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Economic Determinants of Foreign Direct Investment: Empirical Evidence from South Asian Economies

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Abstract

This study aims to explore the economic factors of foreign direct investment in five South Asian economies, including India, Pakistan, Bangladesh, Nepal, and Sri Lanka. Data period is ranging from 1996 to 2020. PMG panel ARDL model is used for estimating the coefficients of the investment demand function. I'm, Pesaran & Shin W-test and Levin, Lin, & Chu t-tests are used for finding stationarity of the data. Panel Kao residuals cointegration technique is applied for detecting the long-run cointegration among the variables. This study finds that, first, economic growth, energy consumption, and education are positively contributing towards the inflow of FDI; second, gross capital formation, government debt, inflation, and debt servicing are negatively affecting the inflow of FDI in these economies. Based on the empirical findings, it is recommended that government should play an effective role in improving the economic growth, bringing stability in prices, and investing in the education sector to make the inflow of FDI more attractive. Implementation of effective debt-management policies also stands radical for the inflows of foreign direct investment.

Key Words: FDI, GDP, Energy Consumption, Debt, PMG panel ARDL

Introduction

The inflow of FDI is an effective tool for diffusing technology and fleeting the growth process in most of developing countries. The New Growth Theory (NGT) was built on the proposition that inward FDI helps in boosting the GDP growth (Bengoa & Sanchez-Robles, 2003). The neoclassical growth framework also indicates that the inflow of FDI simply expands the investment rate, which is essential for stimulating the growth of per capita income (Hsiao & Hsiao, 2006). The new growth framework of the 1980s also believes that FDI inflow has a perpetual spillover impact on the economic productivity of host destinations (Fan, 2002).

So based upon the frameworks of these theories, most of the researchers believe that FDI is an economic indicator that determines the phase of growth and influences economic development, particularly in emerging countries. It promotes the transfusion of technology from advanced economies to the least developed economies, which is essential for economic growth and technological development (Kok & Ersoy, 2009). Similarly, FDI has many external and spillovers effect on the host country, which is endorsed through different channels (Blomstrom & Kokko, 2001). Most of the developing countries have tried to attract FDI for importing the latest technology and reducing the technological gap. However, most of the least developed countries have failed to meet the required level of foreign investment as they are suffering from deficits in almost every sector of the economy (Minhaj-ud-Din, Azam & Tariq, 2020). FDI not only helps in filling such gaps but also helps in creating jobs opportunities, increasing economic productivity, and reducing unemployment. The inflows of FDI in these countries are summarized in Figure 1.

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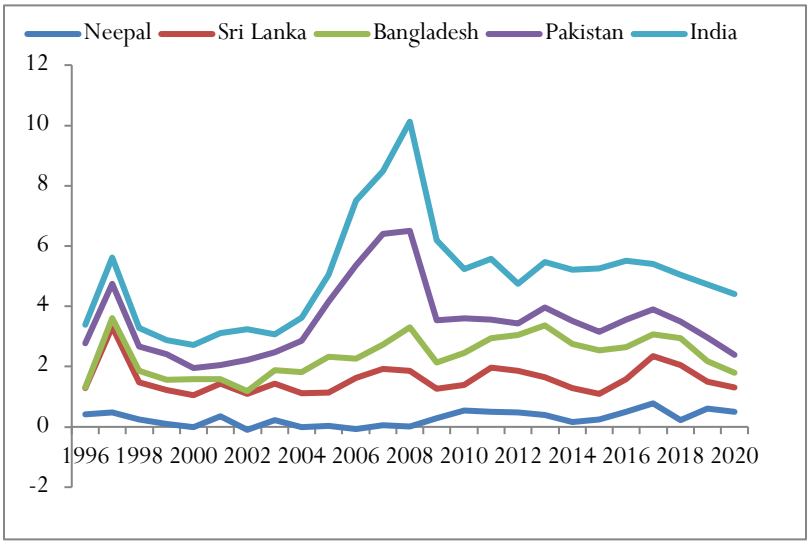

Figure 1: FDI inflows in Five South Asian Countries

With regards to the significance of FDI, it stands radical to investigate the factors which are considered essentials for the growth of this crucial variable. We find several studies that have examined this issue for the purpose of highlighting the fundamental causes of variation in the inflow of FDI. However, no clear consensus has been found about the causes of such variations. Many scholars argue that FDI inflows are sensitive to taxing policy, research and development expenditures of the government, volatility in the exchange rate, and trade openness (Kok & Ersoy, 2009; Chakrabarti, 2001). It is also found sensitive to variation in the pattern of growth, political stability, price stability, government debt, and some other institutional quality factors (Minhaj-ud-Din, Azam & Tariq, 2020). Similarly, we do not find any study that has explicitly covered this area for the selected group of five South Asian economies. So keeping in view the significance of this variable, the frequent examination of the factors affecting the inflows of FDI stands radical for effective policymaking. This study aims to counter this issue by, first, investigating the key determinants of FDI inflow in these economies and, second, providing a benchmark for making effective investment-management policies. With regards to the estimation technique, this study also aims to use the PMG panel ARDL model along with the latest statistical data over a longer period of time.

Literature Review

With regards to the factors of FDI inflow, Akbar and Akbar (2015) applied the OLS estimation techniques to time series data of Pakistan, spanning from 2000 to 2013. They concluded that trade openness, GDP, terrorism, exchange rate, foreign debt, political instability, and FCF are the reasons for foreign direct investment in Pakistan. Bashir, Raza, and Farah (2015) also investigated this issue for Pakistan. They found that the growth of GDP and stability of currency are the main factors behind inward FDI. Hoang and Bui (2015) applied the Feasible GLS technique on the panel data of ASEAN countries. They revealed that trade openness, market size, quality infrastructure, labor productivity, and human capital are significantly affecting the inflow of FDI. Sharma and Kumari (2017) applied the fixed effects model to panel data of least developed countries for the same purpose. They concluded that trade openness, market size, human capital, and interest rate are the factors that stand radical in the path of FDI inflow. Similarly, Nkoa (2018) used the GMM techniques for exploring the significance of financial development on FDI inflow in fifty-two African countries. This study also ended with the sound association of financial development with the inflow of FDI.

Jaiblai and Shenai (2019) highlighted that the inflows of FDI primarily depend upon the market size, infrastructural quality, income level, and exchange rate. Aderemi, Ganiyu, Sokunbi, and Bako (2020) used the

ARDL model for this purpose. They also found that growth in FDI inflows totally depends on the stability of currency and prices and acceleration in economic productivity. Hanh, 2020 employed the augmented gravity equations to panel data of China and Vietnam over a period of 1994 to 2015. They concluded that macroeconomic stability and institutional quality factors play an imperative role in the acceleration of FDI inflow. Minhaj-ud-Din, Azam, and Tariq (2020) found that government debt, debt servicing, inflation, budget deficit, and real trade are the factors that disrupt the inflow of FDI. However, economic growth was found essential for bringing stability in the inflow of FDI. Shahbaz al. (2021) found that high-quality growth in the transportation, education, and financial sector discourages the need for investment, and, hence, the inflow of FDI is reduced.

The available literatures indicate that there is no mutual consent upon the economic determinants of foreign direct investment (Bimal, 2017; Nkoa, 2018; Camarero, Montolio, & Tamarit, 2020; Hanh, 2020; Minhaj-ud-Din, Azam & Tariq, 2020; Shahbaz et al., 2021). Similarly, we do not find any literature that has explicitly investigated this issue for the five South Asian economies. In order to fill this gap and contribute to the existing literature, this study is considering this issue by using the PMG panel ARDL model, which has never been used in any of the previous studies held on this topic. The rationale for the choice of this estimation tool is its superiority over other estimation tools by, first, resolving the issue of endogeneity, second, giving simultaneous results for both periods, and third, giving results for each country separately. This study is also contributing to the existing literature by using the most appropriate variables in the investment demand function. The use of latest data, ranging from1996-2020, also signifies the contribution of this study.

Methodology

This study has utilized the panel data of five South Asian countries, namely Nepal, Bangladesh, India, Sri Lanka, and Pakistan. Data period is ranging from 1996-2020. The data source is WDI, 2021.

Model Specification

This study is using the modified form of the model used by Bevan and Estrin (2004), Na and Lightfoot (2006), Azam and Lukman (2010), Camarero, Montolio, and Tamarit (2019), and Rehman, Khan, and Tariq (2020). Mathematically:

$$\Delta IFDI_{it} = \beta_{0t} + \emptyset_i IFDI_{i,t-1} + \beta_1 GDPPCG_{it} + \beta_2 GCF_{it} + \beta_3 EC_{it} + \beta_4 Debt_{it} + \beta_5 CPI_{it} + \beta_6 SSC_{it} + \beta_7 TDS_{it} + \beta_8 Trade_{it} + \sum_{i=1}^{n} \gamma_{ij} \Delta IFDI_{it} + \sum_{i=0}^{n} \vartheta_{1j} \Delta GDPPCG_{it} + \sum_{i=0}^{n} \vartheta_{2j} \Delta GCF_{it} + \sum_{i=0}^{n} \vartheta_{3j} \Delta EC_{it} + \sum_{i=0}^{n} \vartheta_{4j} \Delta Debt_{it} + \sum_{i=0}^{n} \vartheta_{5j} \Delta CPI_{it} + \sum_{i=0}^{n} \vartheta_{6j} \Delta SSC_{it} + \sum_{i=0}^{n} \vartheta_{7j} \Delta TDS_{it} + \sum_{i=0}^{n} \vartheta_{7j} \Delta Trade_{it} + \omega_{it} \quad \ldots\ldots (1)$$

Where:

$$\emptyset_i = -\left(1 - \sum_{i=1}^{p} \gamma_{ij}\right), \beta_i = \sum_{i=1}^{p} \vartheta_{ij},$$

$$\gamma_{ij} = -\sum_{m=j+1}^{p} \gamma_{im}, j = 1,2, \ldots., p-1 \text{ and } \vartheta_{ij} = -\sum_{m=j+1}^{p} \vartheta_{im}, j = 1,2, \ldots., q-1, i = 1,2, \ldots., n$$

Where:

$i = 0,1,2, \ldots..n, \emptyset_i$ are the correction terms. The description of variables is figured out in Table 1.

Table 1. Variables Description

Variables	Measurement	Symbol
Inflow of FDI	% of GDP	IF
GDP Per-capita Growth	In percent	GDPPCG
Gross Capital Formation	% of GDP	GCF
Fossil Fuel Energy Consumption	In percent	EC
Central Government Debt	% of GDP	DEBT

Variables	Measurement	Symbol
Inflation Consumer Price	CPI in %	CPI
Secondary School Enrollment	In percent	SSC
Total Debt Service	% of GNI	TDS
Trade	% of GDP	TRADE

Estimation Techniques

The study is using two famous panel unit root tests, namely I.P.S W-test and L.L.C. test. The PMG panel ARDL techniques are used to estimate the long-run and short-run coefficients of the model. Panel Kao residuals cointegration technique is used for detecting the long-run cointegration.

Results and Findings

Stationarity

The unit root results are depicted in Table 2. They indicate that data is stationary, either I(0) or I(1). The existence of this mixing order endorses the need to deploy the Kao-test for inspecting the validity of the null hypothesis of no cointegration.

Table 2. Stationarity of Data

Variable	LLC Test		IP & S W Test		Decision
	At I(0)	At I(1)	At I(0)	At I(1)	
$IFDI_{it}$	1.6758**	---	-2.4890*	---	I(0)
$GDPPCG_{it}$	-2.3031*	---	-2.7386*	---	I(0)
GCF	-0.4972	2.5373*	0.4656	-3.7787*	I(1)
EC_{it}	1.8676	3.1812*	-0.7905	-4.3325*	I(1)
$DEBT_{it}$	-0.3168	3.2844*	0.3748	-3.6994*	I(1)
spirit	2.0389**	---	1.9671**	---	I(0)
SSC	0.4998	4.0146*	2.7577	-4.0235*	I(1)
TDS	-0.9935	2.4325*	-1.4349	-6.2055*	I(1)
$TRADE_{it}$	-1.7683	4.9885*	-1.2774	-5.0343*	I(1)

*&** *indicate the order of integration at 1% and 5%, respectively*

Co-integration Analysis

The t-statistic value of the Kao Residual co-integration test indicated that all variables are cointegrated in the long run, therefore, we have to discard the null hypothesis of no co-integration and proceed with the estimates of the PMG panel ARDL model.

Long Run and Short-Run Analysis

Table 3 enlists the estimates of PMG panel ARDL model for the variables added to the investment demand function. Conclusively, the coefficients of these variables indicate that, first, growth in GDP per capita, energy consumption, and education are the factors which affect the inflow of FDI positively; second, gross capital formation, government debt, inflation, and debt servicing are affecting it negatively, and third, the impact of trade is also positive but statistically insignificant. Importantly, the impact of economic growth, government debt, and debt servicing were found imperative in both periods. The ECM value is -0.5371, which indicates that any sudden shock to the economy will be rectified in approximately 2 years.

Statistically, the results related to GDP per capita growth are similar to that of Kravis and Lipsey (1982) and Blomstrom and Lipsey (1991), and Minhaj-ud-Din, Azam, and Tariq (2020), who also concluded that acceleration in economic growth is essential for attracting more investment from abroad. However, the estimates of gross fixed capital formation are showing meaningful but harmful impact on the inflow of FDI. One percent

rise in GCF is connected with 0.02 percent decline in the inflow of FDI. These estimates are consistent with the findings of Vijayakumar, Sridharan, and Rao (2010) but opposing to those of Hejazi and Pauly (2003). The energy consumption variable tells us that growth in energy consumption will stimulate the inflow of FDI in the long-run. This result supports the conclusions of Wheeler and Mody (1992), Essia and Onyema (2012), Oke, Ezike and Ojogbo (2012), and Shahbaz et al. (2021).

Similarly, the impact of government debt and debt servicing variables were found negative and significant in both the periods. One percent growth in these variables was found to affect the inflow of FDI by 0.01% and 0.15 % in the long-run, respectively. The impact of debt servicing was found more destructive in the short run. These results were found consistent with the findings of (Kok & Ersoy, 2009), and Minhaj-ud-Din, Azam and Tariq (2020) who also portrayed similar kind of results. Inflation rate was also found disruptive in this context. One percent increase in inflation was found to cause 0.08% decline in FDI in the long run. Buchanan, Le, and Rishi (2012), Sabir, Rafique, and Abbas (2019) also ended with similar kind of inferences. However, the findings of Vijayakumar et al. (2010) and Omankhanlen (2011) are different from our findings, as they found that inflation has no link with the inflow of FDI. The literacy rate, represented by secondary school enrollment, also got it expected sing. One percent increase in education was found to cause the inflow of FDI with a growth of 0.05% in the long-run. We find Noorbakhsh, Paloni, and Youssef (2001) and Cleeve, Debrah, and Yiheyis (2015) who also communicated similar impact for this variable.

Table 3. Regression Results of the PMG panel ARDL model

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
Long Run Estimates				
$GDPPCG_{it}$	0.1679*	0.0436	3.8492	0.0003
GCF_{it}	-0.0257***	0.0154	-1.6641	0.1000
EC_{it}	0.0825*	0.0175	4.7231	0.0000
$DEBT_{it}$	-0.0138***	0.0084	-1.6458	0.1000
spirit	-0.0829*	0.0131	-6.3406	0.0000
SSC	0.0512*	0.0145	3.5262	0.0008
TDS	-0.1592*	0.0545	-2.9215	0.0047
$TRADE_{it}$	0.0045	0.0054	0.8330	0.4078
Short Run Estimates				
ECM	-0.5371**	0.2231	-2.4079	0.0188
$D(GDPPCG_{it})$	0.0669*	0.0199	3.3520	0.0013
$D(GCF_{it})$	-0.0163	0.0231	-0.7080	0.4814
$D(EC_{it})$	0.0672	0.0448	1.5001	0.1383
$D(DEBT_{it})$	-0.0383**	0.0186	-2.0613	0.0432
$D(CPI_{it})$	-0.0105	0.0160	-0.6562	0.5139
D(SSC)	-0.0018	0.0317	-0.0569	0.9548
$D(TDS_{it})$	-0.2156**	0.0915	-2.3566	0.0214
$D(TRADE_{it})$	0.0155	0.0153	1.0130	0.3147
C	-0.6620	0.7913	-0.8366	0.4058
Kao-Test				
t-Statistics (P-value)			-3.1810* (0.0007)	

*, **, & *** *indicate the significance of variables at 1%, 5% and 10%, respectively*

Conclusion and Policy Implications

The primary purpose of this study was to inspect the economic determinants of FDI inflow in five South Asian economies over a period of 1996 to 2020. This study has used the PMG panel ARDL model for inspecting the coefficients of the investment demand function. I.P.S W-test and L.L.C. test was used for finding the unit root. Panel Kao residuals cointegration technique was applied for detecting the long run cointegration among the

variables. Based upon the empirical findings, this study finds that, first, growth in GDP per capita, energy consumption and education are the factors which affect the inflow of FDI significantly and positively, and second, gross capital formation, government debt, inflation and debt servicing are negatively affecting the inflow of FDI in these economies. The impact of growth in GDP per capita and debt servicing was found more effective than the remaining variables. This study recommends that government should focus on enhancing the economic productivity, bringing stability in prices, improving the level of education through higher investment in human capital, and increasing the production of energy for making the inflow of FDI more productive. Importantly, effective debt-management policies should also be formulated for curtailing the accumulation of debt which puts hurdles in the path of attracting more FDI from abroad.

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