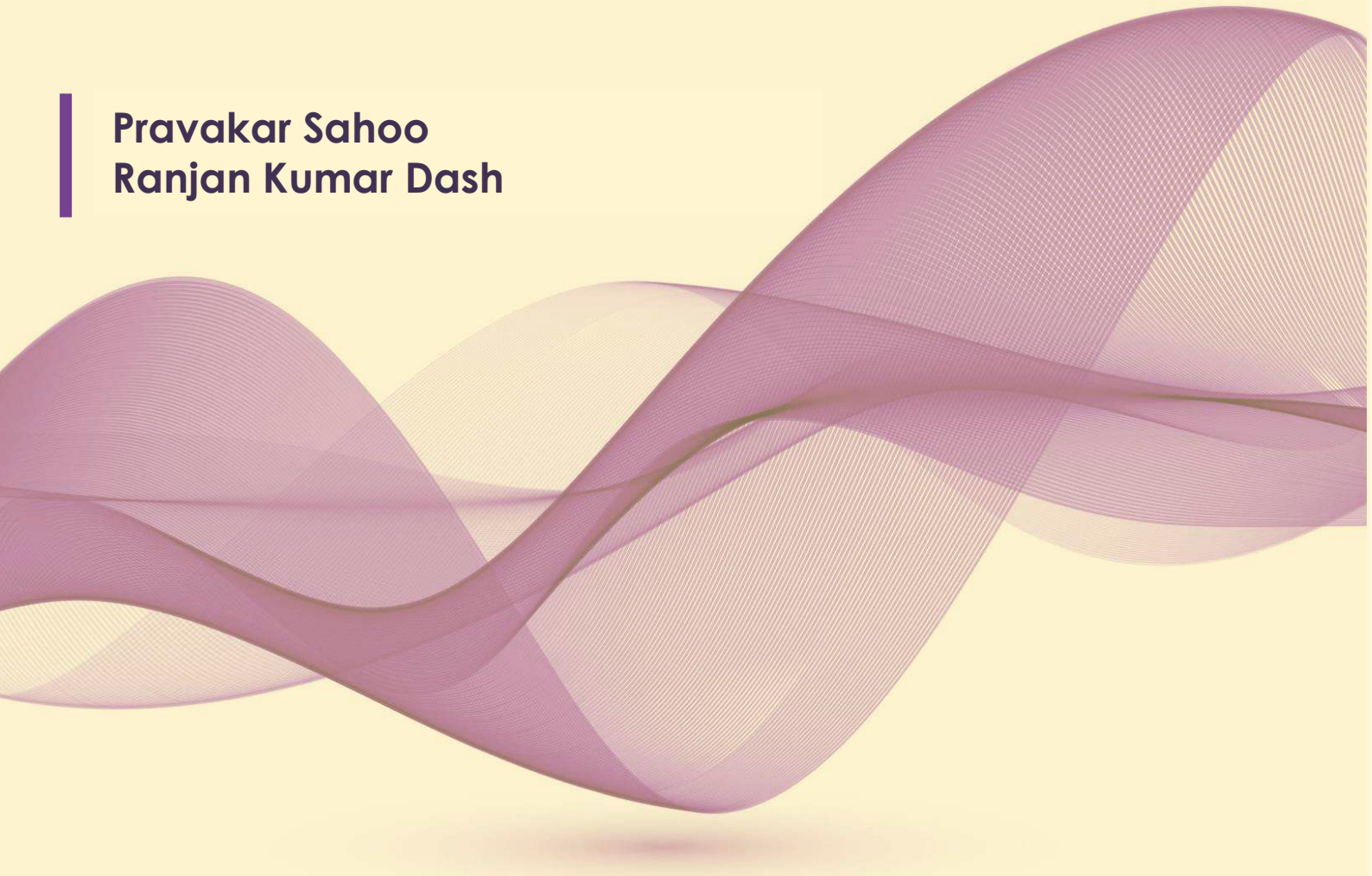
Differential Growth Impact of FDI on LICs, LMICs, and ECs: The Role of Absorptive Capabilities

Pravakar Sahoo
Ranjan Kumar Dash



2021

IEG Working Paper No. 447

November 2021

Differential Growth Impact of FDI on LICs, LMICs, and ECs: The Role of Absorptive Capabilities

Pravakar Sahoo[1]
Ranjan Kumar Dash[2]

Abstract: *FDI has been beneficial to developing countries through increased access to capital, technology, foreign markets, superior managerial skills, and other backward and forward spillover effects. However, the developmental implications of FDI are dependent on the absorptive capabilities and levels of development. In this context, we scientifically examine the impact of FDI on economic growth for 93 developing countries for the period 2000-2017. The strength of this comprehensive study lies in the nuance that it adds to the current discussion by analyzing the differential impacts of FDI inflows across different types of developing countries such as emerging countries(ECs), lower-middle-income countries (LMICs), and low-income countries (LICs). Unlike previous studies, we investigate the particular channels through which positive spillovers from FDI are transmitted towards the growth of these different country categories. The results reveal that the beneficial impact of FDI varies across different country groups. Thus, the efficacy with which FDI positively impacts growth is contingent upon the absorptive capacities of developing countries, which in turn are determined by trade openness, stock of human capital, infrastructure, financial sector development, institutional setup, and foreign debt.*

Keywords: FDI, economic growth, LICs, LMICs, ECs, developing countries, panel data, GMM model

JEL Classification: C51, F21, F23, F62, O11

[1] *Professor, Institute of Economic Growth (IEG), Delhi University Enclave, Delhi. Email:pravakarfirst@gmail.com*

[2] *Associate Professor, Symbiosis School of Economics, Symbiosis University, Senapati Bapat Road, Pune-411004. Email: ranjandash67@gmail.com*

Differential Growth Impact of FDI on LICs, LMICs, and ECs:

The Role of Absorptive Capabilities

1. Introduction

Over the last couple of decades, the attitude towards Foreign Direct Investment (FDI) has changed considerably, as most developing countries have liberalized their foreign policies and offered incentives to attract foreign investment. The change in attitude towards foreign capital can be attributed to a general trend in favour of greater economic liberalization worldwide, and increasing pressure on developing economies to resolve their economic problems of unemployment, low domestic investment, limited access to modern technologies, and overall lack of productivity growth. As such, FDI can augment domestic savings and lead to higher capital accumulation in such countries. It can also crowd in domestic investment and spur increased economic activities. In addition, it allows for easier access to modern technologies, knowledge spillovers, foreign markets, and superior managerial skills, all of which can, in turn, increase the productivity of domestic industries (De Mello, 1997; Balasubramanyam *et al*., 1999; Chakraborty and Nunnenkamp, 2008; Anwara & Nguyen, 2010; Calderón & Nguyen, 2015).

While the theoretical literature seems to lead credence to the idea that FDI promotes growth in host countries, the empirical literature on the subject is not conclusive. Though most of the empirical studies have reported the positive impact of FDI on growth (Borensztein *et al.,* 1998; Calderón & Nguyen, 2015; Rehman, 2016), others have documented a negligible or negative relationship between the two (Blomstrom *et al*. 2003; Ang, 2009; Bruno and Campus, 2013; Temiz, and Gökmen, 2014; Demir & Duan 2018). Moreover, the positive impact of FDI on growth seems to be contingent upon several pre-existing conditions in the host country such as its income level, trade openness, state of human capital, infrastructural facilities, institutional capacity and,

financial development (Bruno and Campus, 2013). In other words, there seem to be multiple channels through which FDI could potentially promote or hinder economic growth.

Thus, there have been several studies reporting the positive growth effects of FDI, there continue to be misgivings about the impact of FDI inflows on host economies. The issue has gained considerable importance in recent years as there have been increased capital inflows to developing economies. On one hand, FDI inflows can potentially put developing countries on higher growth trajectories through its forward and backward positive spillovers. But on the other hand, spillover effects from such inflows are not always found to be automatic and its magnitude can vary according to the absorptive capacities of countries. This may be especially true for less developed countries where the underlying institutions and endowments are often not robust enough to support positive spillovers from FDI. As observed by Blomstrom *et al*. (2003), such foreign inflows can crowd out domestic production in developing countries, as technologically backward local firms are unable to compete with foreign subsidiaries. There is also evidence that FDI inflows do not lead to productivity growth (Ang, 2009; Bruno and Campus, 2013; Demir and Duan, 2018)

The present study aims to contribute to the existing literature and policy in multiple ways by empirically analyzing the growth impact of FDI using a sample of 93 developing countries for the period 2000-2017. First, the paper accounts for differences amongst developing countries by categorizing them into three major groups: LICs, LMICs, and ECs and, studies the differential growth effects of FDI across these three categories of countries. Second, the paper tries to identify the channels through which the positive spillovers from FDI may occur for these different types of developing countries. Third, the study assesses the role of absorptive capabilities through the interaction of FDI with various conditional factors namely, level of infrastructure development, financial development, level of international trade, state of human capital, external sector stability,

and institutions. Fourth, unlike other studies taking a single indicator for infrastructure and financial sector development, we develop composite indices of infrastructure development and financial sector development using principal component analysis for each country by taking multiple indicators. The study makes a serious attempt to answer two main questions namely; is there a differential impact of FDI on growth for different categories of countries? And what is the role of absorptive capacity in explaining these differential impacts? Based on these findings, the study draws relevant policy lessons for ensuring high and sustained growth in developing countries. The study is useful to formulate policies for countries with different levels of economic development and absorptive capacities and to capitalize on gains from FDI inflows.

2. Literature Review

Theoretical arguments suggest that FDI inflows promote economic growth through their direct and indirect effects in the recipient country. The direct impact of FDI can be measured directly by looking at economic growth outcomes. But for understanding the indirect impact, there is a need to understand the possible spillovers effects on the host country (De Mello, 1997; Borensztein *et al.*, 1998; Balasubramanyam *et al*., 1999). Generally, FDI supplements domestic savings which can increase capital accumulation and hence, promote economic growth directly. It is not only an additional source of investment but, can also stimulate the capital formation and further economic activities (Jenkins & Thomas, 2002). In addition, FDI can promote economic growth by improving productivity through technology and knowledge spillovers (Borensztein *et al.*, 1998;). These spillovers could occur through: (i) forward and backward linkages between domestic firms and foreign affiliates; (ii) demonstration effect as domestic firms try to reverse engineer the technologies of MNCs and incorporate them in their production and; (iii) training of workers by MNCs who later take up jobs in local firms and transfer their skills (Blomstrom *et al*., 2003).

Furthermore, FDI inflows can also boost economic growth by providing greater access to foreign markets and exports promotion, better management, increased competitiveness, human capital development and, employment generation (De Mello, 1997 and Balasubramanyam *et al*., 1999; Adams, 2009; Anwara & Nguyen, 2010). Such spillovers are largely beneficial for developing countries (particularly LDCs) which have serious savings deficits and technological gaps compared to developed countries. However, positive spillovers from FDI depend on the type and quality of FDI and host country absorptive capacities (Hermes & Lensink, 2003; Kohpaiboon, 2003).

Although theoretical literature largely supports the idea of FDI promoting economic growth, empirical evidence is far from conclusive. Researchers have used different countries, periods, and methodologies in the study and reached different conclusions. Bruno and Campus (2013) surveyed the literature on FDI and growth. The results of this survey suggest that around 50% of the studies reported positive, 11% negative and the rest, 39% reported no significant impact respectively. Further, the magnitude of growth impact seemed to vary according to the nature of FDI, entry mode of investment, host countries policies, and local conditions facilitating productivity spillovers of FDI for domestic firms (De Mello, 1999; Lensink & Morrissey, 2001; Hermes & Lensink, 2003; Kohpaiboon, 2003; Calderón *et al.*, 2004; Li & Liu, 2005; Kotrajras, *et al*., 2011; Makiela & Ouattara, 2018).

As such, there are several cross-country studies using data from multiple countries that have investigated the role played by FDI in promoting domestic investment, technology transfers, and economic growth. For instance, De Mello (1999) estimated the impact of FDI on output, investment, and total factor productivity using a sample of 32 OECD and non-OECD countries over the period 1970-90. Results of the study show that FDI had a positive growth impact through

its complementary effect on capital accumulation. Similarly, Li and Liu (2005) used data from 84 countries for the period 1970-99 and found that FDI positively affected economic growth both directly and indirectly, the latter occurring through its complementary effect on human capital. Another study by Makiela and Ouattara (2018) explored the transmission mechanism of FDI to growth for 108 countries over 1970-2007. Results of this study suggest that FDI promotes growth through input accumulation rather than through the channel of raising total factor productivity. In contrast, Kotrajas *et al*. (2011) observed that the positive effect of FDI on economic growth was contingent on conditional factors like institutional setup, good governance, financial development, and favourable macroeconomic policies.

Compared to cross-country analysis, studies using times series data for different countries document both positive (Shan, 2002; Baliamoune-Lutz, 2004; Hooi & Wah, 2010; Islam, 2014) and negative (Chakraborty & Basu, 2002; Alaya, 2006; Saqib *et al*., 2013) growth effects. Shan (2002) examined the growth impact of FDI using the vector autoregressive (VAR) method and quarterly data from China over 1986-1998; the study reported the evidence of two-way causality between the two. Similarly, Baliamoune-Lutz (2004) studied data from Morocco and showed that FDI contributed to growth both directly as well as indirectly by promoting exports. In contrast, Alaya (2006) analyzed data from Morocco, Turkey, and Tunisia to report that economic growth was positively affected by the rise in exports and domestic investment, but negatively affected by FDI inflows.

In addition, many studies found that the efficacy with which FDI impacted growth depended on the existence of several pre-conditions in the host country. Positive spillovers from foreign capital inflows - through technology and knowledge transfers - do not occur automatically. According to Blomstrom *et al*. (1994), FDI stimulates investment mostly in high-income developing countries,

indicating that the level of economic development was important for determining the beneficial effects of FDI. Another study by De Mello (1997) showed that the benefits accruing from FDI inflows also depended on the technological gap between the origin and recipient countries. Generally, the higher the technological gap between the origin and recipient countries, the higher are the benefits to the host country. The ability of a country to absorb new technology and ensure that the favourable dimensions of FDI take effect was also greatly improved by the availability of skilled labour (Borenszein *et al*., 1998 and Rehman, 2016). In addition, the positive outcomes of FDI inflows are also determined by the extent of its trade openness (Balasubramanyam *et al.*, 1996). Lower trade restrictions allowed for the import of intermediate goods which were required for the production undertaken by foreign investors. Other factors that could augment or deter the positive effects of FDI were infrastructure levels (Kinoshita & Lu, 2006), institutions (Acemoglu *et al.*, 2006), the financial sector (Alfaro *et al.*, 2001; Hermes & Lensink, 2003; Durham, 2004), and the general business environment (Busse & Groizard, 2008) of the home country.

Thus, while FDI seems to largely have a beneficial effect on the growth of host countries, results may vary according to the absorptive capacity of the country. For developing economies, FDI can be a vehicle of growth as it augments capital, improves technological levels and skills of its labour force, factors that are usually in short supply in such countries. But at the same time, such economies are also more vulnerable to the detrimental effects of FDI. In less developed countries, the underlying economic conditions may not be conducive for absorbing positive spillovers from FDI and, foreign affiliates can crowd out less competitive and technologically backward domestic firms (Blomstorm *et al.*, 2003). In addition, there can be sharp reversals in foreign inflows which can affect the growth and stability of these economies.

However, it is also important to acknowledge that there exists a wide range of experiences amongst developing countries, a phenomenon that has not been explored fully in the existing literature. Countries may be at different stages of development and accordingly, their absorptive capacities may vary. The current paper categorizes developing countries into three major groups: LICs, MICs, and ECs and, analyses the differential growth impact of FDI across the spectrum of developing countries. It studies the existence, direction, and extent of positive spillover effects from FDI empirically amongst these different country categories. Moreover, the present analysis also incorporates the interaction of FDI with various domestic factors (such as financial sector development, trade openness, infrastructure, and human capital levels, external debt, and level of institutions) to understand the various channels through which these spillovers occur for these three country groups.

3. Analytical Framework and Model Specification

The study uses the neoclassical production function but augments it by adding FDI as an additional explanatory variable to examine the growth impact of FDI. The augmented production function is written as:

$$Q = f\,(GFCF, LF, FDI,..), \qquad \text{…….(1)}$$

Where *Q* indicates real per capita income, *GFCF* is the domestic investment (ratio of GDP), *LF* is the total labour force and FDI is the net FDI inflows to GDP)

Following the literature on growth, the study added other relevant variables such as infrastructure, human capital, trade, financial development, governance/institutions, inflation, etc. (Grossman & Helpman, 1991; Barro & Sala-i-Martin, 1995; Hermes & Lensink, 2003; Sahoo & Dash, 2012;

Sahoo *et al.*, 2013). Further, to capture the indirect growth effect several interaction terms are also included. Introducing these variables and interaction terms, equation 1 can be rewritten as:

$$LnRYPC_{it} = \alpha_i + \delta_{it} + \beta_1 FDI_{it} + \beta_2 TR + \beta_3 INFD_{it} + \beta_4 HUM_{it} + \beta_5 LnLF_{it} + \beta_6 GFCF_{it} + \beta_7 INF_{it} + \beta_8 FIND_{ir} + \beta_9 INST_{it} + \beta_{10} INCT_{it} + u_{it} \quad \ldots\ldots\ldots(2)$$

The expected sign of β_1, β_2, β_3, β_4 β_5, β_6, β_8, β_9 are positive, β_7 is negative and β_{10} may be negative or positive,

Where *LnRYPC* is the log of per capita income, *FIND* is financial development index, *TR* is trade (% of GDP, *INFD* is infrastructure index, *HUM* is human capital (secondary enrolment ratio, gross), *LnLF* is the log of the total labor force, *INF* is inflation level (CPI index), *INST* is institutional indicator measured by Economic Freedom of the World (in the scale of 0-10) and *INCT* is the interaction terms.

Unlike other studies taking single indicators for infrastructure and financial sector development, we develop composite Infrastructure Index (*INFD*) and Financial Development Index (*FIND*) by taking multiple infrastructure and financial indicators respectively. The two indices are constructed using Principal Component Analysis (PCA). The Infrastructure Index includes three major infrastructure indicators: (1) telephone lines (fixed lines and mobiles) per 1000 persons, (2) fixed broadband connections, and (3) air transport as given by freight million tons per km. (for details on PCA analysis, see Sahoo *et al.*, 2013). Similarly, the Financial Development Index includes three major financial variables: (1) number of bank branches per one lakh population, (2) Domestic credit by banks as ratio of GDP, and (3) Broad money ratio (M2 by GDP). Financial development is important for investment and a ncesseary condition for technological diffusion (Hermes & Lensink, 2003) leading to higher growth impact of FDI on host countries. Infrastructure

development, which reduces trade and transaction costs and imporves factor productivities and overall competiveness of the conomy, augments the growth impact of FDI.

Equation-2 was estimated by using a dynamic panel model (System-GMM methodology) to address the possible endogeneity and country-specific heterogeneity issues. Unlike previous studies, the present study first linearly interacts FDI with six different host country conditional factors to capture indirect growth effects of FDI. Thus, besides the base model, additional six regression equations are estimated corresponding to the interaction terms. The interaction terms are: FDI*Financial development, FDI*Trade, FDI*human capital, FDI*infrastructure development, FDI*external debt, and FDI *Institution**.***

The parameters β_1 and β_{10} in Equation-2 are of particular interest and the main tool of analysis is the derivative:

$$\frac{\partial\, ln(RYPC)_{it}}{\partial (FDI)_{it}} = \beta_1 + \beta_{10} INCT \qquad \ldots\ldots\ldots\ldots (3)$$

While β_1 measures the direct growth effect, β_{10} estimates the channel or indirect effect. If both β_1 and β_{10} are positive (or negative), then FDI has a positive (or negative) effect on growth. However, if $\beta_1 < 0$ while $\beta_{10} > 0$, indicating that the negative direct effect of FDI can be mitigated by channel effect. On the other hand, if $\beta_1 > 0$ while $\beta_{10} < 0$, indicating that direct impact is positive but channel effect is negative.

4. Data Sources and Methodology

(i) Data Sources

The study includes 93 developing countries (see Appndix-A for list of countries) including and further divided into 18 emerging countries (ECs), 48 lower-middle-income countries (LMICs),

and 27 low-income countries (LICs). The study period covered for the analysis pertains to the period between 2000 to 2017. Most of the data are collected from the World Development Indicators (WDI). Table 1 lists the variables, definitions, and sources used in the analysis.

Table 1: Variables Name, Definitions and Sources

Variables	Definition	Sources
RYPC	Per Capita GDP (base 2010)	WDI
TR	Total trade (% of GDP)	WDI
GFCF	Gross Fixed capital (% of GDP)	WDI
INF	Consumer Price Index (different base year)	WDI
HUM	Secondary Enrollment, Gross (%)	WDI
LF	Total labour force (people ages 15 and older)	WDI
Debt	external debt as ratio of GNP	WDI
INST	Economic Freedom of the World (in a scale of 0-10)	CATO Institute
FDI	Net inflows of Foreign Direct Investment (% of GDP)	WDI
Air Freight	Air transport, freight (million ton-km)	WDI
Telephones lines	Telephone (fixed + mobile) connections (per 100 people)	WDI
Broadband connection	Fixed broadband subscriptions (per 100 people)	WDI
Bank credit	Credit to Private sector by Banks (% of GDP)	WDI
M2	Broad money (% of GDP)	WDI
Bank branches	Number of commercial bank branches (per 100,000 Adults)	WDI

Source: Author's own.

(ii) Methodology

The study follows four-step procedures to investigate the contribution of FDI to growth. First, stationary properties of variables are examined by using the Cross-sectional Augmented Dickey-Fuller (CADF) test. Second, a long-run relationship (cointegration) is established by using panel cointegration tests. Third, after establishing cointegration, the study applies the system GMM model to estimate the contribution of FDI to growth. Finally, the study applies the panel causality test to examine the direction of causality between the two.

Panel Unit Root Test: To test for the non-stationarity of the variables, the following standard ADF regression model augmented by both cross-section lagged levels and first differences is applied:

$$\Delta X_{it} = \alpha_i + b_i X_{i,t-1} + \sum_{j=0}^{p} \Psi_{ij} \overline{X}_{t-1} + \sum_{j=1}^{p} \lambda_{ij} \Delta\overline{X}_t + u_{it} \quad \ldots\ldots\ldots (4)$$

Where Δ indicates the first difference, $\overline{X}_t$ is the cross-section average and P is the lag order. The null of unit root (Ho: $b_i = 0$) is tested using the alternative (H_a: $b_i < 0$ for at least some i). The average t-ratio is calculated to test the stationarity:

$$CIPS = \sum_{t=1}^{N} \frac{t_i(N,T)}{N} \quad \ldots\ldots\ldots (5)$$

Panel Cointegration Test: After establishing the order of integration, the Westerlund (2007) panel cointegration test is applied using the following error correction model:

$$lnRYPC_{it} = \theta' id_t + \sigma_i \left(lnRYPC_{i,t-1} - \psi'_i \, FDI_{i,t-1}\right) + \sum_{j=1}^{pi} \gamma_{ij} \Delta LnRYPC_{i,t-j} +$$

$$\sum_{j=0}^{pi} \lambda_{ij} \Delta FDI_{i,t-j} + e_{it} \quad \ldots\ldots\ldots\ldots\ldots\ldots (6)$$

Where σ_i is the cointegration term and the coefficient indicates the speed of adjustment and d_t is deterministic term. Four panel tests (two panel and two group) were developed by pooling the error term to test panel cointegration. P_T and P_a are panel statistics and written as:

$$P_T = \frac{\hat{\sigma}}{SE(\hat{\sigma})} \; and \; P_a = T\hat{\sigma} \quad \ldots\ldots\ldots\ldots (7)$$

Accordingly, the null and alternative hypothesis is tested as H0: $\sigma_i = 0$, H_1: $\sigma_i < 0$ for at least some i. Gα and GT are group statistics and can have written as:

$$G_a = N^{-1} \sum_{i=1}^{N} \frac{T\hat{\sigma}i}{\hat{\sigma}i} \quad \text{and } G_T = N^{-1} \sum_{i=1}^{N} \frac{\hat{\sigma}t}{SE(\hat{\sigma}t)} \quad \ldots\ldots\ldots\ldots (8)$$

Accordingly, the null and alternative hypothesis is tested as H0: $\sigma_i = 0$, H1: $\sigma_i < 0$ for at least some i.

Panel Causality Test: To examine the ganger causality between the FDI and per capita income, the following equations are estimated:

$$DLnRYPC_{it} = \alpha_i + \sum_{j=1}^{k} \gamma_i{}^k \, DlnRYPC_{it-k} + \sum_{j=1}^{k} \mu_l{}^k \, DFDI_{it-k} + u_{it} \quad \ldots\ldots\ldots (9)$$

$$DFDI_{it} = \alpha_i + \sum_{j=1}^{k} \gamma_i{}^k \, DFDI_{it-k} + \sum_{j=1}^{k} \mu_l{}^k \, DLnRYPC_{it-k} + u_{it} \quad \ldots\ldots\ldots (10)$$

Where D represents the first difference, γ_i is autoregressive and μ_i is the heterogeneous slope coefficient. To test causality from FDI to per capita income by assuming:

$$\mu_i = 0 \text{ for all i } = 1,2\ldots,N,$$

against: $\mu_i \neq 0$ for some i.

As suggested by Dumitrescu and Hurlin (2012), the test statistic $\overline{Z}$ is used to test causality as $T \rightarrow \infty$ and written as:

$$\overline{Z} = \sqrt{\frac{N}{2K}}(\overline{W} - K) \quad \ldots\ldots\ldots\ldots (11)$$

Where $\overline{W}$ is the average Wald statistics. If T is fixed with $T > 5 + 2K$ and $N \rightarrow \infty$, the approximated standardized statistic ($\tilde{Z}$) is used to test causality and written as:

$$\tilde{Z} = \sqrt{\frac{N}{2K} \times \frac{T-2K-5}{T-K-3}} \left[\frac{T-2K-3}{T-2K-1}(\overline{W} - K)\right] \quad \ldots\ldots\ldots..(12)$$

5. The Empirical Analysis

(i) Panel Unit Root Analysis

The results of the CADF test are presented in Table 2. It is evident from Table 2 is that most of the series are non-stationary or I(1) at level but stationary after the first difference. But, variables such as INF, INST, EXD, and INFD are stationary as the null of unit root is not rejected at the level. Hence, results indicate that most of the variables are non-stationary.

Table 2: Results of CADF Panel Unit Root Test

Variables	**At level**		**First difference**	**results**
	Constant	**With time trend**	**Constant**	
LnRYPC	0.37	-0.87	-6.87*	Non-stationary
LnLF	-1.07	-1.89	-2.69*	Non-stationary
TR	0.98	2.29	-6.14**	Non-stationary
FDI	-1.78	-1.18	-5.47**	Non-stationary
GFCF	-1.78	-1.83	-3.63*	Non-stationary
HUM	-0.49	-2..21	-3.16**	Non-stationary
EXD	-3.45**			Stationary
INFD	-3.79**			Stationary
FIND	-0.49	-2.68	-7.76**	Non-stationary
INF	-5.21**			Stationary
INST	-3.21**			Stationary

*Notes: "** and *" implies the rejection of unit root at 1 and 5% level respectively.*

(ii) Panel Cointegration

Since most of the variables are found non-stationary or the I(1) process, the long-run relationship between per capita income and FDI has been established using a panel cointegration test. Results for the whole sample and sub-samples (LICs, LMICs, and emerging countries) are provided in

Table 3. The null of no cointegration is rejected by at least three-panel tests out of four tests, indicating the evidence of a long-run relationship existing between the two.

Table 3: Westerlund (2007) panel cointegration tests (dependent variable: RYPC)

Panel stat.	**Whole sample**	**LICs**	**LMICs**	**Emerging countries**
	Value	**Value**	**Value**	**Value**
G_t	-2.18*	-2.91*	-2.17*	-1.61
G_a	-2.17	-6.22*	-6.18*	-5.72*
P_t	-12.17*	-10.71*	-8.03	-12.49*
P_a	-8.75*	-6.13	-13.42*	-13.28*

** indicates rejection if null at 5% level.*

(iii) The contribution of FDI to Growth

The estimated results obtained by applying the system GMM model for the full sample and three sub-samples are reported in Tables 4, 5, 6, and 7. Diagnostic statistics such as first-order (m1) and second-order (m2) serial correlation and validity of instruments (Sargan test of over-identifying) indicate that the estimated results are valid. Specification 1 provides the baseline results wherein we analyze the direct growth impact of FDI. The remaining specifications assess the indirect impact of FDI by examining the various channels by which it may affect growth.

Full Sample: Table 4 presents the results of GMM estimation for the full sample (93 countries) and it is evident that all the explanatory variables have expected signs. FDI has a positive and significant impact on per capita income, validating the hypothesis that FDI is growth-enhancing in developing countries. In the base model (Specification 1), the coefficient of FDI is 0.004, implying that a percent increase in FDI (as a ratio of GDP) increases per capita income by 0.004 percent. This implies that FDI positively influences economic growth by augmenting domestic capital, transferring technology, promoting exports, improving human capital, creating jobs, and

improving resource allocation in developing countries (De Mello, 1997; 1999 Balasubramanyam *et al*., 1999; Adams, 2009; Anwara & Nguyen, 2010; Rehman, 2016).

In addition, as discussed earlier, the contribution of FDI depends on the efficiency with which the host country absorbs technology and how local factors facilitate spillover effects. Specification 2-7 includes the *interaction terms* between FDI and various other domestic factors (viz., trade, financial development, infrastructural development, human capital, external debt, and institutions) to the indirect effect of FDI. The direct impact of FDI is found to be positive in all the specifications (except specifications 3 and 5). Following Balusubramayam *et al.* (1999), the study used FDI*TR interaction term as an additional independent variable in specification 2. As per the theoretical literature, trade openness not only promotes growth but also facilitates positive technological spillovers of FDI. Contrary to expectations, the coefficient of FDI*TR term is found to be negative and insignificant in our empirical analysis, indicating that trade development seems to substitute the growth effect of FDI. This could be related to the fact that developing countries continue to export largely primary commodities which may have hindered positive spillovers from FDI through trade. Further, our sample has a large number of LICs and MICs countries where average applied tariff rates are relatively higher denying the positive spillovers of FDI through trade.

In specification 3, the role of the financial channel (FDI*FIND) is examined as countries with a better financial system are more likely to realize the positive growth impact from FDI (Mello, 1999; Alfaro *et al*., 2001). Results indicate that the interaction term is positive and significant, confirming the crucial role fulfilled by financial development in enhancing the growth effect of FDI as observed in the past studies (Alfaro *et al.* 2001; Durham, 2004; Baharumshah *et al*., 2017). We also test the hypothesis of whether infrastructure development augments the positive impact of FDI on economic growth as posited by Kinoshita and Lu (2006). Thus, in specification 4 the

interaction term of FDI*INFD is included and the interaction term is found positive and statistically significant, confirming the complementary effect of infrastructure development. Infrastructure development in terms of availability of quality infrastructure improves the factor productivities and thereby enhances the growth impact of FDI. Additionally, the coefficient of the interaction term for human capital (FDI*HUM) is positive and significant in specification 5, which indicates that the growth effects of FDI depend on the state of human capital development. As pointed out by Borensztein *et al.* (1998) and Rehman (2016), threshold levels of human capital are required for absorbing the anticipated spillovers of FDI. Therefore, FDI could also improve economic growth indirectly through human capital development.

Contrary to the major finding by Rodrik (1999) and Acemoglu *et al.* (2006), the results of this study did not find significant evidence of institutions influencing the growth impact of FDI. The interaction term for institutions (FDI*INST) in specification 6 was positive but statistically insignificant. This could be because of the poor quality of institutions in developing countries which prevents them from realizing the positive benefits of FDI. The foreign debt interaction term (FDI*EXD) is found to be negative in specification 7, implying that higher stock of foreign debt may reduce the positive spillover effects of FDI. Higher debt obligations can lead to financial distress and, reduce social and capital expenditures in a country. Such a situation can adversely affect the development of important pre-conditions for growth and consequently, inhibit the growth-enhancing effects of FDI (Presbitero, 2012; Tanna *et al.*, 2018). It is to be noted that the combined effect of both direct and indirect ($\beta_1 + \beta_{10}$) was found positive for all specifications, indicating that FDI had an overall positive growth impact for developing countries.

A series of *control variables* such as trade, investment, infrastructure development, financial development, inflation level, labor, and human capital have also been considered to validate our

findings. The coefficients of the control variables are found to be significant and have the expected sign. Domestic investment positively affects per capita income, indicating that higher investment is required to achieve higher growth. The coefficient of trade ratio is also positive in most estimations, lending support to the idea that open trade is beneficial for countries (Frankel & Romer, 1999). Further, human capital is found to have a positive impact as the coefficient is statistically significant. A skilled workforce is necessary for absorbing new technologies quickly and to innovate further for productivity growth (Mankiw *et al.*, 1992; Mello, 1999). The coefficient of the infrastructre index is also revealed to be positive and significant, as infrastructure growth boosts income levels in developing countries (Aschauer, 1989; Sahoo, 2012). Similarly, the effect of the Financial Development Index is positive as financial infrastructure promotes economic growth in a country (King & Levine, 1993; Beck *et al.*, 2000). In contrast, the coefficient for inflation is negative indicating that high levels of inflation can obstruct economic growth as it has a detrimental effect on consumption, investment, and human capital (Barro, 1995).

Thus, the above analysis shows that FDI stimulates economic growth both directly as well indirectly, the latter occurring through the effect of FDI on domestic factors such as human capital, infrastructure, and financial development.

Table 4: Estimated coefficients of economic growth (Full sample)

Explanatory Variables	Spec-1.	Spec-2.	Spec-3.	Spec-4.	Spec-5.	Spec-6.	Spec-7.
Constant	2.01** (22.26)	1.99* (32.08)	2.37** (20.26)	2.37** (20.26)	2.2** (21.26)	1.83** (22.76)	1.97** (25.58)
LnLF	0.07** (11.24)	0.07** (11.24)	0.04** (4.95)	0.08** (7.61)	0.09** (7.51)	0.09** (8.65)	0.08** (6.86)
TR	0.05** (6.28)	0.053** (5.35)	0.03* (2.35)	0.02 (1.55)	0.02* (2.65)	0.04** (3.88)	0.07** (8.58)
FDI	0.004** (8.74)	0.02* (2.31)	0.004 (0.86)	0.001* (2.17)	0.001 (1.37)	0.006* (2.45)	0.02* (2.65)
GFCF	0.033* (2.74)	0.04** (5.52)	-0.04 (-1.52)	-0.07 (-0.52)	0.07** (6.39)	-0.03 (-0.39)	-

INFD	0.27** (15.19)	0.28** (12.45)	0.23** (9.05)	0.14** (4.05)	0.22** (7.69)	0.27** (13.26)	0.26** (12.19)
FIND	0.32** (11.43)	0.33** (10.26)	0.46** (9.45)	0.44** (8.05)	0.48** (9.65)	0.42** (11.45)	0.21** (6.27)
INFL	-0.002** (-24.39)	-0.002** (-32.39)	-0.002** (-21.45)	-0.002** (-17.46)	-0.001** (-18.46)	-0.002** (-22.46)	-0.002** (-22.46)
HUM	0.014** (34.27)	0.01** (26.27)	0.01** (34.27)	0.013** (30.27)	0.01** (33.56)	0.012** (28.47)	0.01** (33.56)
*FDI*TR*		-0.011 (-0.85)					
*FDI*FIND*			0.02** (4.16)				
*FDI*INFD*				0.03** (5.11)			
*FDI*HUM*					0.001** (5.91)		
*FDI*EXD*						-0.001** (-3.91)	
*FDI*INST*							0.001 (1.42)
m1 (p-value)	(0.03)	(0.00)	(0.18)	(0.00)	(0.00)	(0.00)	(0.00)
m2 (p-value)	(0.15)	(0.16)	(0.84)	(0.94)	(0.94)	(0.34)	(0.14)
Saragn test (p-value)	(0.09)	(0.16)	(0.14)	(0.08)	(0.12)	(0.14)	(0.14)
Observations	1554	1554	1554	1554	1554	1554	1554

*** and * implies significance at 1 and 5 % levels respectively. t-ratios is presented in the bracket.*

Low-Income Countries (LICs): The results for the sub-sample of LICs are presented in Table 5. As per the results, FDI has a positive and significant coefficient, though the value of the coefficient is lower than that for the entire sample. The coefficient of FDI is 0.001, indicating that a percent increase in FDI (as the ratio of GDP) increases per capita income by 0.001 percent. The low value of the coefficient is due to lower absorptive capacity in LICs. However, the combined effect of both direct and indirect effects is found to be positive for almost all models, indicating that FDI has an overall positive growth impact for such countries

Table 5: Long-run coefficients of economic growth (LICs)

Explanatory Variables	Spec-1.	Spec-2.	Spec-3.	Spec-4.	Spec-5.	Spec-6.	Spec-7.
Constant	2.01** (22.26)	1.91** (25.08)	2.37** (20.26)	2.37** (20.57)	2.2** (17.06)	2.03** (32.76)	2.97** (26.45)
LnLF	0.07 (1.48)	0.08 (1.70)	0.004 (0.95)	0.005 (0.61)	-0.01 (-0.51)	0.08* (2.59)	-

TR	0.10** (11.72)	0.05* (2.35)	0.09** (4.92)	0.06** (4.85)	0.12** (6.93)	0.04** (3.88)	0.05** (4.58)
FDI	0.001* (2.74)	0.003** (7.31)	-0.004 (-0.36)	0.006* (2.24)	-0.003 (-1.23)	0.002** (5.55)	0.003** (3.65)
GFCF	0.02** (4.74)	0.04** (5.74)	0.06** (4.72)	0.04** (3.52)	0.03** (4.29)	0.02** (3.03)	0.03* (2.39)
INFD	0.14** (3.49)	0.27** (4.16)	0.33** (9.05)	0.54** (14.05)	0.52** (11.09)	0.32** (6.22)	0,38 (11.19)
FIND	0.12** (4.43)	0.17** (3.26)	0.20** (3.45)	0.10* (2.75)	0.18* (2.65)	0.27** (6.82)	0.18** (8.98)
INFL	-0.005** (-5.49)	-0.004** (-3.39)	-0.002** (-21.45)	-0.002** (-17.46)	-0.001** (-15.26)	-0.004** (-4.46)	-0.002** (-16.46)
HUM	0.003** (16.27)	0.01** (6.44)	0.004** (10.27)	0.02** (15.17)	0.002** (4.56)	0.002** (8.29)	0.01** (16.56)
*FDI*TR*		-0.01** (-3.85)					
*FDI*FIND*			0.007* (2.16)				
*FDI*INFD*				-0.003** (-5.31)			
*FDI*HUM*					0.001* (2.51)		
*FDI*EXD*						-0.001** (-3.91)	
*FDI*INST*							0.005 (1.62)
m1 (p-value)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.03)	(0.00)
m2 (p=value)	(0.08)	(0.17)	(0.48)	(0.44)	(0.36)	(0.24)	(0.30)
Saragn test (p-value)	(0.015)	(0.13)	(0.43)	0.11)	(0.06)	(0.09)	(0.16)
Observations	466	466	466	466	466	466	466

*** and * implies significance at 1 and 5 % levels respectively. t-ratios is presented in the bracket.*

The indirect impact of FDI is also tested by including various interaction terms as discussed earlier. The results reveal that FDI promotes economic growth indirectly through two complementary channels (financial development and human capital) for LICs. On the other hand, FDI depresses economic growth through trade and infrastructure channels as their interaction term found negative and significant. One plausible explanation for this could be the heavy dependence of LICs' export baskets on primary commodities and also higher tariff rates prevalent in LICs, which prevent the trade from augmenting the effects of FDI on the economy. Similarly, most LICs face infrastructure bottlenecks and as such, their infrastructure levels are likely to be below the threshold level

required for FDI to positively affect growth through infrastructure. Lastly, institutions do not seem to have any bearing on the effect of FDI on growth, as the coefficient for its interaction term is insignificant. The level of institutional development in LICs is quite low to enhance the growth impact of FDI.

Lower Middle-Income Countries (MICs): The results for the sample of LMICs are presented in Table 6. As per the results, FDI has a direct positive and significant effect on the per capita GDP. The value of the coefficient (0.002) is lower than that of the full sample but higher than that of LICs. The results also reveal that FDI has indirect growth effects which mainly works through domestic factors such as financial, human, and infrastructure development, as their interaction terms are found to have positive and significant coefficients. This means that the development of these factors will enhance the growth effect of FDI for MICs. Additionally, we find also find that trade openness and external debt stock depress the positive impact of FDI on growth as evident from their negative coefficients. Like LICs, LMICs also largely export primary commodities which could hinder the spillover effects of FDI through trade. Similarly, the effect of FDI on growth is positive but declines with an increase in foreign debt due to the debt overhang effect. However, it must be noted that the combined effect of both direct and indirect effects is positive, indicating that FDI has an overall positive growth impact for LMICs.

Table 6: Long-run coefficients of economic growth (LMICs)

Explanatory Variables	Spec-1.	Spec-2.	Spec-3.	Spec-4.	Spec-5.	Spec-6.	Spec-7.
Constant	2.89** (45.56)	2.72* (55.38)	2.72* (55.38)	2.21** (32.65)	2.29** (37.06)	2.03** (32.76)	2.17** (26.45)
LnLF	-0.02 (-1.48)	-0.02 (-1.70)	-0.02* (-2.70)	0.03** (4.61)	0.03** (5.79)	0.07** (11.28)	0.05** (11.28)
TR	0.02* (2.56)	0.04** (4.88)	0.03* (2.69)	0.04** (6.77)	0.03** (5.79)	0.07** (16.44)	0.05** (8.58)
FDI	0.002** (6.24)	0.003* (2.75)	0.001 (0.61)	0.003** (2.24)	0.002 (1.56)	0.009** (7.84)	0.003** (4.65)
GFCF	0.05**	0.07**	0.09**	0.04**	0.08**	0.05**	0.05*

	(8.37)	(5.64)	(8.34)	(3.52)	(5.75)	(4.63)	(2.39)
INFD	0.33** (22.19)	0.34** (15.87)	0.34** (15.87)	0.54** (14.05)	0.09* (2.59)	0.22** (6.66)	0.38** (12.19)
FIND	0.18** (10.73)	0.12* (2.89)	0.11** (3.55)	0.09** (5.75)	0.14** (3.25)	0.17** (4.69)	0.19** (4.98)
INFL	-0.0002** (-3.88)	-0.0002** (-3.37)	-0.0002** (-3.37)	-0.007** (-7.46)	-0.001** (-5.34)	-0.004** (-4.21)	-0.005** (-6.46)
HUM	0.003** (36.27)	0.004** (20.42)	0.003** (23.14)	0.004** (15.17)	0.004** (16.20)	0.002** (18.45)	0.003** (16.56)
*FDI*TR*		-0.001* (-2.02)					
*FDI*FIND*			0.01** (3.44)				
*FDI*INFD*				0.03* (2.36)			
*FDI*HUM*					0.001* (2.63)		
*FDI*EXD*						-0.001** (-2.96)	
*FDI*INST*							-0.005** (-3.92)
m1 (p-value)	(0.00)	(0.00)	(0.00)	(0.00)	(0.05)	(0.03)	(0.00)
m2 (p=value)	(0.62)	(0.41)	(0.41)	(0.76)	(0.86)	(0.18)	(0.30)
Saragn test (p-value)	(0.08)	(0.12)	(0.17)	(0.34)	(0.23)	(0.18)	(0.08)
Observations	786	786	786	786	786	786	786

*** and * implies significance at 1 and 5 % levels respectively. t-ratios is presented in the bracket.*

Emerging Countries: The results for emerging countries are presented in Table 7. The results reveal that FDI has a direct positive and significant effect on per capita GDP as revealed by the coefficient of 0.01 in the base model. The growth impact of FDI is higher compared to any other samples due to higher absorptive capacities for emerging countries. The indirect impact or conditional factors of FDI are identified by including various interaction terms. The results reveal that conditional factors such as trade, human capital, financial and infrastructure development enhance the complementary effect of FDI on growth for emerging economies. This means that the development of such underlying conditions can increase the growth-enhancing effect of FDI in these economies. In contrast, institutions and external debt stocks are found to depress the positive impact of FDI on growth, though the results for both are statistically insignificant. More

importantly, the combined growth (direct and indirect) effect of FDI is found to be positive, indicating that FDI has an overall positive growth impact for emerging countries.

Table 7: **Long-run coefficients of economic growth (Emerging countries)**

Explanatory Variables	Spec-1.	Spec-2.	Spec-3.	Spec-4.	Spec-5.	Spec-6.	Spec-7.
Constant	4.89** (25.56)	0.53 (1.68)	1.83** (4.68)	2.27** (5.70)	0.57 (1.27)	1.03* (2.76)	1.17* (2.45)
LnLF	0.02 (1.48)	0.02 (0.70)	-0.12* (-2.37)	-0.06* (-2.01)	0.06 (1.05)	0.07* (2.54)	0.05* (2.28)
TR	0.41** (12.21)	0.32** (8.65)	0.19** (3.24)	0.006 (1.07)	0.13* (2.47)	0.17** (6.34)	0.15** (8.58)
FDI	0.01** (4.23)	0.005 (1.35)	0.003 (0.75)	0.02* (2.13)	0.01* (2.24)	0.02** (3.84)	0.06** (4.85)
GFCF	-0.26 (-1.37)	0.07* (2.64)	-0.17* (-2.64)	0.24** (9.52)	-0.14* (-2.52)	0.15** (3.03)	-0.05* (-2.39)
INFD	0.49** (12.43)	0.35** (7.01)	0.14** (5.11)	0.15** (6.15)	0.39** (8.31)	0.35** (7.68)	0.31** (12.19)
FIND	0.26** (6.73)	0.28* (4.57)	0.08* (2.19)	0.29** (7.65)	0.32** (5.55)	0.25** (7.76)	0.19** (4.98)
INFL	-0.002** (-11.88)	-0.002** (-7.34)	-0.002** (-5.41)	-0.003** (-12.46)	-0.004** (-14.46)	-0.024** (-8.81)	-0.003** (6.46)
HUM	0.007** (10.27)	0.02** (9.22)	0.04** (10.15)	0.06** (22.17)	0.03** (14.45)	0.02** (12.89)	0.03** (16.56)
*FDI*TR*		0.02* (2.83)					
*FDI*FIND*			0.11** (5.44)				
*FDI*INFD*				0.04** (3.78)			
*FDI*HUM*					0.02* (2.83)		
*FDI*EXD*						-0.001 (-1.56)	
*FDI*INST*							-0.005 (-1.42)
m1 (p-value)	(0.00)	(0.00)	(0.00)	(0.00)	(0.05)	(0.03)	(0.00)
m2 (p=value)	(0.72)	(0.14)	(0.897)	(0.43)	(0.86)	(0.11)	(0.23)
Saragn test (p-value)	(0.07)	(0.12)	(0.17)	(0.11)	(0.10)	(0.21)	(0.09)
Observations	322	322	322	322	322	322	322

*** and * implies significance at 1 and 5 % levels respectively. t-ratios is presented in the bracket.*

Thus, it is clear that FDI has a positive impact on growth for developing countries, the magnitude of these growth effects vary. The growth-enhancing impact of FDI seems to be least effective for

LICs, followed by LMICs and then, emerging economies. This is due to the differential absorptive capacities of these countries owing to their differing levels of trade openness, financial sector development, infrastructure, human capital, and external debt. Absorptive capacities determine the extent of positive spillovers from FDI through these various channels. According to the results from the empirical analysis, human capital and financial sector development boost the positive effects of FDI on growth across all three groups. On the other hand, the promotional impact of FDI on growth is depressed by greater trade openness for LICs and LMICs, as these countries largely export primary products which are not conducive for technology spillovers. For emerging countries, exports are more diversified and hence, FDI indirectly boosts growth further through its effect on exports. Similarly, infrastructure development strengthens the positive growth effect in the case of LMICs and emerging countries. But for LICs, the level of infrastructure may have not crossed the threshold level required to realize the positive growth effect, as evident from the negative coefficient of its interaction term. The interaction between FDI and external debt also seems to have negative implications for growth in LICs and LMICs and, reducing external debt will enhance the effect of FDI on growth.

(iv) Panel Causality between FDI and Per Capita Income

The panel causality between per capita income and FDI is conducted using the panel non-causality approach proposed by Dumitrescu and Hurlin (2012) and results are presented in Table 8. The results reveal the existence of a two-way or feedback relationship between the two for the full sample, LMICs, and emerging countries. The above results suggest that higher FDI inflows lead to higher real per capita incomes and, higher per capita incomes in turn promote higher FDI inflows to developing countries. However, unidirectional causality running from FDI to per capita income

was found for LICs. This means that FDI inflows promote per capita income but the reverse may not necessarily be true.

Table 8: Result of Panel Causality Test

Direction of Causality	Test statistics	Value (Full sample)	Value (LICs)	Value (LMICs)	Value (Emerging Countries)
FDI →RYPC	Z-bar	7.86**	15.05**	4.44	3.02**
	Z-bar tilde	4.85**	5.44**	1.62#	1.02
RYPC→FDI	Z-bar	4.67**	0.43	2.27*	2.16*
	Z-bar tilde	2.51*	0.80	1.01	0.68

'**, * and #' implies the rejection of no-causality at 1, 5, and 10 % levels respectively. AIC criteria are used to select optimal lags.

6. Conclusion and Policy Implications

With increasing globalization, there has been a surge in FDI inflows into developing countries. The theoretical literature suggests that FDI promotes economic growth in host countries by augmenting domestic, technology, providing access to foreign markets, and improving the skills of the labour force. But empirical literature on the subject has been inconclusive. In this context, the current paper contributes to the existing debate on the relationship between FDI and economic growth by carefully analyzing data from 93 developing countries over the period 2000-2017. The paper also studied the differential impact of FDI inflows for LICs, LMICs, and emerging countries in acknowledgment of the possibility that the implications of FDI inflows may not be the same across the spectrum of developing countries. It considered various host country factors to study how FDI indirectly affected growth through its effect on these factors. Specifically, the paper applied the heterogeneous dynamic panel model to examine if, how, and to what extent FDI impacted economic growth across different types of developing countries, each differentiated by their level of economic development and set of domestic conditions.

According to the results of the empirical analysis, FDI promotes growth in developing countries. However, the magnitude of the growth impact tended to vary across different categories of countries. Emerging countries benefited more than LICs and LMICs, possibly due to the lower absorptive capacities of the latter countries. In addition, the study also sought to understand the role of the level of human capital, degree of trade openness, institutional setup, state of infrastructure, financial development, and stock of foreign debt in complementing the channel effect of FDI. All these factors (except institutions and foreign debt) were shown to positively affect the impact of FDI on growth. But out of these different factors, which particular factor would enhance the growth impact of FDI depended on the country group being studied. For instance, greater trade openness seemed to depress the effect of FDI on growth for LICs and LMICs, but promoted growth in emerging countries. Lastly, using Dumitrescu and Hurlin (2012) methods of "homogeneous non-causality" test, a bi-directional or feedback relationship was found between the two. This means that FDI promotes economic growth while simultaneously, economic growth also attracts greater FDI inflows.

In light of these findings, the study has certain policy implications. Firstly, since FDI spurs economic growth in developing countries, these countries should have pro-FDI policies and remove/re-adjust existing restrictions on FDI inflows. Secondly, policymakers should work towards improving the absorptive capacities of developing countries to improve and sustain economic growth. Such measures include promoting, human capital enhancement, infrastructural development, financial sector development, and open trade policies. This is especially true for lower-income countries which typically have lower absorptive capacities due to infrastructural, human capital, and institutional bottlenecks. Finally, the governments of host countries should harmonize FDI policies with their overall national development policies on trade, macroeconomic

stability, foreign exchange, investment climate, technology up-gradation, and human capital to realize the benefits of FDI inflows more comprehensively.

Acknowledgement: This paper is part of the research project titled "Role of International Capital Flows in Economic Development: An Empirical Assessment" funded by Indian Council of Social Science Research (ICSSR), Government of India (F.No 02/28/2016-17/RP).

Appendix A

LIST OF COUNTRIES

1. **Lower Income Countries (LICs)**

Afghanistan, Benin, Burkina Faso, Burundi, Central African Republic, Chad, Comoros, Congo, Dem. Rep, Eritrea, Gambia, Guinea, Guinea-Bisau, Haiti, Liberia, Madagascar, Malawi, Mali, Mozambique, Nepal, Niger, Rwanda, Senegal, Sierra Leone, Tanzania, Togo, Uganda and Zimbabwe

2. **Lower Middle-income Countries (LIMCs)**

Angola, Armenia, Bangladesh, Bhutan, Bolivia, Cabo Verde, Cambodia, Cameroon, Congo, Rep., Côte d'Ivoire, Djibouti, Egypt, Arab Rep, El Salvador, Georgia, Ghana, Guatemala, Honduras, Kenya, Kiribati, Kosovo, Kyrgyz Republic, Lao PDR, Lesotho, Mauritania, Micronesia, Fed. Sts, Moldova, Mongolia, Morocco, Myanmar, Namibia, Nicaragua, Nigeria, Pakistan, Papua New Guinea, Philippines, São Tomé and Principe, Solomon Islands, Sri Lanka, Sudan, Tajikistan, Timor-Leste, Tunisia, Ukraine, Uzbekistan, Vanuatu, Vietnam, West Bank and Gaza, Yemen, Rep and Zambia.

3. **Emerging Countries**

Brazil, China, Chile, Colombia, Hungary, Indonesia, India, Malaysia, Mexico, Peru, Poland, Russia, South Africa, Thailand, Turkey, Czech Republic, and South Korea,

References

Acemoglu, D., Johnson, S. and Robinson, J. (2005), "Institutions as the fundamental cause of long-run economic growth", in P. Agion and S. Durlauf, eds, "Handbook of Economic Growth", Vol. 1, North-Holland, 385-472.

Adams, S. (2009), "Foreign Direct Investment, domestic investment and Economic Growth in Sub-Saharan Africa", *Journal of Policy Modeling*, 31, 939-949.

Alaya, M. (2006), "Investissement direct e´ tranger et croissance e´conomique: Une estimation a` partir d'un mode` le structurel pour les pays de la rive sud de la Me´ diterrane´ e. 7e`mes journe´ es scientifiques du re´seau "Analyse Economique et De´veloppement de l'AUF", Paris, 7 et 8 septembre 2006.

Alfaro, L., Chanda, A., Kalemli-Ozcan, S. and Sayek, S. (2001), "FDI and economic Growth: The role of financial markets", Harvard Business School, Working Paper 01-083.

Ang, J. B. (2009). Foreign direct investment and its impact on the Thai economy: the role of financial development. *Journal of Economics and Finance*, *33*(3), 316-323.

Anwara, S. and Nguyen, L. (2010), "Foreign Direct Investment and Economic Growth in Vietnam", *Asia Pacific Business Review*, 16(1-2): 183–202.

Aschauer, D. A. (1989), "Is Public expenditure Productive?", *Journal of Monetary Economics*, 23, 177–200.

Baharumshah, A., Ly Slesman, E. and Shyamala, D. (2017), "Types of Foreign Capital Inflows and Economic Growth: New Evidence on Role of Financial Markets", *Journal of International development*, 29, 768-789.

Balasubramanyam, V., Salisu, M. and Sapsford, D. (1996), "Foreign Direct Investment and Growth in EP and IS Countries", *The Economic Journal*, 106(434): 92-105.

Balasubramanyam, V.N., Salisu, M. and Sapsford, D. (1999), "Foreign Direct Investment as an Engine of Growth", *The Journal of International Trade and Economic Development*, 8(1): 27–40.

Baliamoune-Lutz (2004), "Does FDI Contribute to Economic growth?", *Business Economics*, p. 49-56.

Barro, R. (1995): "Inflation and Economic Growth". *Bank of England Economic Bulletin*, pp. 1-11.

Barro, R. J. and X. Sala-i-Martin. (1995), "Economic Growth", New York, McGraw Hill.

Beck, T., A. Demirgüç-Kunt, and R. Levine. (2003), "Law, Endowments and Finance", *Journal of Financial Economics,* 70, 137-81.

Blomström, M., Kokko, A., & Mucchielli, J. L. (2003). The economics of foreign direct investment incentives. In *Foreign direct investment in the real and financial sector of industrial countries* (pp. 37-60). Springer, Berlin, Heidelberg

Blomstrom, M., Lipsey, R. and Zejan, M. (1994), "What explains developing Country growth?", in W. Baumol, R. Nelson and E. Wolff, eds, *Convergence and Productivity: Gross-National Studies and Historical Evidence,* Oxford: Oxford University Press, 246- 262.

Borensztein, E., De Gregorio, J. and Lee, J. (1998), "How does foreign direct investment affect economic growth?", *Journal of International Economics,* 45(1): 115-135.

Bruno, R. and Campos, N. (2013), "Re-examining the conditional effect of foreign direct investment", IZA Discussion Paper 7458.

Busse, M. and Groizard, J. (2008), "Foreign direct investment, regulations and growth", *The World Economy,* 31(7): 861-886.

Calderón, César; Loayza, Norman and Servén Luis (2004), "Greenfield Foreign Direct Investment and Mergers and Acquisitions: Feedback and Macroeconomic Effects", World Bank Policy Research, Working Paper 3192.

Chakraborty, C., & Nunnenkamp, P. (2008). Economic reforms, FDI, and economic growth in India: a sector level analysis. *World development, 36*(7), 1192-1212.

Chakraborty, C., and Basu, P., (2002). Foreign Direct Investment and growth in India: A cointegration approach, *Applied Economics,* No. 34, pp. 1061-1073.

De Mello Jr, L. R. (1997). Foreign direct investment in developing countries and growth: A selective survey. *The journal of development studies, 34*(1), 1-34.

De Mello, L. R. (1999). Foreign direct investment-led growth: evidence from time series and panel data. *Oxford economic papers, 51*(1), 133-151.

Demir, F., & Duan, Y. (2018). Bilateral FDI flows, productivity growth, and convergence: the north vs. the south. *World Development, 101*, 235-249.

Dumitrescu, Elena-Ivona and Hurlin, C. (2012), "Testing for Granger non-causality in heterogeneous panels*", Economic Modelling,* 29(4): 1450-1460.

Durham, J. B. (2004), "Absorptive Capacity and the Effects of Foreign Direct Investment and Equity Foreign Portfolio Investment on Economic Growth", *European Economic Review,* 48, 285 – 306.

Frankel, J. and Romer, D. (1999), "Does trade cause growth?", *American Economic Review,* 89, 379–399.

Grossman, G. M., and Helpman, E. (1991), "Trade, Innovation, and Growth", *American Economic Review,* 80(2): 86-91.

Hermes, N., & Lensink, R. (2003). Foreign direct investment, financial development and economic growth. *The journal of development studies*, *40*(1), 142-163.

Islam, K. M. A. (2014), "Foreign Direct Investment (FDI) in Bangladesh: Prospects Challenges and Its Impact on Economy", *Asian Business Review,* 4(1): 24-36.

Jenkins, C. and Thomas, L. (2002), "Foreign Direct Investment in Southern Africa: Determinants, Characteristics and Implications for Economic Growth and Poverty Alleviation", Globalization and Poverty Project. University of Oxford.

Kaufmann, D., Kraay, A. and Zoido-Lobaton, P. (2002) Governance Matters II: Updated Indicators for 2000/01. Policy Research Working Paper No. 2772. Washington, DC: World Bank.

King, R. and Levine, R. (1993), "Finance and Growth: Schumpeter Might Be Right", *Quarterly Journal of Economics,* 108, 717-38.

Kinoshita, Y., & Lu, C. H. (2006). On the role of absorptive capacity: FDI matters to growth.

Kohpaiboon, A. (2003). Foreign trade regimes and the FDI–growth nexus: A case study of Thailand. *The Journal of Development Studies*, *40*(2), 55-69.

Kotrajaras, P., Tubtimtong, B., and Wiboonchutikula, P. (2011), "Does FDI enhance economic growth? New evidence from East Asia", ASEAN Economic Bulletin, 183-202.

Lensink, R. and Morrissey, O. (2001), "Aid Instability as a measure of Uncertainty and the Positive Impact of AID on Growth", *Journal of Development Studies,* 36(3): 31-49.

Li, X. and Liu, X. (2005), "Foreign Direct Investment and Economic Growth: An Increasingly Endogenous Relationship", *World Development,* 33(3): 393-407.

Makiela, K., and Ouattara, B. (2018), " Foreign direct investment and economic growth: Exploring the transmission channels. Economic Modelling, 72, 296-305.

Mankiw N., Romer D., and Weil, D. (1992), "A contribution to the empirics of economic growth", *Quarterly Journal of Economics,* 107, 407-437.

Pesaran, M. (2007), "A simple panel unit root test in the presence of cross-section dependence", *Journal of Applied Economics,* 22: 265–312.

Presbitero, A. F. (2012), "Total Public Debt and Growth in Developing Countries," *European Journal of Development Research,* 24(4): 606–626.

Rehman, N. U. (2016). FDI and economic growth: Empirical evidence from Pakistan. *Journal of Economic and Administrative Sciences*.

Rodrik, D. (1999), "Where Did All the Growth Go? External Shocks, Social Conflict, and Growth Collapses", *Journal of Economic Growth,* 4(4): 385–412.

Sahoo, P. and Dash, R. K. (2012), "Economic growth in South Asia: Role of infrastructure", *The Journal of International Trade and Economic Development,* 21(2): 217-252.

Sahoo, P., Nataraj, G., and Dash, R. K. (2013), " Foreign Direct Investment in South Asia: Policy, Impact, Determinants and Challenges", New Delhi: Springer India

Saqib, N., Masnoon, M. and Rafique, N. (2013), "Impact of Foreign Direct Investment on Economic Growth of Pakistan", *Advances in Management and Applied Economics,* 3(3): 35-45.

Shan, J. (2002), "A VAR approach to the economics of FDI in China", *Applied Economics,* 34: 885–93.

Tanna, S., Li, C., & De Vita, G. (2018). The role of external debt in the foreign direct investment–growth relationship. *International Journal of Finance & Economics, 23*(4), 393-41

Temiz, D., & Gökmen, A. (2014). FDI inflow as an international business operation by MNCs and economic growth: An empirical study on Turkey. *International Business Review, 23*(1), 145-154.

Westerlund J (2007), "Testing for error correction in panel data", *Oxford Bulletin Economics and Statistics,* 69: 709–748.

Recent IEG Working Papers:

Kar, Sabyasachi, Bashir, Amaani and Jain, Mayank (Oct.2021).New Approaches to Forecasting Growth and Inflation: Big Data and Machine Learning, , Working Paper Sr. No.: 446

Mohapatra, Sonali Madhusmita (Oct. 2021). Export Performance: A Study of Labour and Capital Intensive Manufacturing Industries in India, Working Paper Sr. No.: 445

Priyadarshini, D. and Kar, Sabyasachi (Sep. 2021). Central Bank Digital Currency (CBDC): Critical Issues and the Indian Perspective, Working Paper Sr. No.: 444

Garg, Bhavesh and Sahoo, Pravakar (Sep. 2021). DO DIFFERENT TYPES OF CAPITAL INFLOWS HAVE DIFFERENTIAL IMPACT ON OUTPUT? Evidence from Time series and Panel Analysis, Working Paper Sr. No.: 443

Garg, Sandhya and Gupta, Samarth (Sep. 2021). Financial Access and Gender Gap in Entrepreneurship and Employment: Evidence from Rural India, Working Paper Sr. No.: 442

Sahoo, Pravakar and Bishnoi, Ashwani (Sep. 2021). Drivers of Corporate Investment Slowdown in India: A Firm Level Analysis, Working Paper Sr. No.: 441

C.S.C. Sekhar and Thapa, Namrata (Sep. 2021). AGRICULTURAL MARKET IMPERFECTIONS AND FARM PROFITABILITY IN INDIA, Working Paper Sr. No.: 440

Sahoo, Pravakar and Bishnoi, Ashwani (Aug 2021). Investment Slowdown in India: Role of Fiscal-Monetary policy and Economic Uncertainty, Working Paper Sr. No.: 439

IEG Working Paper No. 447

INSTITUTE OF ECONOMIC GROWTH

University Enclave, University of Delhi
(North Campus) Delhi 110007, India
Tel: 27667288/365/424
Email: system@iegindia.org