

Do Macroeconomic Factors Affect FDI: Evidence from South Asian Countries

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Research

Keywords: FDI, Human capital, infrastructure, institutions, trade openness, technology

Posted Date: May 21st, 2020

DOI: <https://doi.org/10.21203/rs.3.rs-27489/v1>

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Abstract

There are numerous factors such as absorptive capacity along with other are very important to make foreign direct investment (FDI) more effective for economic growth and development. There are numerous indicators of absorptive capacity such as human capital, technology, infrastructure, institutional quality, GDP per capita, and trade openness. This study determines the effect of absorptive capacity on FDI in South Asian countries over the time period 1984–2017 using system Generalized Method of Moment (GMM). The study found that absorptive indicators such as trade openness, infrastructure, institutional quality, human capital, GDP per capita, and technology are positively related to foreign direct investment in South Asian countries but human capital is the more effective determinant of FDI. Therefore it is necessary to increase human capital, free trade, infrastructure, technological innovations and institutional quality to effectively absorb the benefit and spillover effects of FDI which boosts economic growth and development.

1. Background

Economic development immensely depends on huge amount of profitable domestic and foreign investment. It is pertinent to mention that South Asian countries are facing the problem of saving deficit and hence could not achieve the desirable amount of targeted investment. Therefore FDI is required and considered as a catalyst for economic growth and development. Moreover South Asian countries (SAC) identify that FDI leads to substantial increase in physical capital, knowledge, and technology (Sabir et al., 2019). This also supports in hunting international markets for the sale of goods and services (Nasir & Hassan, 2009). SAC had implemented market-led growth policies to attract FDI inflows in 1980s, but these countries tend to differ in receiving FDI inflows. For example, India experienced highest amount of FDI on average during 1984–2017, Sri Lanka and Pakistan also received a fairly amount of inward FDI that increased gross fixed capital formation (Adhikary 2017). Moreover India is the highest recipient of FDI among SAC followed by Bangladesh, Nepal, Pakistan, and Sri Lanka (UNCTAD 2018). South Asian countries have similar structural and macroeconomic parameters that provide conducive environment for foreign investors. To facilitate FDI inflows, many developing countries initiated liberalization and deregulation of financial sector. Genesis of transformation occurred in late 1970s, when Sri Lanka started the process of financial liberalization and other South Asian countries also began to liberalize financial sector. Pakistan also tried to privatize and deregulate financial sector in 1980s to attract enormous amount of FDI. Later on, this process is enhanced in 1990s with the start of liberalization process in India (Nasir and Hassan 2009). Additionally, emerging South Asian countries significantly liberalized their trade policies in order to boost domestic and foreign investment to enhance economic growth and development (Adhikary 2018).

FDI inflows are multidimensional in nature which makes them superior to other dynamic causes of capital. These contain stuffing saving-investment gaps, easing foreign exchange restrictions, and comprising a bundle which contain not only investment but also deliver tangible returns in the form of
Loading [MathJax]/jax/output/CommonHTML/fonts/TeX/fontdata.js ent assistances (Grossman & Helpman 1992;

Pradham 2003). Empirical studies have showed that FDI has ubiquitous effects on the economic growth through capital accumulation of the host country and transfer of technology from source to the host nation.

Dunning (1988) proposes eclectic paradigm theory which is also known as OLI theory of FDI. Eclectic paradigm theory also known as OLI theory of FDI reveals that FDI in host country is determined by ownership or proprietorship explicit advantage (O), locational specific advantage (L) and International specific advantage (I). This theory also states that verdict of foreign investor whether to invest or not, counts on capacity of industries or firms, organization and supervision system, prices of labor, transportation expenditures and government strategies. Moreover FDI also flows to the countries which offer benign, risk averse and commercial investment opportunities and consequently win the global race for these floating resources.

One can raise a question that how inward FDI benefits the host South Asian countries? Benefits accrued by host country depend on its sufficient capabilities referred as absorptive capacity. Absorptive capacity pertains to an economy's capacity to absorb the benefits provided by FDI in the form of knowledge and technology spillovers effects. South Asian countries attempt to enhance massive FDI inflows but cannot identify whether they have absorptive capacity to harness the benefits from FDI or not. For example countries have achieved minimum level of development before achieving the technological and managerial spillovers of FDI. However, if absorptive capacity is not sufficient, South Asian cannot get too much benefit from inward FDI (Nunnemkamp, 2004). The most important indicator of absorptive capacity is human capital which absorbs and grasps knowledge and technology gains from the inward FDI and has spillover impacts of economic growth. A high level of human capital significantly impacts FDI inflow (Dunning, 1977; Dunning, 1988; Dunning, 2009; Lucas, 1990; Zhang & Markusen, 1999; Li & Liu, 2005; Alfaro & Wang, 2003). More skilled human capital attracts FDI in South Asian countries (Kinda 2013; Cleeve et al. 2015). However literature shows the mix results concerning the significant effects of human capital development on inward FDI. For example, non-intensive skilled industries invest in those countries where cheap labor with less skills are available whereas knowledge and technology intensive industries invest in countries where skillful labor in the form of higher education is available (Cleeve et al. 2015).

In addition, political institutions are also used as proxy of absorptive capacity. Various empirical studies support that political institutions affect the performance of the economy (Keefer & Knack 1997). Further, differences in institutions lead to the variation in the level of technology and sustainable growth that also depends on the technological innovations and quality of political institutions. In particular, political institutions are important for international business companies to make investment in those countries where property rights are secured, rules, regulations and policies are well documented and implemented, and stability of governments are stable with less evidences of corruption and bureaucratic hurdles. Strong institutions are prerequisite to attract FDI inflows to boost proliferation of jobs and productivity. For instance, political stability is a measure of political institutions and it leads to plenty of FDI inflows

Loading [MathJax]/jax/output/CommonHTML/fonts/TeX/fontdata.js domestic investors are disinclined to invest.

Gastanaga (1998) added that weak institutions are malefactors that cause less FDI in developing countries. In particular, multinational enterprises are ambitious to invest in the politically stable countries (Harms 2002). Therefore bottom line is that the institutions play a momentous role in the determination of FDI inflows in developing countries like emerging SAC.

Furthermore infrastructure is considered as another indicator of absorptive capacity to increase FDI inflows in developing countries. Many studies claimed that good infrastructure surges the productivity of capital and it also attracts FDI inflows. If physical infrastructure is poor, then FDI does not benefit the development process of any recipient country. A few researchers have synthesized the enhancing effects of infrastructure on FDI inflows (Wheeler & Moody 1992; Asiedu 2002).

Trade liberalization and openness is also used as a measure of absorptive capacity. Trade openness is vital factor which stimulates FDI in developed and developing countries. Multinational corporations prefer unrestricted trade relative to restricted trade because restricted trade increases distortion of market and increases the transaction cost that drops off FDI (Eswards 1990; Asiedu 2002). Therefore countries with more free trade are able to attract FDI inflows.

Technology is used as a measure of absorptive capacity to impact foreign direct investment of the country. Research and development sector is least developed in developing countries especially South Asian countries. Therefore technology diffusion occurs from developed to developing countries. FDI is considered as major source of relocation of innovative technologies to technology deficient developing countries. It has been asserted that absorptive capacity can be truly captured with technology innovations, technology transfer and human capital development. This augments the fact that investment in research and development in term of technology and educated labor equipped with skills can contribute to increase absorptive capacity and thereby enhance inward FDI (Borensztein et al., 1998). It has been claimed that sufficient absorptive capacity catalyzes spillovers effects of multinational enterprises on host countries (Girma 2005).

The prime objective of this study is to observe the impact of various measures of absorptive capacity such as human capital, trade openness, technology, infrastructure and political institutions on the FDI in SAC using panel data over the time period 1984 to 2017. There exists problems of endogeneity, autocorrelation and omitted variable bias in regression equation which lead to inconsistency in ordinary least square (OLS) estimators. Therefore this study uses System Generalized Method of Moment of Arellano and Bond (1995) and Arellano and Bover (1998) to tackle the aforementioned econometric problems.

This study makes a significant contribution in the previous literature in twofold ways. First, this is the pioneer study which examines the influence of absorptive capacity on inward FDI in South Asian countries. Second; this study considers the multiple indicators of absorptive capacity to explore their effects on FDI inflows in SAC. .

Rest of the paper is organized into five sections. Section 2 provides the comprehensive literature review. Section 3 contains methodology comprising of the econometric technique and data sources. Explanation of observed results is provided in the Sect. 4. Section 5 concludes.

2. Literature Review

Kawai and Urata (2002) analyzed the trend of FDI in East Asia over the last two decades. They numerically examined trend in different countries of East Asia and concluded that East Asian economies had been performing well in attracting the FDI for several decades. This showed that foreign trade and FDI in East Asia were increased in the 1980s and 1990s largely due to adoption of trade liberalization policy and FDI regime. The increasing trend of FDI in many East Asian countries had decreased in 1998 and 1999 because of Asian financial crisis.

Narula and Marin (2003) examined the factors that affect the absorptive capacity of foreign direct investment. This study is based on the data from the innovation survey in Argentina (1992–1996). Their study survey sample was representative of the universe of industrial firms in the country and included 50 per cent of the total industrial firms, which account for 53 per cent of total sales, 50 per cent of total employment, and 61 per cent of total exports. They concluded that FDI is important for firms and country. Infrastructure and human capital play an important role in attracting foreign direct investment. Criscuolo (2005) concluded that absorption occurs due to interaction of skilled workers and transfer of knowledge among the staff members. He used the sample of 25 countries and prove that the countries with skilled workers, absorb the more benefit when compared with the countries with less skilled workers.

Alfaro et al. (2006) examined the effect of FDI on growth through absorptive capacity by taking financial markets development as a proxy of absorptive capacity for 72 countries. They found that countries with well-developed financial markets can get more benefits from FDI. Furthermore he concluded that FDI can play an important role in economic growth. Kinishita and Lu (2006) demonstrated two channels through which infrastructure can affect economic growth. First; infrastructure is one of the important determinants of economic growth and this exerts positive externalities on economies. Second; foreign investors are attracted in a country that has sound infrastructure that reduce the cost of doing business as many empirical studies showed. Calrinescu *et al.* (2006) examined the impact of remittances and institutions on economy growth using cross-sectional data of 12 countries. Results showed that institutions are important determinants to attract FDI and that speed up the economic growth. They concluded that sound institutional environment is helpful in both attraction and better utilization of FDI. For developing countries FDI is important factor which can accelerate economic growth.

Busse and Hefeker (2007) explored the linkage between political risk, institutions and foreign direct investment inflows. They used the data for 83 developing countries for the period 1984 to 2003. Information on political risk and institutions is taken from the International Country Risk Guide (ICRG) provided by the Political Risk Services (PRS) Group. They used fixed effect model (FEM) and Arellano–Bond GMM dynamic estimator. They found that political risk and institutions are closely associated with

FDI. Fu and Gong (2007) investigated the role of absorptive capacity in the economy. They construct the FDI-intensity weighted global R&D stock for each industry and link it to Chinese firm-level panel data relating to 53,981 firms over the period 2001–2005. They found that R&D activities and training at individual firms serve as an effective source of absorptive capability. They found that with greater absorptive capacity, firms can effectively assimilate the spillovers of the most advanced knowledge which has been generated through greater openness to FDI from industrialized countries.

Ang (2008) in his research study on determinants of FDI in Malaysia has found GDP as proxy for market size to be positive and significantly related to FDI. It has been argued in the study that increased size of domestic market attracts FDI through the incentive of large economies of scale. He has also pointed out that trade openness has positive and significant relationship with FDI. He claimed that increased trade liberalization leads to larger inflows of inward FDI. Corporate tax rate has been found to be negatively related with FDI. Demirhan and Masca (2008) examined the determinants of foreign direct investment inflows in developing countries. For this purpose, study used cross-sectional data of 38 developing countries over the period 2000 to 2004. Study considered both economic and institutional factors. Growth rate, inflation, trade openness, and tax rate are used as main economic variables controlled with political institution. They found that trade openness and growth rate play positive role in FDI inflows whereas inflation rate, risk factor and tax rate play negative role in FDI inflows. All variables are significant with expected risk factor. This revealed that when the marginal return of capital is high, then foreign investor may ignore political risk. This study concluded that economic factors are more important in attraction of FDI. Sawkut *et al.* (2009) examined the cause of low FDI inflows in African countries. For this purpose they used panel data of selected African economies over the period 1990–2005. They used some macro-economic variables (trade openness, stock of capital, labor cost) and institutional variable (political instability, domestic market condition, law and order). Result showed that there is positive relationship between trade openness, capital stock and sound domestic market condition whereas inversely relationship with political instability and labor cost play negative role in attracting FDI. They concluded that for attraction of FDI African economies have to improve their institutions. Nguyen et al. (2009) found that developing countries can achieve benefits from FDI once they have sufficient absorptive capacity such as human capital resource, physical infrastructure, technological, and institutional development. They found that poor countries often look on short term goals in order to quickly cover their shortage. They paid less consideration on absorptive capacity because this process requires time and a lot of efforts before achieving performance. Thus, FDI seems to be the best solution to fill the gap between savings and investment, create job, and collect tax. However, FDI holds more benefits in the form of advanced technology and knowhow.

Walsh and Yu (2010) examined the determinants of FDI. Study was based on institutional and sectorial approach. For this purpose they used panel data of 27 advanced and emerging economies over the period 1985–2008. They examined various developmental, institutional and macroeconomic determinants of FDI. At first they examined the impact of relationship between FDI and macroeconomic variables such as inflation, trade openness and exchange rate, political stability and judicial

Loading [MathJax]/jax/output/CommonHTML/fonts/TeX/fontdata.js onship between FDI and these macroeconomic

and institutional variables. Asiedu and Lien (2011) examined the impact of democracy on foreign direct investment. They used panel data for 112 developing countries for the period 1982 to 2007 using system GMM. They found that good democracy have positive impact on inward FDI. Good institutions provide investment friendly environment to foreign investor and create favorable condition for investment. They further examined that the effect of democracy on FDI depended on the importance of natural resources in the host country

Bissoon (2011) examined the impact of institutional quality on foreign direct investment. For this purpose he used cross-sectional data of 45 selected countries. To capture quality of institutions he used some variables like low level of corruption, political instability, law and order situation, political freedom, and freedom of media. Result showed that there is positive relationship between institutional quality and FDI inflows. He concluded that institutions may serve as catalyst to attract foreign direct investment. Ishida (2012) examined the positive and negative effects of FDI in East Asian country. He concluded that to attract FDI East Asian countries make best possible use of its human capital by giving them education and health incentives. The technology may also be improved to digest the more benefit provided by foreign direct investment. Saleh (2013) examined the absorptive capacity of a country and effect of FDI on growth. He took the sample of 45 emerging and MENA economies over the period 1990–2009. His study showed that FDI have a positive impact on the host economy when controlling for the number of years of schooling as a factor of absorptive capacity in Emerging and MENA economies. The findings showed that a lower level of schooling cause higher FDI spillovers. Trade openness and institutional quality also absorb the benefit of FDI, and positive effect on the growth of the host country. Paulo et al. (2013) examined the impact of institutional factor in attracting the FDI. They took the data of 86 countries as a sample during the period 2005–2007. They proved that institutional framework and financial market are means to attract FDI. More efficient the markets are, more they absorb the benefits of FDI. Sallero et al. (2014) have studied the determinants of absorptive capacity from FDI. They took the data of 20 manufacturing countries for 13 years, from 1994 to 2006 through primary data. They found that R&D activities increase the absorptive capacity from FDI. They also found that family management has negative relation with absorbing capacity i.e. the companies own by the people who are not member of same family is better for absorbing the benefit of FDI. Furthermore they also observed that market efficiency has the positive relation with the absorptive capacity from FDI.

Lugemwa (2014) highlighted the importance of improved the absorptive capacity in developing countries. He used descriptive analysis to carry out his study for developing countries and used the concept of absorptive capacity with foreign direct investment to prove his study. He said that FDI can play an important role in growth. Developing countries need to attract FDI. One way of doing this is to support firms in developing absorptive capacity. By another way this could be done through workforce development programs, human resource practices and institutional quality. Developing countries therefore need to do research in ways of promoting workforce development programs to enhance absorptive capacity for local firms, and to support good human resource practices and organizational routines.

Samruti et al. (2015) concluded that absorptive capacity of the markets of domestic firms is highly relevant to enjoy the benefit provided by FDI. They used panel data and OLS model to prove his study. They concluded that the large and fast growing markets can absorb the more benefit provided by FDI. Furthermore they also showed that absorptive capacity for high concentrated markets and skilled labor. They suggested that benefits reaped by the local firms from the foreign markets, increase the overall productivity of domestic firms.

In the light of above literature, we can say that absorptive capacity and FDI are being rarely studied for East Asia Pacific and South Asian countries. This study contributes in the literature by taking the diversified measures of absorptive capacity to examine its impact on FDI in both regions. Then we compare the impact of absorptive capacity on FDI in both regions.

3. Methodology And Data

We estimate the following econometric model

$$\ln FDI_{it} = \alpha_0 + \alpha_1 HD_{it} + \alpha_2 INSQ_{it} + \alpha_3 INFR_{it} + \alpha_4 TO_{it} + \alpha_5 \ln GDP_{it} + \alpha_6 TEC_{it} + U_{it} \quad (1)$$

Where i indicates the number of countries that is $i = (1, 2, \dots, N)$, t is selected time period of this study that is $t = (1, 2, \dots, T)$, FDI is our dependent variable taken as net inflow of FDI in current U.S. dollars. It is the summation of equity capital, re-investment of revenues, and other assets. HD is human capital development expressed as the average years of tertiary education and life expectancy. Human capital development is one of the furthestmost significant determinant that absorb the benefit provided by FDI. Many studies use this variable as a main determinant of FDI. Life expectancy and tertiary education are used to measure the human capital. Criscuolo (2005) conclude that absorption occurs due to interaction of skilled workers and transfer of knowledge among the staff members. TO shows trade openness constructed as the ratio between sum of exports and imports to GDP. Trade openness is a key factor to catch inward FDI to boost job creation and economic development. Following Kravis and Lipsey (1982), Culem (1988) and Eswards (1990) we use trade openness as determinant of FDI and it has positive effects on FDI. INFR is the infrastructure measured with fixed telephone line subscriptions per 100 persons. Hypothetically there is exists a positive association between infrastructure and inward FDI. Modern infrastructure attracts FDI inflows due to reduction in operational cost (Khadaroo & Seelannah 2008). SQ is the democratic institutions. The political stability is used as a measure of the institutional quality. If institutions are weak, foreign investors dither to bring money for investment purpose. Moreover political instability and poor institutions indicate the poor governance within country viz a viz the reversal of policies which are detrimental for FDI (Gastanaga, 1998; Harms, 2002). We use polity 2 as an indicator for political institutions which lies between + 10 (strong democracy) and - 10 (weak democracy).

GDP is the gross domestic product (GDP) per capita. It is usually documented that a phases of economic development also determined FDI inflows. As economic development rises, purchasing power of the

people increases, which encourages foreign investors to invest. This study uses, GDP per capita as a proxy of the level of development to inspect its influence on FDI inflows.

TEC is technology measured as the import of machinery and equipment at SITC 1 and total trade mark registered. Technology shows improvement in the method of production and innovations. Import of machinery is used as a measure of technology. Technology is also an indicator of absorptive capacity to induce FDI in a country. FDI usually comes with new technologies and innovations. Technology has positive impact on inward FDI. Alternatively, this study also uses total registered trademark as a proxy of technological innovations. All variables are expressed in natural logarithm (ln).

To examine the effect of human capital, institutional quality, infrastructure, trade, GDP and technology on the FDI, the model (1) is estimated by using ordinary least square method. Perhaps estimators can be biased due to cross sectional heterogeneity, autocorrelation and endogeneity in democratic institutions, import of machinery, life expectancy, fixed telephone line subscriptions and tertiary education. To tackle these problems, this study uses system GMM (Arellano & Bover, 1995; Blundell & Bond, 1998). The validity of instruments is tested using standard Sargan test. The prerequisite for system GMM is, autocorrelation at first order (AR1) must be statistically significant while autocorrelation at second order (AR2) must be statistically insignificant.

To evaluate the effect of absorptive capacity on FDI inflows, this study uses panel data of five SAC such as Bangladesh, India, Nepal, Pakistan and Sri Lanka over the period 1984 to 2017. These countries are selected on the basis of accessibility of data.

Data of trade openness, fixed telephone line subscription per 100 people, life expectancy, GDP per capita and FDI are gleaned from the World Development Indicators (WDI). Data on import of machinery in Standard International Trade Classification, Revision 1 (STIC I) have collected from UN COMTrade, the data of average years of tertiary education are obtained from Barro and Lee database and data of polity II are retrieved from Polity IV dataset. We present the descriptive statistics of the selected variables in Table 1.

Table 1
Descriptive Statistics

Variables	Obs.	Mean	Std. Dev.	Min	Max
LFDI	170	19.042	2.844	12.421	24.518
Trade Openness	170	41.436	17.303	12.352	88.636
Tertiary Education	170	8.873	0.113	0.020	0.460
Political Stability	170	4.246	4.661	-7.000	9.000
Life Expectancy	170	64.678	5.869	49.410	75.284
Infrastructure	170	2.517	3.678	0.114	17.762
Ln(Technology)	170	21.321	1.615	18.238	25.317
ln(Trade Marks)	170	8.873	1.472	6.110	12.599
Ln(GDP per capita)	170	24.017	4.343	1.755	28.462
Source: Authors' own calculations.					

4. Results And Discussions

This paper empirically investigates the influence of absorptive capacity on FDI inflows in SAC. First of all, we estimate Eq. (1) using SGMM and results are displayed in Table 2. The estimated results show that trade openness, democratic institutions, import of machinery, life expectancy, fixed telephone line subscriptions, and tertiary education are positively connected to FDI inflows. The estimated results show that life expectancy, trade openness, political stability, import of machinery, infrastructure and average years of tertiary education are positively linked with FDI and statistically significant respectively.

Table 2
Estimated Results of FDI inflows

Variables	GMM	GMM	GMM
FDI(t-1)	0.490***	0.667***	0.516***
	(0.000)	(0.000)	(0.000)
Trade Openness	0.008*	0.011*	0.012**
	(0.090)	(0.107)	(0.092)
Democratic institutions	0.042*	0.072**	0.010*
	(0.055)	(0.043)	(0.070)
Log (Import of Machinery)	0.642***	0.237**	0.361**
	(0.000)	(0.027)	(0.032)
Log (Life Expectancy)	0.093***		0.083***
	(0.000)		(0.000)
Human Capital		2.778**	5.352**
		(0.029)	(0.037)
Log (Infrastructure)	0.042*	0.038**	0.014*
	(0.085)	(0.035)	(0.086)
Ln(GDP per capita)	0.033*	0.305**	0.346*
	(0.106)	(0.037)	(0.105)
Constant	-10.319***	-6.522***	-12.575***
	(0.000)	(0.000)	(0.000)
Sargan test	0.127	0.176	0.459
AR1	0.000	0.000	0.000
AR2	0.717	0.588	0.672
Note: *, ** and *** show significance at 10%, 5% and 1% level. P-values are given in parenthesis.			

Trade openness (TO) has positive and significant effect on FDI in selected SAC, which shows that the countries with free trade can attract more FDI because foreign investors favor free trade relative to the restricted trade. Since restricted trade increases the transaction cost which discourages FDI. Martens (2008) also found that trade openness and foreign direct investment are complement for each other and effect positively. Joshua and Ilan (2005) also analyze the association between trade and FDI, and found significant at the 10% level for the countries sample.

The Table 2 displays that political stability has positive and statistically significant enhancing effect on FDI inflows. Foreign investors are reluctant to invest in political instable countries owing to threat of policies reversal and other uncertain economic fluctuations that may cause loss in the profit. Our finding is akin with the studies of Asiedu and Lien (2011), Wheeler and Moody (1992), Kumar (1994), Loree and Guisinger (1995), Alfaro et al. (2004) and Nunnemkamp (2004). The Table 2 shows that import of machinery is taken as the proxy of technology has positive impact on FDI. The main objective of the foreign firms is to maximize profit. Firms invest in the country where expected rate of return on the investment are high and higher returns are gained and associated with the improved technology. Improvement in the production technology increases economic growth (Dornbusch & Fischer, 2003; Startz, 2003). Life expectancy and tertiary education are used to measure human capital. The Table 2 shows that life expectancy and tertiary education are positively related to foreign direct. As life expectancy and education increases, the productivity of labor force increases which is a natural resource that enhances FDI. Moreover, GDP per capita has positive and statistically significant impacts on inward FDI in South Asian countries. If countries have achieved the certain level of development, then increase FDI inflows spur economic growth. We have replaced the import of machinery with total registered trademark to measure the effects of technology on inward FDI in SAC and results are described in the Table 3. This shows that trade openness, political stability, total registered trademark, life expectancy, tertiary education, infrastructure and GDP per capita have positive and statistically significant influence on inward FDI in SAC. The coefficient of registered trademarks is positive in all three models which implies that an increase in registered trademark shows that technology is getting developed in these countries which plays significant role in attracting FDI inflows. The results show that 1 percent rise in the trade openness causes 0.018 percent upturn in FDI south Asian region. Edwards (1992) claims that economies that are significantly trade openness can grow fast by absorbing new technologies at a higher rate than a country with a low degree of openness. Political stability is positively related to FDI in south Asian countries. If there is any political stability, FDI increases monotonically and therefore economic growth increases.

Table 3
Absorptive capacity and FDI inflows in South Asian Countries

Variables	GMM	GMM	GMM
FDI(t-1)	0.547***	0.561***	0.520***
	(0.000)	(0.000)	(0.000)
Trade openness	0.012*	0.017**	0.018**
	(0.105)	(0.042)	(0.024)
Political Stability	0.022*	0.010*	0.015*
	(0.105)	(0.052)	(0.086)
Log (Trademark)	0.638**	0.572**	0.516**
	(0.030)	(0.043)	(0.045)
Log (Life Expectancy)	0.315**		0.065***
	(0.047)		(0.003)
Human capital		4.260**	4.790**
		(0.049)	(0.044)
Log (Infrastructure)	0.024**	0.060**	0.032**
	(0.039)	(0.038)	(0.029)
Ln(GDP Per Capita)	0.139**	0.236**	0.571*
	(0.028)	(0.031)	(0.060)
Constant	-0.574**	-2.762**	-11.250**
	(0.039)	(0.023)	(0.036)
Sargan test	0.307	0.502	0.521
AR1	0.000	0.000	0.000
AR2	0.612	0.667	0.663
Note: *, ** and *** show significance at 10%, 5% and 1% level. P-values are given in parenthesis.			

Total registered trademarks are positively related to foreign direct investment, which shows that if the trademark increases, then it indicates that technological innovations are improving. Therefore it indicates that the absorptive capacity of a country is rising. The results show that 1 percent increase in technology causes 0.516 percent rise in FDI in South Asian countries.

Infrastructure has rising effect on FDI inflows in South Asian countries. The result shows that 1 percent improvement in infrastructure causes 0.032 percent increase in the FDI inflows in SAC. Tertiary education as a proxy of education has positive relation with inward FDI. The table illustrates that 1 percent acceleration in the tertiary education causes 4.790 percent increase in the FDI in SAC. Aleksynska et al. (2003) analyzed that an increase human capital development is expected to augment the potentials of FDI in absorbing benefit in pacific regions. Moreover, GDP per capita has positive effect on FDI inflows in SAC. Overall, this analysis indicates that human capital development is more effective measure of absorptive capacity which significantly determinant FDI inflows in South Asian countries followed by registered trademark and GDP per capita. Moreover GMM satisfies the valid instrument condition, autocorrelation at first order auto-regressive process and zero autocorrelation at second order auto-regressive process respectively.

5. Conclusion

This study has investigated the influence of absorptive capacity on FDI for selected SAC using General Method of Moment (GMM) for the time period 1984–2017. Factors such as human capital, infrastructure, institutional quality, technology, trade openness, and GDP appeared to be positive and statistically significant essentials of the FDI inflows in SAC respectively.

We found that developing SAC can induce more FDI inflows if there is no restriction on trade. Democratic institutions are positively related to FDI in South Asian region which implies that if there is political stability then foreign investors prefer to bring investment in these countries due to risk aversion and huge returns. Technology is positively related to foreign direct investment, which shows that if the technology improves, it increase the absorptive capacity of a country. Infrastructure has positive impact on FDI in SAC and tertiary education as a proxy of education is positive related with foreign direct investment.

The governments of the South Asian countries should improve the absorptive capacity measures such as human capital, infrastructure and institutions of the country to give better incentives to the foreigners for investing in the country. The government should enhance tertiary education to absorb foreign direct investment inflows that can positively impact economic growth. Trade barriers such as tariffs should be reduced to enhance export-oriented growth which attracts the FDI.

Abbreviations

Foreign direct investment	FDI
Gross domestic product	GDP
Generalized Method of Moment	GMM
South Asian countries	SAC

Ordinary least square	OLS
Fixed effect model	FEM
Trade openness	TO
Human capital development	HD
Democratic institutions	SQ
World Development Indicators	WDI

Declarations

Acknowledgements

Not applicable

Funding

Not Applicable

Availability of data and materials

We have used secondary data retrieved from WDI, UN.COMTRADE and Polity IV.

Competing interests

The authors declare that they don't have any financial and non-financial competing interests.

Authors Contribution

Samina Sabir has done each and every section of this paper. **Samia Qureshi** has worked on literature review and methodology.

Data Sources

Data of variables are retrieved from the World Development Indicators (WDI), UN COMTrade Barro and Polity IV dataset.

Ethical declarations

Competing interests

The authors declare that they have no competing interests.

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