradhan, 2017). Increase in imports of capital goods, R&D investment and export orientation helped Indian industries to attain higher productivity, which in turn provided a favourable environment for increasing OFDI (Thomas *et al.*, 2017).

III. Brief literature review

Existing literature suggests that OFDI can affect the economic growth of a country through its impact on domestic investment. In this context, previous studies have found that OFDI could have any of the three effects on domestic output: neutral, complementary and substitution effect. Under the complimentary effect, OFDI can lead to an expansion of domestic output by increasing access to global production networks, markets, transfer of technology and, acquisition of skills (Zhao *et al.*, 2010; Herzer, 2010; Globerman, 2012; Ameer *et al*., 2017; Kazemi *et al*, 2018). In addition, it could increase a country's investment competitiveness through forward and backward linkages, resulting in higher growth trajectories (Kim, 2000; Simpson, 2012; Ameer *et al.*, 2017; Kazemi *et al.*, 2018). OFDI also offers the scope for diversifying markets and enjoying the benefits of scale economies (Sauvant, 2005; Goh; 2011; Badar *et al.*, 2018; Chaudhary *et al.*, 2018). Those arguing in favour of the substitution effect (SE) suggest that the effect of OFDI is subject to the availability of investment opportunities in the home country. In case of diminished domestic return in the absence of a conducive business environment and appropriate investment opportunities, OFDI may divert resources away from domestic investment in the home economy (Stevens and Lipsey, 1992). The

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[5] About 57 % of OFDI was utilized for acquiring the ownership participation in the 80-100 percent range

intensity of SE is usually more pronounced for capital deficient developing countries, wherein OFDI can lead to below trend level of domestic investment and growth potential (Braconier and Eckholm, 2002; Lee *et al.*, 2009; Imbriani *et al.*, 2011; Wagner, 2011; Al-Sadig, 2013). There are also evidences of mixed outcomes as the effect of OFDI on domestic investment and output growth seemed to vary according to country specific characteristics (Falzoni and Grasseni, 2005; Bitzer and Görg, 2009; Debaere *et al.*, 2010).

There have also been numerous empirical studies on the issue. Out of these, several studies have reported on the complementary impact of OFDI on domestic investment and growth, both at the micro and macro levels. The prominent studies in support of this argument are Globerman (2012) for Canada; Desai *et al.*, (2009) for US MNEs; Simpson (2012) for UK (high-skill sector) etc. Similar observations have also been made for developing countries as given in the studies by Kim (2000) for Korea; Chen and Yang (2013) for Taiwan, Zhao *et al.* (2010) and Ameer *et al.* (2017) for China and Pradhan *et al.* (2009) for the Indian automotive sector. As pointed out by Kazemi *et al.* (2018), channelling FDI outflows to developed countries could enable the Asian region to gain access to the advanced technologies available in these countries, thereby improving the productivity of local firms and expanding the domestic economies of this region.

An illustration of the substitution effect of OFDI is given in a study by Imbrani *et al.,* (2011) which used firm level data in Italy for the period 2003-06, to show that OFDI has a negative impact on employment in the services sector. However, the same paper found that OFDI strengthened productivity and to a lesser extent, employment in the manufacturing sector. The negative impact of off-shoring on employment was also noticed in Germany (Wagner, 2011) and China (Lee *et al.*, 2009). In addition, Lee *et al.* (2009) found that FDI outflows to China decreased the exports to GDP ratio for small source countries (such as the Tiger economies i.e. Hong Kong, Singapore, Taiwan, and Korea). The negative impact of OFDI on domestic investment was also observed in the case of developing countries as found in the study by Al-Sadig (2013).

Lastly, some empirical studies have also found mixed results while examining the impact of OFDI on domestic investment. Falzoni *et al.* (2005) used data from Italian firms and found both substitution and complimentary effects of OFDI as upper quintile firms performed better in terms of productivity and employment whereas less productive firms – lower quintile - experienced no such gain. Bitzer and Görg (2009) considered 10 manufacturing sectors from 17 OECD countries and reported an overall negative relationship between OFDI and domestic

productivity with outcomes varying across countries. Braconier and Eckholm (2002) examined OFDI for Swedish manufacturing firms for the period 1970-1998. The study found that OFDI neither strongly substituted nor complemented domestic investment, except in the case of a few firms. The study by Debaere *et al.*, (2010), shows that OFDI in less developed countries lowered employment in the home economy whereas there was no significant impact on employment for OFDI in advanced countries. Herzer (2010) employed time series data analysis to show that OFDI substitutes domestic investment in the short run and complements it in the long run. Yet another study by Goh *et al*. (2013) found insignificant OFDI-trade linkages in the case of Malaysia.

The effect of FDI outflows on the domestic economy has also been analysed in the Indian context. Das (2015) used data from Indian manufacturing firm for the period 2009 to 2012 and found that OFDI by Indian MNEs seemed to have a positive influence on export intensity and R&D, while having no significant impact on the domestic investment, output and employment, import of raw materials, and import of capital goods. Other studies have attempted to capture the impact of OFDI on different dimensions including technology and R&D (Pradhan *et al.*, 2009; Chen *et al.*, 2013), exports or trade (Pradhan, 2007; Goh *et al*., 2013), domestic employment (Debaere*et al*., 2010), domestic investments (Al-Sadig, 2013), domestic output (Herzer, 2010) and total factor productivity (Zhao et al., 2010). The results are mixed – while some studies found positive impact of OFDI on exports, R&D and investment, others found insignificant results.

Overall, the existing literature shows mixed results with regard to the impact of OFDI on domestic investment and economic growth. In addition, the economic landscape has changed significantly in the post GFC era and there needs to be a re-examination of these relationships in emerging economies. For India, the past decade has been marked by several economic developments. There has been an investment slowdown in the country, the reason for which has been attributed to a number of factors, including the credit crunch experienced amid rising NPAs of banks and the twin balance sheet problem. The current study extends the existing literature on several grounds. Firstly, it makes a deliberate attempt to include countries which are actively participating in OFDI activities. Secondly, the time span chosen for the analysis (1980-2018) marks an important period in the evolution of OFDI from these countries, tracing its rise in the beginning of the period to a period of increased financial volatility in the aftermath of the GFC and the sovereign debt crises. Thirdly, the paper accounts for the state of capital deficiency, debt burden and uncertainty by including these factors as controlling variables

while estimating the OFDI impact on investment. These three dimensions have been largely overlooked in earlier studies.

IV. Impact of OFDI on growth and Domestic Investment: Panel data analysis

IV. 1. Methodology: Model Estimation, Data Sample and Sources

The standard growth model depends on various factors such as factor endowments, external sector performance, policy environment, financial soundness, state of technology, and human capital levels. The primary concern of the present paper is to delineate the impact of OFDI on economic growth. In this context, the present study uses a growth accounting framework where OFDI is taken as one of the explanatory variables along with important control variables. The selection of control variables is based on the existing literature on drivers of economic growth, and includes factors such as human capital (Nelson & Phelps, 1966; Sahoo and Dash, 2012); FDI (Samuel. 2009; Sahoo *et al.*, 2014); trade openness (Jacob & Zelealem, 2015; Sahoo *et al.,* 2014); fiscal policy (Chandika *et al.*, 2020) and; OFDI (Herzer, 2010; Usman *et al.*, 2018). In addition, the current growth function includes other control variables such as gross fixed capital formation for domestic capabilities (Reppas and Christopoulos, 2005; Akinlo, 2004); financial development for supply side of resources (Sahoo and Dash, 2013); life expectancy for better quality of human capital; external sector for global demand and; policy environment factors. External sector performance is measured through terms of trade as it captures the behaviour of volume as well as prices of trade. The macroeconomic policy environment of a country depends on its existing monetary and fiscal policies which affect aggregate demand and supply conditions. We also take into account these dimensions through proxy measures of real interest rate and government size. (Refer Table 1 for a detailed description of these variables[6]). Thus, we empirically examine the relationship between OFDI and economic growth utilizing the following model specification:

$$GDP_{ij} = \alpha_0 + \alpha_1 DI\_FD_{ij} + \alpha_2 OFDI_{ij} + \alpha_3 LE_{ij} + \alpha_4 TOT_{ij} + \alpha_5 X_{ij} + \mu_{ij} \quad \text{.......1}$$

Here, i and j refer to values for the specific country and year respectively, α_{1-5} are the coefficients to be estimated and μ is the error term. X is the set of variables representing policy environment such as inflation, real interest rate and government spending.

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[6]We did consider host of other variables but had to settle for these variables given the data availability and diagnosis tests while carrying the empirical exercise.

With regard to investment estimation, we have followed the standard investment model wherein output plays an important role under the accelerator principle; bank credit appears as a supply side factor for financial resources and; monetary and fiscal policies work as counter-cyclical factors. The state of the external sector also affects the level of investment in a country. This particular dimension is measured through trade openness and real effective exchange rate, which respectively represent the market and competitiveness of a country. Since the impact of OFDI on the economy of the investing country occurs through particular channels – such as technology transfers, acquisition of skills and access to global production networks and markets - we have considered exports and imports separately. Additionally, in keeping with the recent literature (Anand & Tulin, 2014; Dastidar & Ahuja, 2019) we have extended the investment model to include certain drivers of investment such as credit short fall (measured by credit-gap as % of GDP), debt sustainability (quantified through the debt service ratio) and business environment (by ease of doing business). These dimensions have been largely overlooked in existing literature in the context of OFDI's impact on domestic investment. Accordingly, we have estimated the following investment function:

$$DI_{ij} = \beta_0 + \beta_1 Credit_{ij} + \beta_2 GVA_{ij} + \beta_3 OFDI_{ij} + \beta_4 X_{ij} + \mu_{ij} \qquad \text{……..2}$$

Where, X refers a set of variables comprising the external sector; policy factors and business environment factor (refer Table 1). As mentioned before, the analysis has considered a sample of 14 emerging economies, mainly from the Asian region which have a comparable economic structure with India[7] and have uniform data availability since 1981. The time period considered for the analysis is 1981-2019, as OFDI from these countries has been increasing since the 1980s. The data has been extracted from the World Development indicators and BIS Statistics Explorer released by the World Bank and Bank for International Settlement (BIS) respectively and website of policy uncertainty.

Table 1: List of variables for panel estimation

Variable	Dimension	Description and measurement
Growth Factors		
GDP	Economic Growth	Log of real GDP per-capita
DI_FD	Domestic capabilities including financial soundness	A composite index[8] of gross fixed capital formation (as % of GDP) and financial development index[9]

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[7] These include: Bangladesh, Brazil, China, Hong Kong, India, Indonesia, Korea, Malaysia, Philippines, Russia, Singapore, South Africa, Sri Lanka and Thailand..

[8] Using principal component analysis

[9] Financial development is measured through an index compiled by IMF considering various dimensions such as depth, access and efficiency of both the financial institutions and financial markets.

OFDI	External investment	Outward net FDI (% of GDP)
LE	Human Capital	Life expectancy
TOT	External Sector	Terms of trade (Unit value index of exports to imports)
INF	Macroeconomic policy	Inflation rate (%)
RIR	Monetary Policy	Real interest rate (%)
GFCE	Government Size	Government final consumption expenditure (% of GDP)
OFDIxCrisis	OFDI with GFC	Interaction of OFDI with dummy variable of value 1 in post GFC period and 0 otherwise
OFDIxCGAP	OFDI with financial constraint	Interaction of OFDI with dummy value 1 for credit shortfall period[10] and 0 otherwise
Domestic Investment Factors*		
Credit	Financial Soundness	Credit as % of GDP
Output	Demand side	Log value of gross value added at constant prices
OFDI	External investment	Outward net FDI (% of GDP)
TRADE		Trade openness (Trade as % of GDP)
EXP	External Sector	Exports as % of GDP
IMP		Imports as % of GDP
CGAP	Credit shortfall	Gap between actual and trend value of Credit as % of GDP
REER	External sector	Real effective exchange rate
DSR	Debt burden	Debt Service Ratio (Interest burden to income, %)
EPU	Uncertainty	Economic Policy Uncertainty index
EODB	Business environment	Ease of doing business index

Note: * Considering the commonality if investment and growth drivers, we tried to take alternative variables to the extent possible in estimating the investment function.

There are various methods available for estimating the panel data such as fixed effect, random effects and generalized least squares methods. According to the existing literature, classical linear regression models suffer from problems of heteroscedasticity and autocorrelation nature of the disturbance (Victor, 2015). These problems are relatively better handled by using generalized least square (GLS) estimation. Hence present study uses the GLS method while allowing the heteroscedastic panels as well as autocorrelation pattern.[11]

V. Econometric analysis and empirical results

V.1. Impact of OFDI on economic growth

The results of the panel data analysis with slightly different variations of the models (Eq. 1) are presented in Table 2. In *Model G1*, the results reveal that OFDI, domestic investment, financial development[12] and life expectancy have a positive and significant impact on

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[10] A dummy value 1 is assigned, where credit-gap has negative values implying the credit falls short of the long-run trend level and, 0 otherwise.

[11] The model specification is standard in literature and hence not presented.

[12] We clubbed these two variables while considering the finance-growth literature wherein financial development plays an important in economic growth through accumulation of quality and quantity of capital formation.

economic growth.[13] The value of the OFDI coefficient implies that 1% increase in OFDI leads to 0.13% increase in the per-capita GDP. Similarly, the coefficient value of domestic investment suggests that 1 % increase in domestic investment can increase the per-capita GDP by 0.69 %. These results are in accordance with earlier studies (Herzer, 2010; Usman *et al.*, 2018), where domestic capabilities, human capital and financial sector development matter for growth. On the contrary, macroeconomic stability represented by inflation does not seem to have a significant impact on growth. Moreover, as opposed to common wisdom, terms of trade (TOT) have a negative though insignificant effect on GDP per capita. This result is in line with Jebran *et al.* (2018), wherein the terms of trade is evidenced to have an adverse impact on the economic growth of China. The economic reasoning is that a secular improvement in the terms of trade leads to higher levels of investment, and hence long-run economic growth, and other way in case of volatile behaviour (Deaton and Miller 1996; Kose and Reizman 2001; Bleaney and Greenway, 2001). There also seems to have been a decline in the TOT for majority of the economies included in our study since the onset of the 21st century. In model G2, trade openness exerts a positive and significant influence on economic growth. In fact, when we take into account the policy variables included in Models G3-G5, it is found that real interest rate has positive and higher government expenditure has a negative impact on economic growth. These findings coincide with Pill (1997) who highlighted the positive effect of real interest rate on economic growth and, Hwang and Lee (2015) who found the negative relationship between government spending and growth for Korea.

As discussed in the introduction section that study endeavours to account for the heterogeneous response of OFDI in volatile economic environment. We have incorporated the interaction effect using a dummy variables for two dimensions- one, post crisis period when the sample economies have experienced a shift in their fundamentals including investment which is the central point for debate of outward FDI. Second, we take dummy for credit shortfall periods. We assign value 1 for periods when credit gap turns up negative. Those opposing the OFDI-growth nexus argues that with diminished domestic return in the absence of a conducive business environment and appropriate investment opportunities, OFDI may divert resources away from domestic investment in the home economy and the intensity of this substitution effect exaggerates for capital deficient developing countries. Our analysis aims to answer this issue that how OFDI reacts in the wake of domestic resource shortfall as well as the slowing

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[13] We have carried out a correlation analysis wherein OFDI has a positive relationship with per-capita GDP and negative association with domestic investment. In addition, OFDI is positively correlated with exports and imports and, negatively correlated with government expenditure. Results are available with authors upon request.

investment in the home economy. The results reported in models G4-G6, captures the differential effect of OFDI in changing economic situations, like in the post GFC era and in the period where countries have faced capital deficiency. The coefficient values of interaction term have negative sign, however not significant[14], thereby indicating the absence of adverse effects of OFDI on economic growth in the post GFC period or even, in the presence of domestic credit shortfalls. The direction of results has remained the same with marginal changes in the coefficient values. The value of the F-statistic for all three models is higher than the critical value at 1% indicating that all the variables jointly have a statistically significant effect on growth.

Table 2: Panel Results: OFDI Impact on Growth (LGDP)

Variable	Model G1	Model G2	Model G3	Model G4	Model G5	Model G6
DI_GFCF	0.686*	1.178*	1.133*	0.683*	0.701**	0.885*
LE	6.927*	5.949*	10.241*	7.211*	7.090*	9.637*
OFDI	0.138*	0.072***	0.139*	0.139*	0.164*	0.107***
TOT	-1.851	-0.764	-1.719	-	-	-0.709
Trade	-	0.077*	-	-	-	-
Macro-policy Variables						
RIR	-	-	0.029	0.064*	0.067*	-
GFCE	-	-	-0.589*	-0.649*	-0.669*	-0.673*
Interaction Effect						
OFDIxCrisis	-	-	-	-	-0.061	0.063
OFDIxCGAP	-			-0.029	-	-
Constant	-8.852	-7.469	-15.158	-9.325	-9.091	-13.976

Source: Authors' Computations, Note: *, **, *** significant at 1%, 5% and 10%, respectively,

V.2. Impact of OFDI on domestic investment

Looking at previous empirical studies and considering the prevailing discourse on drivers of investment, we have broadened the scope of the current investment model by including variables for representing the demand side, state of financial resources, monetary & fiscal policies, and external sector performance (Eq-2). This methodological approach of including a diverse set of variables (along with OFDI) seeks to capture the different dimensions of recent debates, making the present study different from existing literature.

The results of the different fixed effects models are reported in Table 3. The coefficient value of OFDI was found to be significant and negative implying that OFDI could be having a substitution effect on domestic investment (DI). Given the coefficient, 1% increase in OFDI

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[14] A negative significant coefficient value would have evidenced a dampening effect of OFDI on economic growth.

leads to a 0.12 to 0.16 % decline in DI. Similar effect has been reported by Al-Sadig (2013) in the context of developing countries. Even for developed countries, Herzer and Schrooten (2008) have noted the substitution effect of OFDI for Germany and complementary effect in USA. In the present study output is observed to be significantly positive contributor to DI, thereby supporting accelerator principal of investment theory. Exports and imports may have differential impact on growth. Further, OFDI may have implications for imports and exports individually as OFDI improves access to technology imports resulting in increased capabilities and thus, exports or higher output. Therefore, we use imports and exports separately in *Models D1-D2*. However, the direction of impact of exports is not on expected lines as the coefficient is negative and significant. Imports' having positive impact on investment is a reflection of increasing domestic demand. Further, it suggests utilization of intermediates import for investment expansion. This finding favours the argument that OFDI facilities the resource seeking argument wherein firms might be utilising the OFDI activities to facilitate the import demand, in turn strengthening the domestic absorptive capacities, eventually leading to higher growth. Trade openness at aggregate level could evidence the negative relationship with domestic investment, may be the opposite significant effect of individual parameters- exports and imports.

On the fiscal policy front, higher government size is found with negative impact (Models D2-D3), might be governed by the crowding-out phenomena. Real interest rate has positive coefficient value suggesting the implications of marginal efficiency of capital (MEC) theory of investment. With regard to financial variables, the bank credit, supply factor for financial resources contributes the domestic investment positively. Model D3 also considers the credit-gap and real effective exchange rate as alternative variables and found positive bearings on investment. This finding suggests that the credit short fall from trend level reduces the capital formation. Model D4 extends the analysis while using the ease of doing business indicators, however there is insignificant impact. This may be happening due to shorter sample period as the data for this dimension is available for past five years only.[15] Model D5 uses TOT and debt service ratio (DSR) as alternative variables and found negative bearings on investment. Overall, the important finding is that OFDI has negative impact on domestic investment and thereby supports the substitution effect hypothesis.

Table 3: Panel Results: OFDI Impact on Domestic Investment (DI)

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[15] We have tried best to incorporate the maximum possible alternative variables to develop an insight about OFDI impact, though the sample period and group vary with limited data availability.

Variable	Model D1	Model D2	Model D3	Model D4	Model D5
Output	3.905*	5.947*	2.781**	2.391*	9.475*
OFDI	-0.126*	-0.160*	-0.100*	-0.105**	0.005
EXP	-0.343*	-0.362*	-	-	-
IMP	0.410*	0.427*	-	-	-
Trade	-	-	-	-0.011*	-
TOT	-	-	-	-	-4.783*
REER	-	-	0.044*	-	-
GFCE	-	-0.179***	-0.761*	-	-
RIR	-	-0.014	-0.101*	-	-
Credit	0.015***	0.012	-	0.022**	0.034*
CGAP	-	-	0.084*	-	-
EODB	-	-	-	-0.013	-
DSR	-	-	-	-	-0.134*
_cons	-21.534	-42.153	-1.396	-1.092	-82.842

Source: Authors' Computations, Note: *, **, *** significant at 1%, 5% and 10%, respectively,

V.3. Panel causality test

Since the relationship between growth, OFDI and DI continues to be debated, we have applied Panel Granger causality test for determining the direction of causality between OFDI and growth, and OFDI and domestic investment[16]. The null hypothesis can be rejected for the causality from economic growth to OFDI at 1% level based on the asymptotic standardized Z statistics, implying that changes in GDP lead to changes in OFDI (Table 4). High GDP, which in general reflects the upward surge in the demand side, motivates firms to expand their investment and integrate with global value chains. However, the results for the causality from OFDI to growth are found to be statistically insignificant. Similarly, there does not seem to be any statistically significant causal relationship from OFDI to domestic investment, but there seems to one from domestic investment to OFDI. This suggests that firms expanding their business activities in the domestic market also tend to seek off-shore markets for investment purposes. Thus OFDI seems to have an impact on domestic growth and investment, through its collective effect with other control variables. The individual effect of OFDI could not be ascertained as the level of OFDI has remained less than 1% of the GDP for majority of the countries, except in the cases of Hong Kong, Singapore, Malaysia, South Korea and China.

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[16]We have dropped Indonesia as some of the required OFDI figures are missing for the country and panel causality requires balance panel data set.

Table 4: Results of Granger causality test (Dumitrescu & Hurlin 2012)

	Statistic	P-Value
Causality from OFDI to GDP	Z-bar = -1.1296	0.2586
	Z-bar tilde = -1.1561	0.2476
Causality from GDP to OFDI	Z-bar = 12.8878	0.0000
	Z-bar tilde = 11.4638	0.0000
Causality from OFDI to DI	Z-bar = 0.8906	0.3732
	Z-bar tilde = 0.6627	0.5075
Causality from DI to OFDI	Z-bar = 2.2691	0.0233
	Z-bar tilde = 1.9037	0.0569

Source: Based on author's computation

The above section has presented the impact assessment of OFDI on economic growth and domestic investment using panel data approach. However, there are cross country differences and the same can be captured by country specific analysis. For this purpose, the next section elaborates on a time series analysis of the Indian economy for understanding the impact of OFDI on domestic investment and economic growth.

VI. Country specific analysis of the impact of OFDI on economic growth for India: Time series analysis

VI.1. Data and methodology

Similar to the panel data approach, we estimate growth and investment functions *albiet* model specification has been slightly altered to include more suitable controlled variables that are available for India. For example, we have used private sector gross fixed capital formation (GFCF) where OFDI seems to have a greater impact rather than public investment. Similarly, income terms of trade[17] (ITOT) has been used as proxy for gauging the external sector performance of India. Ekholm *et al.* (2002) points out that ITOT serves as a useful measure for understanding the relationship between trade and growth. It measures the import capacity of a country, wherein increases in ITOT expands the country's capacity to import. The data used for the model corresponds to the period 1975-2017[18] and has been sourced from World Development Indicators (World Bank) and the Handbook of Statistics on Indian economy.

In order to assess the effect of OFDI under a long-run equilibrium framework, the Bounds testing approach (ARDL) to co-integration has been used. The ARDL test is more appropriate

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[17]The income terms of trade corresponds to the commodity terms of trade (i.e. the ratio between a country's export prices and its import prices) multiplied by the volume of exports.

[18] We take the longest available annual data, however it deviates from panel set as few sample countries' OFDI data is not uniformly available. Also, we keep the variables limited but covering the maximum information as SBC criteria estimates the ARDL model with certain lags.

for small samples with mix of I (0) and I (1) variables (Pesaran et al., 2001). The model specification of the ARDL-bounds test for two variables X and Y is as given below:

$$\Delta Y_i = \beta_0 + \sum_{i=1}^{p}\psi_i \Delta Y_{t-i} + \sum_{i=1}^{p}\phi_i \Delta X_{t-i} + \theta_1 Y_{t-1} + \theta_2 X_{t-1} + \varepsilon_t \qquad \text{...............} \quad (3)$$

Here β_0 is drift term, Δ is difference operator and ε_t denotes the white noise.

The ARDL approach is a two steps process. First, identifying the long-run relationships among the underlying variables using F-statistics and then estimating following error-correction model – implies short adjustment leading to long-run equilibrium - in case the long-run equilibrium relationship is found.

$$\Delta Y_i = \beta_0 + \sum_{i=1}^{p}\psi_i \Delta Y_{t-i} + \sum_{i=1}^{p}\phi_i \Delta X_{t-i} + \alpha ECM_{t-1} + e_t \qquad \text{..............}(4)$$

VI. 2 Econometric analysis and empirical results: Impact of OFDI on economic growth

The ARDL bounds-testing approach necessitates checking for the order of integration and we employ Augmented Dicky Fuller (ADF) and Phillips Perron (PP) to test stationary properties of the variables. The test results of both ADF and PP tests show that all variables are stationary at first difference (integrated of order I (0)) except GDP[19]. Given the mixture of I(0) and I (1) variables and the order integration does not exceed one, the ARDL bounds-testing approach for co-integration analysis is the most appropriate. The Schwarz Bayesian Information Criteria (SBIC) has been used for selection of lag length.

The next step is to identify the long run relationships among the variables. Table 5 presents the test statistic results for OFDI-growth nexus as well as OFDI- domestic investment. The F-statistic (4.224) is higher than the upper critical values at 10 % level of significance thereby providing evidence of existence of long-run relationship among the specified variables. The results suggest that OFDI along with the controlling variables (credit, income terms of trade, private investment and inflation) are collectively able to explain the behaviour of real per-capita GDP in the Indian economy. In the same line, the test statistic reported in panel B confirms the existence of long-run equilibrium relationship while taking the domestic investment as dependent variable.[20]

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[19] We are not reporting Unit test statistics as these are standards now but results are available on request.

[20] Albeit different variable such as gross value added (GVA) instead of GDP and taking the fiscal policy side with fiscal deficit as % of GDP (GFD), assuming the inclusion of monetary policy effect in the bank credit.

Having confirmed the long-run relationship, the coefficients of individual variables are estimated to determine their effect on economic growth. The results of the estimation are given in Table 6 (Panel-A). Note that the estimated model satisfies the conditions of diagnostic tests of serial correlation, normality and heteroskedasticity. The results reveal that expansion of domestic investment and external sector have positive impact on growth as expected from theoretical and empirical literature. Rise in investment and trade serve to expand domestic demand and production capacities leading to an increase in output. Similarly, inflation is found to have a significant and negative influence on growth. High inflation can adversely affect the aggregate demand conditions of an economy and hence, growth. Inflation rates were high in India during the sample period and thus, it is not surprising that the model could capture the negative relationship between inflation and growth.

However, the coefficients for OFDI are found to be statistically insignificant. This finding indicates that the OFDI scale is not as powerful as compared to other macro fundamentals so as to establish the impact on growth. This finding is in line with the empirical analysis by Das (2015), wherein he observed that the low involvement of Indian manufacturing firms in international production networks has prevented it from reaping the complementary effects of OFDI. Additionally, the coefficients for measuring the impact of bank credit on growth are also statistically insignificant. One possible reason for this could be the asymmetric distribution mainly due to the primary sector lending which may not be as competitive as the other sectors and as such, does not necessarily translate into higher growth for the economy. Also, the credit growth has remained volatile during the Asian financial crisis, subsequently followed by global financial crisis of 2009 and then the twin balance sheet problems in Indian economy, which in turn disrupted financial flows and prevented bank credit from having significant impact on the country's growth[21].

Table 5 (Panel B) presents the long-run behaviour of impact of OFDI on domestic investment (DI) in India. It is found that OFDI contributes positively to the DI. Other variables except credit (as % of GDP), have impact on investment in light of the theoretical literature. For credit variable it is observed in the short-run analysis that it affects the investment with 2-3 lag

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[21]We also examined the impact of OFDI on Credit but we find that OFDI fails to institute a significant impact on credit

periods. As observed there has been volatile behaviour in bank credit growth in India especially post GFC, hence it may have a negative impact on investment.

Table 5: ARDL Estimations: Long-run analysis[22]

PANEL-A		PANEL-B	
Dependent variable: GDP		**Dependent variable: Private Investment**	
F-statistic	4.224**	F-statistic	6.177*
t-statistic	5.342**	t-statistic	4.657*
Variable	**Coefficient**	**Variable**	**Coefficient**
CREDIT	-0.62	CREDIT	-0.46*
OFDI	0.02	GVA	23.21*
ITOT	0.33**	OFDI	3.06*
GFCF	0.75**	GFD	1.64*
INFLATION	-3.56*	Trade	0.27*
ecm(-1)	-0.055**	ecm(-1)	-0.67**
Diagnostic Checks (Test Statistic)			
χ^2_{SC}	2.0146		2.71
χ^2_{nor}	0.9240		1.16
χ^2_{het}	0.5235		45.00

Source: Based on author's computation. Note: * and ** imply significant at 1% and 5% respectively.

The short-run relationship between OFDI -growth and OFDI-investment are further investigated using error correction model (ECM). The coefficient values of ECM in both the models are negative and statistically significant thereby indicating the power of correcting the disequilibrium in the long-run.

VIII. Conclusion

In the context of the growing trend of OFDI from emerging economies, the current study endeavours to explore the relationship between OFDI and economic growth through both cross-country and India specific analyses. For this purpose, the paper employs a panel data approach to estimate the impact of OFDI on economic growth and domestic investment for 14 Asian economies for the period 1981-2019. An empirical investigation of the panel data reveals that OFDI along with control variables such as bank credit, domestic investment and life expectancy have a positive effect on economic growth. Our study also did not find any evidence of OFDI adversely affecting economic growth in the face of credit short falls or increasing volatility in the post GFC era. With regard to the impact of OFDI on domestic investment, the findings confirm results in favour of the substitution effect. The fact that investment outflows lead to an increase in growth but not domestic investment, indicates that OFDI may have a

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[22] Short-run analysis results are available with authors upon request.

positive effect on growth largely through trade channel and other positive spillover effects. On the causality front, our study finds that it runs from GDP to OFDI and domestic investment to OFDI, but not the other way around. This implies that bigger the market size of the home country, it reflects the strength of the country in terms of investable resources and capabilities to invest in other countries. These findings have two implications. Firstly, OFDI impacts growth - collectively with other controlling variables. Secondly, OFDI seems to influence growth through foreign trade, especially through the imports side. Increase in OFDI can help increase imports of useful resources and strengthen the absorptive capacities of investing countries.

Using India as a case study, the time series analysis in our paper revealed that domestic investment and trade had a significantly positive effect on economic growth whereas the same could not be established for OFDI. However, OFDI had a significant impact on domestic investment. This could be attributed to the fact that the level of OFDI from India continues to be low (especially when compared to its Asian counterparts like Singapore and Hong Kong) and thus, does not constitute a significant contributor to its economic growth as compared to other macro fundamentals. In other words, the study confirms the complementary effect of OFDI on domestic investment in the Indian context and the substitution effect in context of the panel of developing countries. This difference can be attributed to the differential growth models of the sample countries and underlines the need for future research which studies the issue keeping in account the heterogeneity amongst investing countries. Overall, the findings in our paper seem to suggest that there need to be policies in place to support OFDI flows from developing countries, which can in turn support these economies on their trajectory to higher economic growth.

The empirical results are useful for policy. First, emerging countries gain from OFDI through channels such as trade, reverse technology spill overs, production restructuring, technology upgradation etc. Therefore, the emerging countries should create an enabling environment for OFDI such as external sector reforms, liberalisation of capital flows, developing research and development capabilities and facilitating competition for better interaction with multinational companies. Though OFDI has complimentary effect on domestic investment in case of India, we find weak evidence of substitution impact for emerging countries. This implies that loss of attractiveness and business climate of these emerging countries for investment compared to other countries due to competitive cost of production and higher rate of return, may be because of cheap labour and other resources.

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