

Print ISSN: 2288-4637 / Online ISSN 2288-4645
doi:10.13106/jafeb.2021.vol8.no11.0031

Absorptive Capacity Effects of Foreign Direct Investment in Selected Asian Economies

Samrat ROY¹

Received: July 15, 2021 Revised: September 28, 2021 Accepted: October 05, 2021

Abstract

This study empirically examines the proposition that the domestic fundamentals of a nation can emerge as absorptive capacity factors to reap the benefits of inward FDI. The study is contextualized in Asia, set from 1982 to 2017, and data is grouped into low-income and lower-middle-income economies, in comparison to high-income and upper-middle-income economies, catering to different geographical regions within Asia. The investigation is based on a series of absorptive capacity factors such as infrastructure, human capital, domestic credit, and health indicator. The methodological analysis is premised on dynamic panel structure and employs the Generalized Method of Moments (GMM) estimation technique. The empirical findings suggest that the infrastructure variable appears to be the major absorptive capacity factor for both groups of countries. The health indicator, on the other hand, can help reap the benefits of inward FDI, but only if the threshold level is met. The selected economies must achieve this threshold level to reap the benefits of FDI. To absorb the benefits of inward FDI, countries must be proactive in providing sound infrastructure and implementing proper healthcare measures.

Keywords: FDI, Generalized Method of Moments, Absorptive Capacities, Growth

JEL Classification Code: F21, C26, O11, O4

1. Introduction

The episodic inflows of foreign capital across the world economies during the past two decades are argued considerably in the theoretical and empirical literature. More significantly the developing countries of the world gradually experienced a surge in capital inflows. In terms of the composition of capital inflows, the existing literature provides ample evidence on the appropriateness of Foreign Direct Investment (FDI) over alternative capital inflows in terms of relative stability. Hence this discussion generalizes the fact that FDI is more preferred to other capital flows from the perspective of receiving countries.

The mixed evidence on FDI-growth nexus is the reflection of the omission of some local factors or host country conditions which evokes the presence of heterogeneities across the countries. These fundamentals can be attributed to infrastructure, institutional framework, human capital, financial development and political stability, and many other dimensions. The contextualization in Asia is motivated by the remarkable spurt in FDI inflows in recent times. Asian economies have recognized the significance of FDI both in quantitative and qualitative terms.

In this context, these domestic factors are stated in the literature as ‘absorptive capacities’ (Demekas et al., 2007). The word “absorptive capacity” refers to a country’s foundations in terms of domestic fundamentals. Given this context, the purpose of this study is to investigate the indirect relationship between domestic fundamentals and Asian economic growth over time.

2. Literature Review

The significance of FDI in augmenting economic growth and creating positive spillovers is widely recognized in growth theories. The existing studies applied different econometric methodologies but the findings are mixed.

¹First Author and Corresponding Author. Assistant Professor, Department of Economics, St. Xavier’s College (Autonomous) Kolkata, University of Calcutta, India. <https://orcid.org/0000-0002-4139-585X>. [Postal Address: 30 Park St., Mullick Bazar, Park Street area, Kolkata, West Bengal 700016, India] Email: samratroy@sxccal.edu

© Copyright: The Author(s)
This is an Open Access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (<https://creativecommons.org/licenses/by-nc/4.0/>) which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

The study done by Mohamed (2019) infers that for Sri Lanka, inward FDI is instrumental to growth. Foreign aid was studied in relation to FDI by Nguyen (2020) and the study inferred that level of exports is a significant variable. The significance of infrastructure as an absorptive variable in reaping the benefits of FDI is highlighted in few studies (Asiedu, 2002).

In summary, the existing studies have dealt with specific host country-fundamentals like education or infrastructure but there are limited studies examining the relevance of a host of multifaceted factors namely infrastructure, human capital, financial variable, and health indicator through their interaction terms with FDI to capture the growth-inducing effects.

Against this backdrop, this study looks into the significance of the domestic fundamentals in explaining the absorptive capacities of FDI. The analysis is conducted within the framework of selected Asian economies which are grouped into low-income and lower-middle-income economies vis-à-vis high income and upper-middle-income economies across various regions in Asia for the time-frame, 1982–2017. The selected low- and lower-middle-income countries are Mongolia from East Asia, Indonesia, Philippines, Vietnam, Laos, and Cambodia from South East Asia, India, Bangladesh, Pakistan and Sri Lanka from South Asia and finally, Syria, Yemen, Armenia from West Asia followed by Uzbekistan from Central Asia respectively. The high-income and upper-middle-income selected economies are China, Hong Kong, Japan and Korea from East Asia, Malaysia, Singapore and Thailand from South East Asia, Bahrain, Jordan, Saudi Arabia, Oman, Turkey, Kuwait, Israel UAE, Lebanon, Qatar, Iran and Cyprus from West Asia followed by Kazakhstan and Turkmenistan from Central Asia respectively.

The uniqueness of the study lies in the rigorous exploration to capture the growth-inducing effects of FDI in the presence of host country factors and subsequently portraying a comparative analysis between the two sets of countries. There are very limited studies on the entire canvas of Asia sub-divided into different regions. Hence this study proposes to examine empirically the hypothesis that whether the determinants of FDI are capable enough to act as absorptive capacity factors in the context of Asia.

3. Data, Empirical Specification, and Methodology

3.1. Data

This analysis is based on selected Asian economies for the time frame, 1982 to 2017. To lessen the short-run fluctuations, the data for all the concerned variables are averaged over non-overlapping 6-year periods, 1982–1987,

1988–1993, 1994–1999, 2000–2005, 2006–2011, and 2012–2017. This results in six observations per country. Thus the panel structure is considered to study the structural relationship of interest. The starting year, 1982 is mainly motivated by the availability of the data for all variables and countries. All the variables are considered in natural logarithms.

The data on the growth rate of GDP per capita is obtained from World Development Indicators (WDI) published by World Bank (n.d). The level of initial GDP per capita is regarded as one of the major repressors. The regressor of major interest is FDI (inflows) expressed as a percentage of GDP. This data is collected from WDI. The data on the gross domestic capital formation (percentage of GDP) is considered for domestic investment and is obtained from WDI. The absorptive capacity factors can be classified into macroeconomic fundamentals comprising infrastructural, financial, human capital, governance, and health indicators. The variable, fixed broadband connections (per 100 variable) is a proxy variable for infrastructure as considered in this study. The data on average years of schooling is obtained from WDI. This is the indicator for human capital which through its interaction with FDI might have growth-enhancing effects. The indicator measuring the financial development is captured by the domestic credit availability by the banking sector. The data is obtained from World Development Indicator (WDI). Finally, the health indicator is captured by life expectancy rate which measures the number of years a newborn infant would survive.

For robustness of the findings, trade openness (ratio of exports and imports divided by GDP) is considered. The inclusion of this variable is motivated by the study of Nantharath and Kang (2019).

The data of this variable is collected from WDI for the selected Asian countries within the time frame, 1982–2017.

3.2. Model Specification

The empirical specification is framed within the panel structure of two groups of Asian countries as represented in Table 1 for the time frame, 1982–2017. All the variables are in natural logarithms. The estimation is done separately for each of the two groups.

$$\Delta(\log \text{GDP per capita})_{it} = \alpha + \beta_1(\log \text{GDP per capita})_{i,t-1} + \beta_2 \log X_{it} + \beta_3 \log(\text{FDI/GDP})_{it} + \beta_4 \log Z_{k,it} + \eta_i + u_{it} \quad (1)$$

Where,

i stands for a country and t represents the time period that specifies one of the six-year averages.

η_i is unobserved country-specific effects and ε is the error term.

The first difference of the \ln GDP per capita is the dependent variable which is the proxy for economic growth. GDP per capita_{*i,t-1*} represents the log of real per capita GDP at the starting of each six-year period. This is motivated by traditional growth models where the log of initial GDP per capita captures the convergence effect. The log of the past value of real GDP per capita is considered.

Log X_{it} includes the independent variable namely, gross fixed capital formation as a ratio of GDP, which captures domestic investment.

The major independent variable of concern is the log FDI/GDP ratio. This is defined by the total FDI inflows divided by GDP which is commonly applied in empirical works (Adams, 2009).

Moreover, Z_k captures the impact of local factors on the dependent variable. These factors include absorptive capacity variables pertaining to infrastructure, finance, human capital, and health dimensions and their interaction terms with FDI.

For robustness, trade openness measured by the ratio of exports and imports divided by GDP is considered in every case.

Here the terms η_i and ε_{it} have standard properties. That is $E(\eta_i) = E(\varepsilon_{it}) = E(\eta_i \varepsilon_{it}) = 0$ for $i = 1, \dots, N$ and $t = 2, \dots, T$. It is also assumed that the time-variant errors are uncorrelated:

$$E(\varepsilon_{it} \varepsilon_{it'}) = 0 \text{ for different } t \text{ and } s.$$

3.3. Methodology

GMM methodology for the dynamic panel data.

With reference to the above equation (1) sub-section 2.2, the FDI/GDP ratio variable is endogenous due to a two-way relationship between FDI/GDP ratio and growth. The presence of the past value of real GDP per capita as one of the independent variables gives rise to the problem of autocorrelation. This estimation procedure considers the first-differencing technique to eliminate the fixed country-specific effect. Moreover, the past values of the first-difference initial dependent variable are used as instruments. According to the two-step difference GMM estimator proposed by Arellano and Bond (1991), a consistent estimate of the variance-covariance matrix is obtained. The estimation procedure takes care of two different income level groups-high-income and low-income groups. Otherwise, the combination of different levels of economic development will lead to misleading inferences.

4. Empirical Findings

This section reports the empirical results for low-income and lower-middle-income countries vis-à-vis high-income and upper-middle-income countries. The comparative results are expected to frame policies with regard to the absorptive capacity factors unique for each set of countries.

This exercise justifies the segregation of the economies as per income criterion.

4.1. Dynamic Panel Estimation Results for Low-Income and Lower-Middle-Income Countries

Table 1 reports the findings for low-income and lower-middle-income countries. In this case, two-step robust difference GMM results are reported. Since the number of countries in each sub-sample is sufficiently less, there is a possibility for the number of instruments to outweigh the number of cross-sections or countries. So there is a need for reducing the instrument count. For this purpose, collapsing of instruments is done in every specification to ensure robust results. For all, the regressions the models are correctly specified as confirmed by the Arellano-Bond test and the Hansen test respectively.

Column (I) confirms that the estimated coefficients of the basic variables are positive and significant. Column (II) considers the addition of the infrastructure variable. The infrastructure variable does not significantly affect economic growth by itself. The robustness of this finding is confirmed by the presence of trade openness in Column (III). Column (IV) considers the inclusion of the education variable as a proxy for human capital. The coefficient for human capital is negative and insignificant which may be due to the deficiency in skill formation across these set of countries. Again this finding is robust as confirmed by Column (V). Column (VI) adds the financial indicator proxied by domestic credit. The estimated coefficient of the domestic credit variable is positive and significant to economic growth. The robustness of this finding is confirmed by Column (VII) in the presence of trade openness. Finally, health indicator is considered in Column (VIII). In this case, the estimated coefficient of life expectancy rate as a proxy for health indicators turns out to be insignificant. This finding is also robust.

So the variables namely infrastructure, human capital, and health indicators do not have their partial impact on economic growth for these sets of selected Asian countries.

Table 2 given below deals with the interaction effects of local factors with FDI and examines its impact on economic growth in the context of low and low middle-income countries. This table reports the findings for the set of 14 low and lower-middle-income countries for the time frame 1982 to 2017 by applying the difference GMM methodology.

The interaction effect of infrastructure variable as proxied by fixed broadband subscriptions with FDI is considered in Column (I). Except for domestic investment, the basic core variables are positive and significant. The major concern of interest is the partially estimated coefficient of FDI and the estimated coefficient of the interaction term. If both the coefficients turn out to be

Table 1: Two-Step Robust Difference GMM Estimation Results for Low-Income and Lower-Middle-Income Countries

Variables	I	II	III	IV	V	VI	VII	VIII	IX
Initial GDP per capita	0.34 (0.00)	0.43 (0.00)	0.45 (0.00)	0.36 (0.00)	0.41 (0.00)	0.41 (0.00)	0.42 (0.00)	0.46 (0.06)	0.48 (0.00)
log_FDI	0.15 (0.04)	0.24 (0.02)	0.24 (0.08)	0.16 (0.03)	0.18 (0.06)	0.12 (0.15)	0.15 (0.17)	0.23 (0.12)	0.33 (0.10)
log_domestic investment	0.25 (0.56)	0.49 (0.43)	0.48 (0.49)	0.42 (0.45)	0.19 (0.76)	0.48 (0.13)	0.33 (0.59)	0.57 (0.44)	1.26 (0.37)
log_infrastructure		0.13 (0.43)	0.07 (0.63)						
log_education				−0.27 (0.43)	−0.09 (0.77)				
log_domestic credit						0.34 (0.06)	0.38 (0.09)		
log_life expectancy								−3.16 (0.44)	−6.61 (0.35)
log_trade openness			0.12 (0.21)		0.08 (0.30)		0.11 (0.19)		0.55 (0.02)
Constant	0.14 (0.81)	0.33 (0.72)	0.30 (0.77)	0.02 (0.99)	0.23 (0.76)	0.68 (0.10)	0.53 (0.47)	5.37 (0.43)	10.68 (0.27)
Arellano-Bond test for AR(2) <i>p</i> -value	0.27	0.23	0.26	0.27	0.29	0.29	0.29	0.23	0.33
Wald Statistic	22.31 (0.00)	28.30 (0.00)	65.04 (0.00)	26.48 (0.00)	37.22 (0.00)	45.63 (0.00)	42.46 (0.00)	244.67 (0.00)	205.09 (0.00)
Hansen <i>p</i> -value	0.14	0.15	0.14	0.30	0.30	0.25	0.12	0.16	0.18
No. of countries	14	14	14	14	14	14	14	14	14
No. of Instruments	5	12	13	7	9	9	5	12	12
No. of observations	84	84	84	84	84	84	84	84	84

Note: *p*-values are in parentheses.

positive and significant, then the FDI definitely renders a positive impact on economic growth. Under such circumstances, the infrastructure variable can turn out to be the strong absorptive capacity factor. The findings in Column (I) clearly show that the estimated coefficient of FDI is significantly positive as well as that of the interaction term (FDI_infrastructure) is also positive and significant at 10 percent level. For this set of selected Asian economies, the creation of a sound infrastructural base is a prerequisite condition for absorbing the benefits of FDI. Column (II) includes the human capital variable as proxied by the average years of total schooling for both males and females of age 25–29 years respectively. In this case, the partial impact of FDI on economic growth turns out to be positive and significant at a 10 percent level, and more interestingly the interaction term of human capital with FDI is also positive and significant. This finding reinstates that the human capital indicator can be considered to be one of the major absorptive

capacity factors similar to infrastructure. The addition of the domestic credit variable in Column (III) provides a different result as compared to the earlier specifications. In this case, both the estimated coefficients of FDI and interaction term of domestic credit with FDI turn out to be insignificant at all levels of significance respectively. This clearly indicates the incapability of this factor to be the absorptive capacity factor in the context of these sets of countries. Column (IV) considers the inclusion of health indicators proxied by life expectancy rate. In this case, the partial effect of FDI on economic growth appears to be negative and significant. Whereas the estimated coefficient of the interaction term (FDI with life expectancy rate) is positive and significant. This finding explains that the positive impact of FDI on growth is conditional to the level of improvement in health indicators. This necessitates the computation of the threshold level of life expectancy rate in the context of low and lower-middle-income countries. In this regard

Table 2: Two-Step Robust Difference GMM Estimation Results on Interaction Terms For Low-Income and Lower-Middle Income Countries

Variables	I	II	III	IV	V	VI	VII	VIII
Initial GDP per capita	0.46 (0.00)	0.45 (0.00)	0.44 (0.00)	0.43 (0.00)	0.46 (0.00)	0.46 (0.00)	0.44 (0.00)	0.44 (0.00)
log_FDI	0.33 (0.05)	0.11 (0.09)	0.19 (0.67)	-8.33 (0.04)	0.41 (0.05)	-0.03 (0.86)	0.18 (0.73)	-8.74 (0.04)
log_domestic investment	0.25 (0.75)	0.64 (0.38)	0.04 (0.91)	-0.26 (0.65)	0.34 (0.70)	0.22 (0.80)	-0.02 (0.96)	-0.27 (0.27)
log_infrastructure	-0.02 (0.83)				-0.04 (0.77)			
log_education		-0.10 (0.83)				0.05 (0.91)		
log_domestic credit			0.29 (0.34)				0.29 (0.41)	
log_lifeexpectancy				5.13 (0.27)				
FDI_infrastructure interaction term	0.13 (0.06)				0.17 (0.06)			
FDI_education interaction term		0.60 (0.00)				1.49 (0.05)		
FDI_domestic credit interaction term			0.05 (0.98)				0.01 (0.97)	
FDI_life expectancy interaction term				4.71 (0.04)				4.95 (0.08)
log_trade openness					0.12 (0.21)	0.63 (0.17)	0.06 (0.52)	0.10 (0.49)
Constant	0.06 (0.96)	0.45 (0.61)	0.10 (0.89)	8.61 (0.29)	0.10 (0.93)	0.02 (0.98)	0.03 (0.96)	7.94 (0.29)
Arellano-Bond test for AR(2) <i>p</i> -value	0.29	0.24	0.22	0.20	0.34	0.63	0.35	0.22
Hansen <i>p</i> -value	0.15	0.12	0.13	0.09	0.12	0.33	0.09	0.09
Wald Statistic	143.75 (0.00)	233.54 (0.00)	90.41 (0.00)	44.68 (0.00)	175.04 (0.00)	360.10 (0.00)	107.33 (0.00)	50.86 (0.00)
No. of countries	14	14	14	14	14	14	14	14
No. of Instruments	12	13	12	12	13	12	13	13
No of Observations	84	84	84	84	84	84	84	84

Notes: *p*-values are in parentheses.

the threshold level can be computed from Column (IV) by differentiating the growth equation with respect to the FDI variable and setting the resulting derivative equal to zero:

$$-8.33 + 4.71 \log_life\ expectancy = 0$$

Solving the above equation, the threshold level of log of expectancy rate = 1.76 and as a result, the threshold

level of life expectancy rate in the context of low and lower-middle-income countries is 57.5 years (integer value of 1.76). This is the desired threshold level. In this case, the interaction term is positive and significant but the partial coefficient of FDI is negative. This necessitates the computation of the threshold level. The beneficial effect of FDI on economic growth shall be pronounced in those countries within this sample where the life expectancy rate is above this threshold. Hence life expectancy rate

as a proxy of health indicator turns out to be the strong absorptive capacity factor. All the selected countries in this sample have life expectancy rates (in years) above the computed threshold level. Columns (V), (VI), (VII), and (VIII) confirms the robustness of these findings with the inclusion of trade openness. The models in each case are correctly specified confirmed by the probability values of the Arellano-Bond test for AR (2) and Hansen test respectively.

Hence in the context of low and lower-middle-income countries, the infrastructure and human capital variables emerge to be the significant absorptive capacity factors irrespective of any threshold levels. However, for health indicators, the selected countries can benefit if they satisfy the threshold level.

4.2. Dynamic Panel Estimation Results for High and Upper-Middle Income Countries

Table 3 reports the findings for 21 high and upper-middle-income countries in the context of Asia. In this case, two-step robust difference GMM results are reported. For all the regressions, the models are correctly specified as confirmed by the Arellano-Bond test and the Hansen test respectively.

Column (I) confirms the significance of basic variables. Column (II) considers the inclusion of infrastructure variable but it is insignificant. The robustness of this finding is confirmed by the presence of trade openness in Column (III). Column (IV) considers the human capital variable. The estimated coefficient for human capital is negative and

Table 3: Two-Step Robust Difference GMM Estimation Results for High-Income and Upper–Middle-Income Countries

Variables	I	II	III	IV	V	VI	VII	VIII	IX
Initial GDP per capita	0.46 (0.00)	0.46 (0.00)	0.46 (0.00)	0.62 (0.00)	0.62 (0.00)	0.54 (0.00)	0.55 (0.00)	0.70 (0.06)	0.69 (0.00)
log_FDI	0.26 (0.00)	0.30 (0.01)	0.30 (0.05)	0.26 (0.00)	0.23 (0.00)	0.26 (0.00)	0.25 (0.00)	0.25 (0.00)	0.22 (0.02)
log_domestic investment	0.91 (0.07)	0.81 (0.18)	0.67 (0.30)	1.19 (0.02)	0.95 (0.09)	1.16 (0.03)	1.02 (0.07)	1.06 (0.06)	0.81 (0.16)
log_infrastructure		−0.12 (0.29)	−0.17 (0.11)						
log_education				−0.17 (0.51)	−0.25 (0.34)				
log_domestic credit						−0.04 (0.69)	−0.04 (0.70)		
log_life expectancy								0.47 (0.78)	0.23 (0.89)
log_trade openness			0.03 (0.83)		0.10 (0.25)		0.06 (0.54)		0.08 (0.42)
Constant	1.05 (0.14)	0.92 (0.26)	0.75 (0.41)	1.38 (0.10)	0.94 (0.29)	1.34 (0.13)	1.14 (0.18)	2.13 (0.57)	1.31 (0.72)
Arellano-Bond test for AR(2) p-value	0.11	0.11	0.11	0.14	0.14	0.15	0.14	0.22	0.24
Wald Statistic	142.33 (0.00)	96.65 (0.00)	91.87 (0.00)	10.07 (0.00)	10.59 (0.00)	13.09 (0.00)	14.53 (0.00)	14.66 (0.00)	14.19 (0.00)
Hansen p-value	0.12	0.15	0.12	0.29	0.25	0.24	0.27	0.21	0.23
No. of countries	21	21	21	21	21	21	21	21	21
No. of Instruments	7	13	14	8	9	7	8	8	9
No. of observations	126	126	126	126	126	126	126	126	126

Notes: p-values are in parentheses.

insignificant. Again this finding is robust as confirmed by Column (V) in the presence of trade openness. Column (VI) adds the financial indicator proxied by domestic credit and this finding is robust. The presence of health indicators is considered in Column (VIII). In this case, the estimated coefficient of life expectancy rate as a proxy for health

indicators turns out to be insignificant. This finding is also robust as reported in Column (IX). So all the concerned host country factors are not individually significant for this set of economies.

To capture the interaction effects of local factors with FDI on economic growth, in this case, Table 4 reports the

Table 4: Two-Step Robust Difference GMM Estimation Results on Interaction Terms for High-Income and Upper-Middle-Income Countries

Variables	I	II	III	IV	V	VI	VII	VIII
Initial GDP per capita	0.55 (0.00)	0.55 (0.00)	0.58 (0.00)	0.58 (0.00)	0.65 (0.00)	0.65 (0.00)	0.67 (0.00)	0.65 (0.00)
log_FDI	0.46 (0.00)	0.46 (0.00)	0.52 (0.05)	0.52 (0.02)	0.60 (0.00)	0.57 (0.04)	5.07 (0.04)	5.70 (0.01)
log_domestic investment	1.05 (0.08)	1.02 (0.09)	1.08 (0.03)	0.88 (0.08)	1.04 (0.06)	0.84 (0.13)	1.05 (0.05)	0.76 (0.17)
log_infrastructure	-0.18 (0.12)	-0.18 (0.13)						
log_education			-0.09 (0.97)	-0.05 (0.83)				
log_domestic credit					0.04 (0.80)	0.04 (0.72)		
log_lifeexpectancy							-0.40 (0.78)	-0.55 (0.64)
FDI_infrastructure interaction term	0.18 (0.02)	0.17 (0.03)						
FDI_education interaction term			-0.45 (0.26)	-0.50 (0.13)				
FDI_domestic credit interaction term					-0.21 (0.23)	-0.21 (0.17)		
FDI_life expectancy interaction term							-2.59 (0.04)	-2.95 (0.01)
log_trade openness		0.01 (0.87)		0.09 (0.31)		0.10 (0.33)		0.11 (0.30)
Constant	1.38 (0.10)	1.34 (0.11)	1.25 (0.10)	0.25 (0.22)	1.28 (0.18)	1.00 (0.27)	0.46 (0.88)	0.26 (0.92)
Arellano-Bond test for AR(2) <i>p</i> -value	0.14	0.14	0.13	0.13	0.21	0.20	0.20	0.21
Hansen <i>p</i> -value	0.20	0.24	0.29	0.38	0.23	0.30	0.22	0.26
Wald Statistic	20.03 (0.00)	18.28 (0.00)	7.83 (0.00)	8.94 (0.00)	13.67 (0.00)	18.52 (0.00)	18.29 (0.00)	24.56 (0.00)
No. of countries	21	21	21	21	21	21	21	21
No. of Instruments	9	10	8	9	9	10	9	10
No of Observations	126	126	126	126	126	126	126	126

Notes: *p*-values are in parentheses.

two-step robust difference GMM results. The interaction effect of infrastructure with FDI is considered in Column (I). The interaction effect of FDI with the host country factors considered sequentially is of major interest.

The findings in Column (I) clearly show that the estimated coefficient of FDI is significantly positive and its interaction term (FDI_infrastructure) with infrastructure is also positive and significant at a 5 percent level. The creation of a sound infrastructural base is a prerequisite condition for absorbing the benefits of FDI. This variable unambiguously affects economic growth significantly. Column (II) confirms the robustness of this finding in the presence of trade openness. Column (II) includes the human capital variable as proxied by the level of education. The interaction effect of human capital with FDI is insignificant (Column III). In this case, unlike the set of low and lower-middle-income countries, this finding clearly reinstates that the human capital indicator fails to be the major absorptive capacity factor and the finding is robust (Column IV). Column (V) includes the domestic credit variable and looks into the interaction effect of domestic credit with FDI. The estimated coefficient of interaction term of domestic credit with FDI turns out to be insignificant. This clearly indicates the incapability of this factor to be the absorptive capacity factor in the context of these sets of countries. Column (VI) confirms the robustness of this finding when trade openness is considered. Column (VII) considers the inclusion of interaction of health indicators proxied by life expectancy rate with FDI. The estimated coefficients of basic variables turn out to be significant. The interaction term of FDI with the life expectancy rate appears to be negative but significant. The positive effect of FDI on economic growth shall be pronounced in those countries within this sample where the life expectancy rate is below this threshold.

In this regard the threshold level can be computed from Column (VII) by differentiating the growth equation with respect to the FDI variable and setting the resulting derivative equal to zero:

$$5.07 - 2.59 \log_life\ expectancy = 0$$

Solving the equation above, the threshold level of log of expectancy rate = 1.95 and as a result, the threshold level of life expectancy rate in the context of high and high middle-income countries is 89.1 years (integer value of 1.95). This is the desired threshold level. In this case, the interaction term is negative and significant. The host country will potentially benefit from FDI if its average life expectancy rate is below this threshold level. For every country, the respective average life expectancy rate appears to be less than this threshold level. Similar to low-income

and lower-middle-income countries, life expectancy rate as an indicator of health can be regarded as one of the potential absorptive capacity factors for all the countries in this sample. The countries in this sample are expected to have robust healthcare systems to meet the minimum threshold level needed to harness the benefits of FDI. C Column (VIII) confirms the robustness in the presence of trade openness. The correct specification of these models is confirmed by the Arellano-Bond test for AR (2) and Hansen test respectively.

Hence in the context of high and upper-middle-income countries, the infrastructure and health indicators emerge to be the significant absorptive capacity factors. However, for health indicators, the beneficial impact is conditional on the threshold level.

5. Conclusion and Policy Implications

The empirical findings confirm that for low-income and lower-middle-income countries, the infrastructure and human capital variables emerge to be the significant absorptive capacity factors irrespective of any threshold levels. But for health indicators, the selected countries can benefit if they satisfy the threshold level. In the case of high-income and upper-middle-income countries, the variables namely infrastructure index and health indicators are the only factors that can act as absorptive capacity variables. The infrastructure variable appears to be the major absorptive capacity factor since it undoubtedly enhances economic growth independent of any threshold level. But for health indicators, the threshold level is necessary to be computed. Hence the separate analysis of the economies as per the different income levels is justified.

The study's findings demonstrate that the FDI-growth relationship is substantiated by considering the host country factors that are important for not only attracting FDI but also absorbing its benefits. Hence the host country governments must be proactive in combining the key elements of development strategies with their respective macroeconomic conditions in the context of Asian economies (Mohamed, 2019). This necessitates the development of improved health infrastructure and a conducive investment climate to emerge as absorptive capacity factors.

The policies framed to attract FDI must be in tune with the ultimate drivers of economic growth namely the process of capital accumulation and technological advancement (Nantharath & Kang, 2019). The heterogeneities across economies can be addressed to local factors which can have growth-inducing effects. The mixed evidence regarding the relationship between FDI and economic growth for selected Asian economies as considered in this study gets substantiated.

References

- Adams, S. (2009). Foreign direct investment, domestic investment, and economic growth in Sub-Saharan Africa. *Journal of Policy Modeling*, 31, 939–949. <https://doi.org/10.1016/j.jpolmod.2009.03.003>
- Arellano, M. & Bond, S. (1991). Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. *Review of Economic Studies*, 58(2), 277. <https://doi.org/10.2307/2297968>
- Asiedu, E. (2002). On the determinants of foreign direct investment to developing countries: Is Africa different? *World Development*, 30(1), 107–118. [http://doi.org/10.1016/S0305-750X\(01\)00100-0](http://doi.org/10.1016/S0305-750X(01)00100-0)
- Demekas, D., Horváth, B., Ribakova, E., & Wu, Y. (2007). Foreign direct investment in European transition economies. The role of policies. *Journal of Comparative Economics*, 35(2), 369–386. <http://doi.org/10.1016%2Fj.jce.2007.03.005>
- Mohamed, M. A. M. (2019). Contribution of tourism and foreign direct investment to a gross domestic product: Econometric analysis in the case of Sri Lanka. *Journal of Asian Finance, Economics, and Business*, 6(4), 109–114. <https://doi.org/10.13106/jafeb.2019.vol6.no4.109>
- Nantharath, P., & Kang, E. (2019). The effects of foreign direct investment and economic absorptive capabilities on the economic growth of the Lao People's Democratic Republic. *Journal of Asian Finance, Economics, and Business*, 6(3), 151–162. <http://doi.org/10.13106/jafeb.2019.vol6.no3.151>
- Nguyen, H. C. (2020). The impact of foreign direct investment, aid, and exports on economic growth in Vietnam. *Journal of Asian Finance, Economics, and Business*, 7(10), 581–589. <https://doi.org/10.13106/jafeb.2020.vol7.no10.581>
- World Bank. (n.d). *World Development Indicators*. Washington, DC: The World Bank.