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# ECONOMIC GROWTH, FOREIGN DIRECT INVESTMENT AND TRADE ACCESSIBILITY: EMPIRICAL EVIDENCE FROM SAARC ECONOMIES (1996-2017)

**Maryam Nasir and Raza Ali Khan**

**ABSTRACT**

*Foreign direct investment (FDI) accounts for the largest share of external capital flows into Asia. From a host country perspective, the FDI is considered to be more attractive and less volatile as compared to other forms of international capital flows i.e. Portfolio investment and remittances. The main motive of this study is to illuminate the importance of inward FDIs for SAARC economies and to determine the proportion of these economies that have been assessed and managed to attract FDI over the last two decades. This study seeks to investigate the impact of FDI on Economic growth via trade accessibility through empirical evidence from SAARC economies such as Afghanistan, Bangladesh, Bhutan, India, Nepal, Maldives, Pakistan and Sri Lanka by using Panel data technique. GDP per capita growth will be used as a variable to assess Economic growth in Foreign Direct Investment inflows data will be obtained from the website of World Bank, World Development Indicators for the selected countries. The data will be a cross-sectional time series from 1996-2017. FDI is considered as one of the conventional determinants of Economic growth. Economies that are pursuing for a better tomorrow must focus on attracting Foreign Direct Investments, although FDI depends on several factors in a country such as market size, level of openness, natural resources, labour cost and productivity, economic growth rate, macroeconomic stability, inflation, technology level and so on. Besides these factors trade accessibility in the recipient economy is also determinants of FDI. This research study argues that openness in trade is one of the*

*important preconditions for FDI inflows to have a positive impact on economic growth. The results indicate that these absorptive capacity factors do not exert their impact on FDI inflows in SAARC economies.*

***Keywords**: Economic Growth, Foreign Direct Investment, Trade Accessibility*

## INTRODUCTION

Today's world out looked like a global village, more integrated and interdependent in terms of world economy driven by international trade and foreign investment. Globalization aims to provide a platform that is one huge global marketplace by merging of historically distinct and separate national markets with the help of declining cross border trade barriers and ease of doing investment that is a free flow of goods and services and capital between nations.

Globalization not only helps out in providing one platform for business but also helps out in reducing overall cost structures by taking advantage of national differences in the form of absolute advantage and/or comparative advantage through cost and quality of factor of production include land, labour, capital & technology.

The global institutions such as GATT (general agreement on tariff and trade) and its subsidiary the WTO (world trade organization) played a pivotal role in accelerating globalization of minimizing tariff rates, reducing barriers to cross border investments, helps out in bilateral and multilateral investment treaties, providing protection for patent, trademarks and copyrights & limiting the use of antidumping laws.

Adam Smith, David Ricardo, Eli Hecksher & Bertil Ohlin well-reputed economist firmly supports the contribution of international trade in economic growth by penning the concept of absolute and comparative advantage and renowned Hecksher & Ohlin theory, however, these concepts are contrary to the doctrine of Thoams Man, that was emerged in the mid-sixteenth century.

The economic philosophy of Thomas Mun is termed as Mercantilism, advocates that economies should encourage exports only and discourage imports at the same time. The mercantilist doctrine prescribes government intervention by limiting imports by imposing tariffs and quotas while subsidizing exports to achieve a surplus in the balance of trade, the gain

by one country results in a loss by another country was the underpinned plot of Mercantilism. Adam Smith and David Ricardo overrule the zero-sum game and ratified trade as a positive-sum game or as a situation in which all countries can get a benefit.

The regional trade blocs EU (European Union), NAFTA (North American free trade agreement) between Canada, Mexico and the United States and CAFTA-DR (The Dominica Republic and Central American free trade agreement) between the United States, Central American countries of Costa Rica, El Salvador, Guatemala, Honduras and Nicaragua and the Dominican Republic provide clear evidence for the link between trade and economic growth that leads to increase in income level and hence improve the standard of living. Opponents of free trade argue that free trade associated with an increase in pollution and labour exploitation, however, supporters of free trade argue that the tougher enforcement of environmental protection regulations and the implementations of labour laws tie with free trade agreements leads to the sustainable development of the economies.

In addition to the concept that was emerging in the late nineteenth century by Paul Krugman, the new trade theory advocates that countries attain economies of scale as well as a first-mover advantage through international trade. Besides international trade, foreign investment possesses crucial importance concerning economic growth and hence economic development. Foreign direct investment inflows act as a catalyst for non-speedy developing and/or under developing economies. From host country perspective economies get aid from foreign direct investment inflows in the form of transfer of resources and technology and employment opportunities. Moreover, foreign direct investment inflows have favourable and/or adverse effect on competition, the balance of payment and national sovereignty and autonomy. Low tariff rates and transportation cost leads to international trade while high transportation cost and tariff, tight control over the foreign operation lead to foreign investment. Many economists found either complementary or substitute relationship between trade and foreign investment, therefore the scheme of present study revolves around the interdependence of foreign direct investment (FDI) inflows on trade accessibility, and their overall impact on economic growth. The result of this study would assess to what extent trade openness contributes to the absorption of FDI inflows in SAARC economies.

According to the world investment report 2016, only about 7% FDI was attracted by India and Pakistan aggregately, 6% and 1%, respectively, however, in 2017, 11% FDI was attracted by India and Pakistan remain stagnant with the 1% (UNCTAD, 2016-2017).

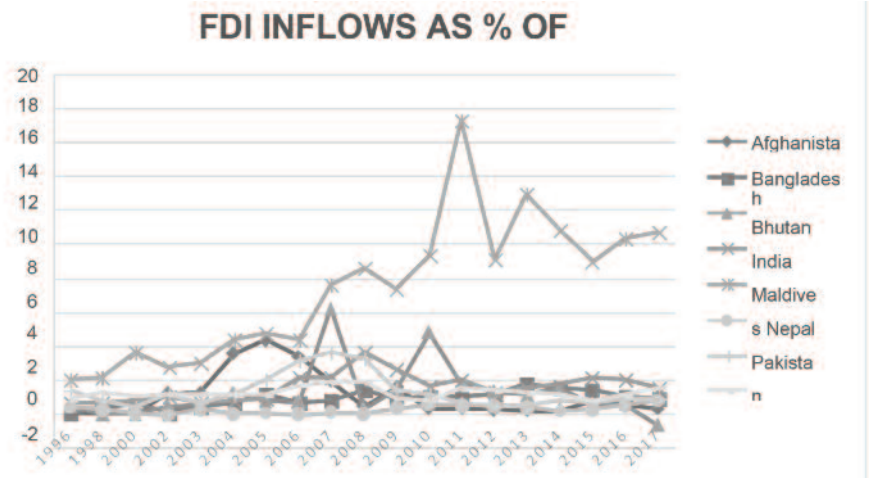


*Figure 1: FDI inflows as a percentage of GDP*

*Source: World Development Indicators (https://data.worldbank.org), accessed September 24, 2018*

SAFTA (South Asian free trade area) an agreement reached at the 12th SAARC summit in 2004 for bilateral trade and reduce customs duties ratified by Pakistan and India in 2009 and by Afghanistan in 2011. The trend line shows in figure 2 that Sri Lanka, Pakistan, Nepal, Maldives has higher trade accessibility as compared to India, Bhutan, Bangladesh and Afghanistan after 2005.

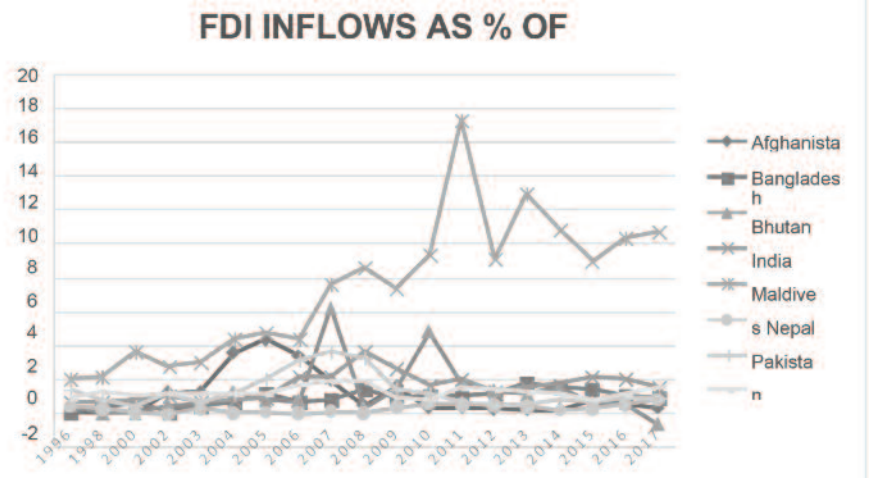


*Figure 2: Trade Openness as percentage of GDP*

*Source: World development Indicators (https://data.worldbank.org) accessed September 24, 2018*

## RESEARCH OBJECTIVES

This study primarily aims to investigate the impact of FDI on Economic growth via Trade accessibility and to highlight the importance and role of openness of trade towards the absorption of FDI inflows.

To investigate the complementary relationship between FDI inflows and trade accessibility, multiplicative interaction model used and thus generate a conditional hypothesis, a hypothesis in which relationship between two or more variables depends on the value of one or more other variable known as a conditional hypothesis. The null hypothesis is as follows:

$H_0$ = An increase in FDI is associated with an increase in economic growth when condition trade accessibility is met but not when trade accessibility is absent

## LITERATURE REVIEW

The liaison between the FDI and trade is familiar. It is postulated by various researchers that FDI and trade openness can lead to economic growth. (Grossman & Helpman, 1993) emphasized on global interdependence and comparative advantage as an endogenous variable for long term economic growth. (Krueger, 1997) studied the transformation of high-inflation, inner-oriented, aid-dependent and highly indebted economies of East Asia to major exporting economies through openness in trade and export promoting policies. Similarly (Balasubramanyam, Salisu, & Sapsford, 1996) found the strong impact of inward FDI on economic growth in the presence of export promoting policies.

Moreover, many researchers hypothesized substitute and complement relation between FDI and trade. (Mundell, 1957) under the assumption of the identical production function for two countries within the framework of Heckscher-Ohlin- Samuelson model of trade found FDI and trade substitute for each other, while researchers like (Purvis, 1972; Schmitz & Helmberger, 1970) under the assumption of varied production function between two countries found Foreign investment work complementary to international trade. (Kojima, 1975) put a step forward to find the relation between FDI and trade in the light of previous research work found FDI work as complement and substitute to trade as trade creating and trade destroying factor respectively.

Several researchers test the spillover effect of FDI on trade empirically. (Haddad & Harrison, 1993) explored the spillover effect of FDI on improving the quality of human capital, increase competition and boost export performance and opportunities in the host economy through technological diffusion. (Bhalla, 1995) and (Fry, 1993) drew special attention in their study towards the FDI role in elevating trade and emphasized on improving FDI policies to get benefits from spilt over effect especially in case of developing economies.

(Gnangnon & Roberts, 2015) worked on the panel of eighty-six countries, including developing and least developed economies found a more significant impact of FDI on export performance in the least developing economies. (Makki & Somwaru, 2004) claimed that trade openness lubricates FDI spillover effects. They further claimed that FDI has a significant impact on human capital development, improvement in the quality of institutions and trigger domestic investment. (Zhang, 2005) observed the effect of horizontal and vertical foreign investment in export productivity in China found an indirect effect of horizontal foreign direct investment towards export while the direct effect of vertical foreign direct investment. (Saadi, 2014) examined the impact of FDI inflows on export productivity found FD elevate overall productivity level of the developing and emerging countries' exports.

(Tekin, 2012) examined two-way relationship between FDI, export and GDP at least developing economies by using Granger causality test from the period 1970 to 2009 found growth led to export in countries rich in natural resources while export-led growth in manufacturing and services exporters. Moreover, then explore that FDI is market seeking in economies rich in renewable resources and trade creating in manufacturing economies.

(Sharma & Kaur, 2013) explored the causal relationship between FDI and trade in India and China by using Granger causality test for time series data from 1976 to 2011, observed unidirectional causality from FDI to trade in China while bidirectional causality between FDI and trade in India.

(Hsiao & Hsiao, 2006) to study the causal association between FDI, GDP and exports by using Granger causality test for four Southeast Asian economies, known as Asian tigers, Hong Kong, Singapore, South Korea

and Taiwan along with China, Thailand, Philippines and

Malaysia explored bidirectional causality between export and GDP for the selected economies and unidirectional from FDI to GDP but directly and indirectly caused effects through exports. (Min, 2003) analyzed FDI spillover effect towards the shift from primary to the manufacturing sector to boost export in the perspective of Malaysia over the period from 1988 to 1995.

The study of (Fukao, Ishido, & Ito, 2003) explored that FDI plays a key role to get access to international markets and tie domestic enterprises with global manufacturing chains, predominantly efficiency-seeking and export-oriented FDI contribute in enhancing trade performance in East Asia during the 1970s to 1980s.

## RESEARCH METHODOLOGY

Empirical model Equation

The model is derived from standard neoclassical simple production function,

$$Y=f(K, H) \quad (1)$$

Where Y is GDP per capita, K is the stock of physical capital, and H is the human capital; by differentiating the function we get the following equation termed as a base equation:

$$y= \gamma_1 k + \gamma_2 h \quad (2)$$

FDI affects growth directly by increasing the stock of physical capital and indirectly by inducing human capital development and promoting technological upgrading (De Mello, 1999) therefore FDI denoted as F is introduced as an additional variable in the production function we get

$$Y=f(K, H, F) \quad (3)$$

Differentiating (3) we get

$$y= \gamma_1 k + \gamma_2 h + \gamma_3 f \quad (4)$$

To empirically examine the impact of FDI on Economic Growth via Trade accessibility, this study hypothesizes a model as follows:

$$\mathbf{EG}= \gamma_0 + \gamma_1 \mathbf{M} + \gamma_2 \mathbf{FDI} + \gamma_3 \mathbf{TA} + \gamma_4 \mathbf{FTA} + \gamma_5 \mathbf{C} + \epsilon \quad (5)$$

The dependent variable is the growth rate of real GDP per capita, (**EG).** The vector **M** include generally accepted variable to economic growth. There are 2 variables in vector **M;** namely gross capital formation (formerly gross domestic investment) it is denoted as **(GKF)** and computed as the ratio to GDP. Tertiary school enrollment as a percentage of the gross enrollment ratio (the ratio of total enrollment) used as a proxy for human capital, represented as **(HC).** The variable (**FDI)** represents foreign direct investment inflows as a percentage of GDP. The variable (**TA)** depicts constitutive term the variable of interest that is Trade accessibility. (**FTA**) represents an interaction term of FDI and Trade accessibility. The vector **C** includes three conditional variables, namely Inflation (**INF**) used as a proxy for measuring macroeconomic stability, Government expenditures denoted as **(GE)** is measured as GDP ratio and institutional quality (**IQ**) measured as by simply computing average of six components of Worldwide Governance indicators produced by Daniel Kaufmann and Aart Kray, these six dimensions of governance include Control of Corruption, Government Effectiveness, Political Stability and Absence of Violence/Terrorism, Regulatory Quality, Rule of Law and Voice and Accountability. Each of these variables is measured in percentile rank. A higher value indicating better performance.

Table A exhibits a correlation matrix to investigate the dependence between the selected variables, the Correlation coefficient value ranges from -1 to +1 indicate a strong correlation between the variables. Values close to zero indicate a weak correlation between the variables. The correlation matrix indicates that EG is positively correlated with FDI (0.48), Gross capital formation (0.29), human capital (0.13), institutional quality (0.23), government expenditure (0.13) and trade accessibility (0.21). However, inflation is negatively correlated or inversely correlated with EG (-0.30).

Table A: Correlation Matrix

| | EG | GKF | HC | FDI | TA | INF | GE | IQ |
|---|---|---|---|---|---|---|---|---|
| EG | 1.00 | | | | | | | |
| GKF | 0.29 | 1.00 | | | | | | |
| HC | 0.13 | 0.28 | 1.00 | | | | | |
| FDI | 0.48 | 0.25 | 0.13 | 1.00 | | | | |
| TA | 0.21 | 0.75 | -0.06 | 0.21 | 1.00 | | | |
| INF | -0.30 | 0.13 | 0.12 | 0.18 | 0.03 | 1.00 | | |
| GE | 0.13 | 0.58 | -0.13 | 0.27 | 0.79 | 0.03 | 1.00 | |
| IQ | 0.23 | 0.65 | 0.38 | 0.37 | 0.52 | 0.04 | 0.49 | 1.00 |

Table B: Regression Model

| | | VARIABLE | | PROXY |
|---|---|---|---|---|
| EG | DEPENDENT | ECONOMIC GROWTH | (EG) | GROWTH RATE OF REAL GDP PER CAPITA |
| M | INDEPENDENT | HUMAN CAPITAL | (HC) | GROSS ENROLLMENT RATIO (TERT) |
| | INDEPENDENT | GROSS CAPITAL | (GKF) | GDI TO GDP RATIO FORMATION |
| FDI | INDEPENDENT | FOREIGN DIRECT INVESTMENT | (FDI) | INWARD FDI FLOWS TO GDP RATIO |
| TA | INDEPENDENT | TRADE ACCESSIBILITY | (TA) | TRADE AS % OF GDP |
| FTA | INDEPENDENT | FDI AND TRADE | (FTA) | MULTIPLICATION |
| C | INDEPENDENT | INFLATION | (INF) | CONSUMER PRICES ANNUAL % |
| | INDEPENDENT | GOVERNMENT EXPENDITURE | (GE) | GE AS GDP RATIO |
| | INDEPENDENT | INSTITUTIONAL QUALITY | (IQ) | GOVERNANCE INDICATOR AVERAGE |

## FINDINGS

In table 1, specification IA explores the empirical results of the base equation & specification IB explores the empirical results of the base equation along with foreign direct investment and trade accessibility, interaction term by using fixed effects (FE) and random effect (RE) least-squares technique.

For specification IA, the required model for fixed effect technique is as follows:

$$EG_{it} = \gamma_{0i} + \gamma_1 GKF_{it} + \gamma_2 HC_{it} + \gamma_3 FDI_{it} + \gamma_4 TA_{it} + \mu_{it} \quad (6)$$

For specification IA, the required result of the fixed effect technique is as follows:

$$EG_{it} = 3.56_{0i} + 0.06\ GKF_{it} + 0.01\ HC_{it} + 1.12\ FDI_{it} - 0.05\ TA_{it} + \mu_{it} \quad (7)$$

For specification IA, the required model for random effect technique is as follows:

$$EG_{it} = \gamma_0 + \gamma_1 GKF_{it} + \gamma_2 HC_{it} + \gamma_3 FDI_{it} + \gamma_4 TA_{it} + \omega_{it} \quad (8)$$

For specification IA, the required result of the random effect technique is as follows:

$$EG_{it} = 1.66_0 + 0.08\ GKF_{it} - 0.00\ HC_{it} + 1.04\ FDI_{it} - 0.02\ TA_{it} + \omega_{it} \quad (9)$$

For specification IB, the required model for fixed effect technique is as follows:

$$EG_{it} = \gamma_{0i} + \gamma_1 GKF_{it} + \gamma_2 HC_{it} + \gamma_3 FDI_{it} + \gamma_4 TA_{it} + \gamma_5 FTA_{it} + \mu_{it} \quad (10)$$

For specification IB, the required result of the fixed effect technique is as follows:

$$EG_{it} = 3.28_{0i} + 0.06\, GKF_{it} + 0.01 HC_{it} + 1.46\, FDI_{it} - 0.05\, TA_{it} - 0.00\, FTA_{it} + \mu_{it} \quad (11)$$

For specification IB, the required model for random effect technique is as follows:

$$EG_{it} = \gamma_0 + \gamma_1 GKF_{it} + \gamma_2 HC_{it} + \gamma_3 FDI_{it} + \gamma_4 TA_{it} + \gamma_5 FTA_{it} + \omega_{it} \quad (12)$$

For specification IB, the required result of the random effect technique is as follows:

$$EG_{it} = 1.35_0 + 0.09\, GKF_{it} + 0.00\, HC_{it} + 1.00\, FDI_{it} - 0.02\, TA_{it} + 0.00\, FTA_{it} + \omega_{it} \quad (13)$$

Table 1: Base equation along with Trade openness Interaction term

| | IA | | IB | |
|---|---|---|---|---|
| | **FE** | **RE** | **FE** | **RE** |
| **C** | 3.56** | 1.66 | 3.28* | 1.35 |
| | (1.79) | (1.11) | (1.90) | (1.16) |
| **GKF** | 0.06 | 0.08** | 0.06 | 0.09*** |
| | (0.06) | (0.03) | (0.05) | (0.03) |
| **HC** | 0.01 | -0.00 | 0.01 | 0.00 |
| | (0.09) | (0.06) | (0.07) | (0.05) |
| **FDI** | 1.12*** | 1.04*** | 1.46 | 1.00 |
| | (0.35) | (0.29) | (0.81) | (0.70) |
| **TA** | -0.05** | -0.02 | -0.05** | -0.02 |
| | (0.02) | (0.01) | (0.02) | (0.02) |
| **FTA** | | | -0.00 | 0.00 |
| | | | (0.01) | (0.00) |
| **$R^2$** | 0.29 | 0.19 | 0.29 | 0.23 |
| **d** | 1.00 | 0.94 | 1.01 | 0.92 |
| **F-stats** | 3.29*** | 5.17*** | 2.98*** | 5.02*** |
| **OBS** | 89 | 89 | 89 | 89 |
| **H Test-P** | 0.51 | | 0.20 | |

*-Standard Errors are reported in parentheses*
*-The significance level indicated by (*). One (*) indicates significance at the 10% level, (**) indicates significance at the 5% level, while (***) indicates significance at the 1% level.*

In specification IA, the base equation includes Gross capital formation (GKF), human capital (HC), foreign direct investment (FDI) and trade accessibility (TA) where (GKF) and (FDI) are positively significant at the 5% and the 1% significance level respectively. The coefficient 1.04

implying that an increase in FDI inflows as a percentage of GDP leads to an increase in GDP per capita growth 1.04%. Many researchers have found a positive link between trade accessibility and human capital (Miller & Upadhyay, 2000) but in case of SAARC economies, the variable human capital (HC) in the presence of trade accessibility is insignificant while the variable of interest trade accessibility (TA) is insignificant too. The result depicts that human capital and trade accessibility has no impact on GDP per capita, in other words, human capital and trade accessibility not enhancing the living standards of people of SAARC region. This is due to lack of adequate knowledge workers and proves trade deficit in SAARC economies. It also shows that the ratio of import is greater than the ratio of export. The negative sign is usually associated with a lower level of technology transfer, lower level of transparency and disclosure of the risk associated with business, low market regulation and low production of goods and services by domestic firms.

Many researchers found a positive impact of trade accessibility on domestic growth, income growth and regional per capita (Buch & Toubal, 2009) but in case of SAARC economies, the inclusion of interaction term of foreign direct investment and trade accessibility (FTA) in specification IB turns (FDI) insignificant although (GKF) remains significant at the 1% significance level.

In Table 2, specification IIA explores the empirical results of the base equation with the inclusion of one conditional variable that is inflation & specification IIB explores the empirical results of conditional variable inflation along with foreign direct investment and trade accessibility interaction term by using fixed effects (FE) and random effect (RE) least-squares technique.

For specification IIA, the required model for fixed effect technique is as follows:

$$EG_{it} = \gamma_{0i} + \gamma_1 GKF_{it} + \gamma_2 HC_{it} + \gamma_3 FDI_{it} + \gamma_4 TA_{it} + \gamma_5 INF_{it} + \mu_{it} \quad (14)$$

For specification IIA, the required result of the fixed effect technique is as follows:

$$EG_{it} = 1.45_{0i} + 0.08\, GKF_{it} + 0.00\, HC_{it} + 1.49\, FDI_{it} + 0.01\, TA_{it} - 0.35\, INF_{it} + \mu_{it} \quad (15)$$

For specification IIA, the required model for random effect technique is as follows:

$$EG_{it} = \gamma_0 + \gamma_1 GKF_{it} + \gamma_2 HC_{it} + \gamma_3 FDI_{it} + \gamma_4 TA_{it} + \gamma_5 INF_{it} + \omega_{it} \quad (16)$$

For specification IIA, the required result of the random effect technique is as follows:

$$EG_{it} = 3.24_0 + 0.07\ GKF_{it} + 0.01\ HC_{it} + 1.43\ FDI_{it} - 0.00\ TA_{it} - 0.37\ INF_{it} + \omega_{it} \quad (17)$$

For specification IIB, the required model for fixed effect technique is as follows:

$$EG_{it} = \gamma_{0i} + \gamma_1\ GKF_{it} + \gamma_2\ HC_{it} + \gamma_3\ FDI_{it} + \gamma_4\ TA_{it} + \gamma_5\ FTA_{it} + \gamma_6\ INF_{it} + \mu_{it} \quad (18)$$

For specification IIB, the required result of the fixed effect technique is as follows:

$$EG_{it} = 1.64_{0i} + 0.08\ GKF_{it} + 0.00\ HC_{it} + 1.02\ FDI_{it} + 0.01\ TA_{it} + 0.00\ FTA_{it} - 0.33\ INF_{it} + \mu_{it} \quad (19)$$

For specification IIB, the required model for random effect technique is as follows:

$$EG_{it} = \gamma_0 + \gamma_1\ GKF_{it} + \gamma_2\ HC_{it} + \gamma_3\ FDI_{it} + \gamma_4\ TA_{it} + \gamma_5\ FTA_{it} + \gamma_6\ INF_{it} + \omega_{it} \quad (20)$$

For specification IIB, the required result of the random effect technique is as follows:

$$EG_{it} = 3.57_0 + 0.06\ GKF_{it} + 0.02\ HC_{it} + 1.07\ FDI_{it} - 0.01\ TA_{it} + 0.00\ FTA_{it} - 0.36\ INF_{it} + \omega_{it} \quad (21)$$

Table 2: Inflation as Conditional variable

| | IIA | | IIB | |
|---|---|---|---|---|
| | **FE** | **RE** | **FE** | **RE** |
| **C** | 1.45 | 3.24*** | 1.64 | 3.57*** |
| | (1.73) | (0.86) | (1.76) | (1.03) |
| **GKF** | 0.08* | 0.07* | 0.08* | 0.06* |
| | (0.05) | (0.03) | (0.05) | (0.03) |
| **HC** | 0.00 | 0.01 | 0.00 | 0.02 |
| | (0.06) | (0.04) | (0.06) | (0.04) |
| **FDI** | 1.49*** | 1.43*** | 1.02 | 1.07* |
| | (0.28) | (0.24) | (0.74) | (0.64) |
| **TA** | 0.01 | -0.00 | 0.01 | -0.01 |
| | (0.03) | (0.01) | (0.03) | (0.02) |
| **INF** | -0.35*** | -0.37*** | -0.33*** | -0.36*** |
| | (0.08) | (0.07) | (0.08) | (0.07) |
| **FTA** | | | 0.00 | 0.00 |
| | | | (0.00) | (0.00) |
| **$R^2$** | 0.49 | 0.44 | 0.49 | 0.45 |
| **d** | 1.19 | 1.09 | 1.17 | 1.07 |
| **F-stats** | 6.56*** | 13.1*** | 6.01*** | 10.9*** |
| **OBS** | 87 | 87 | 87 | 87 |
| **H Test-P** | 0.27 | | 0.38 | |

*-Standard Errors are reported in parentheses*
*-The significance level indicated by (*). One (*) indicates significance at the 10% level, (**) indicates significance at the 5% level, while (***) indicates significance at the 1% level.*

Many researchers found negative nature between trade accessibility and inflation such as (Sachsida, Carneiro, & Loureiro, 2003) and (Kim, Lin, & Suen, 2010) found a negative relation between trade accessibility and low-income level, high inflated economies although in case of SAARC economies the inclusion of inflation (INF) as a conditional variable in base equation as shown in specification IIA, possess no impact on trade accessibility (TA) and it remains insignificant while gross capital formation (GKF) and foreign direct investment (FDI) remain significant at the 10% and 1% significance level respectively during the study period. The conditional variable inflation is negatively significant at the 1% significance level. The following results depict that the presence of inflation in SAARC economies possesses a negative impact on

economic growth. The coefficient 0.37 implying that an increase in inflation leads to a decrease in GDP per capita growth 0.37%.

In Table 3, specification IIIA explores the empirical results of the base equation with the inclusion of another conditional variable that is government expenditure & specification IIIB explores the empirical results of conditional variable government expenditure along with foreign direct investment and trade accessibility interaction term by using fixed effect (FE) and random effect (RE) least-squares technique.

For specification IIIA, the required model for fixed effect technique is as follows:

$$EG_{it} = \gamma_{0i} + \gamma_1 GKF_{it} + \gamma_2 HC_{it} + \gamma_3 FDI_{it} + \gamma_4 TA_{it} + \gamma_5 GE_{it} + \mu_{it} \quad (22)$$

For specification IIIA, the required result of the fixed effect technique is as follows:

$$EG_{it} = 5.92_{0i} + 0.07\, GKF_{it} + 0.02\, HC_{it} + 1.09\, FDI_{it} - 0.06\, TA_{it} - 0.23\, GE_{it} + \mu_{it} \quad (23)$$

For specification IIIA, the required model for random effect technique is as follows:

$$EG_{it} = \gamma_0 + \gamma_1 GKF_{it} + \gamma_2 HC_{it} + \gamma_3 FDI_{it} + \gamma_4 TA_{it} + \gamma_5 GE_{it} + \omega_{it} \quad (24)$$

For specification IIIA, the required result of the random effect technique is as follows:

$$EG_{it} = 1.49_0 + 0.09\, GKF_{it} - 0.02\, HC_{it} + 1.05\, FDI_{it} - 0.02 TA_{it} - 0.04\, GE_{it} + \omega_{it} \quad (25)$$

For specification IIIB, the required model for fixed effect technique is as follows:

$$EG_{it} = \gamma_{0i} + \gamma_1 GKF_{it} + \gamma_2 HC_{it} + \gamma_3 FDI_{it} + \gamma_4 TA_{it} + \gamma_5 FTA_{it} + \gamma_6 GE_{it} + \mu_{it} \quad (26)$$

For specification IIIB, the required result of the fixed effect technique is as follows:

$EG_{it} = 5.58_{0i} + 0.07\ GKF_{it} - 0.02\ HC_{it} + 1.40\ FDI_{it} - 0.05\ TA_{it} - 0.00\ FTA_{it} - 0.22\ GE_{it} + \mu_{it}$ (27)

For specification IIIB, the required model for random effect technique is as follows:

$EG_{it} = \gamma_0 + \gamma_1\ GKF_{it} + \gamma_2\ HC_{it} + \gamma_3\ FDI_{it} + \gamma_4\ TA_{it} + \gamma_5\ FTA_{it} + \gamma_6\ GE_{it} + \omega_{it}$ (28)

For specification IIIB, the required result of the random effect technique is as follows:

$EG_{it} = 1.48_0 + 0.09\ GKF_{it} - 0.00\ \beta_2\ HC_{it} + 1.06\ FDI_{it} - 0.02\ TA_{it} - 0.00\ FTA_{it} - 0.04\ GE_{it} + \omega_{it}$ (29)

Table 3. Government expenditure as Conditional variable

| | IIIA | | IIIB | |
|---|---|---|---|---|
| | **FE** | **RE** | **FE** | **RE** |
| **C** | 5.92 | 1.49 | 5.58 | 1.48 |
| | (3.93) | (1.02) | (4.03) | (1.21) |
| **GKF** | 0.07 | 0.09*** | 0.07 | 0.09*** |
| | (0.05) | (0.03) | (0.06) | (0.03) |
| **HC** | 0.02 | -0.00 | 0.02 | -0.00 |
| | (0.07) | (0.05) | (0.07) | (0.05) |
| **FDI** | 1.09*** | 1.05*** | 1.40* | 1.06 |
| | (0.33) | (0.28) | (0.81) | (0.71) |
| **TA** | -0.06** | -0.02 | -0.05** | -0.02 |
| | (0.02) | (0.01) | (0.02) | (0.02) |
| **GE** | -0.23 | -0.04 | -0.22 | -0.04 |
| | (0.35) | (0.10) | (0.35) | (0.10) |
| **FTA** | | | -0.00 | -0.00 |
| | | | (0.01) | (0.00) |
| **$R^2$** | 0.30 | 0.23 | 0.30 | 0.23 |
| **d** | 0.99 | 0.92 | 1.00 | 0.92 |
| **F-stats** | 3.01*** | 5.07*** | 2.75*** | 4.18*** |
| **OBS** | 89 | 89 | 89 | 89 |
| **H Test-P** | 0.22 | | 0.27 | |

*-Standard Errors are reported in parentheses*
*-The significance level indicated by (*). One (*) indicates significance at the 10% level, (**) indicates significance at the 5% level, while (***) indicates significance at the 1% level.*

In specification IIIA the inclusion of government expenditure (GE) as conditional variable possess insignificant property depicts there is no impact either positive or negative or relationship between government expenditure (GE) and GDP per capita, the reason behind is the unnecessary size of government that is there is a negative relationship between country

size and government size, the augmentation of government personnel and government spending, less in favour of public amelioration, although gross capital formation (GKF) and foreign direct investment (FDI) remain significant at the 1% significance level in presence of government expenditure (GE) variable in case of SAARC economies. Many researchers have found a negative relationship between government size and trade accessibility, large governments are less needy to open market due to their sizeable domestic market (Alesina & Wacziarg, 1998) but in case of SAARC economies the government expenditure not hinder foreign investment nor the domestic investment as well.

In Table 4, specification IVA explores the empirical results of the base equation with the inclusion of another conditional variable that is institutional quality & specification IIIB explores the empirical results of conditional variable institutional quality along with foreign direct investment and trade accessibility interaction term by using fixed effect (FE) and random effect (RE) least-squares technique.

For specification IVA, the required model for fixed effect technique is as follows:

$$EG_{it} = \gamma_{0i} + \gamma_1 GKF_{it} + \gamma_2 HC_{it} + \gamma_3 FDI_{it} + \gamma_4 TA_{it} + \gamma_5 IQ_{it} + \mu_{it} \quad (30)$$

For specification IVA, the required result of the fixed effect technique is as follows:

$$EG_{it} = 7.72_{0i} + 0.05\ GKF_{it} - 0.04\ HC_{it} + 1.11\ FDI_{it} - 0.05\ TA_{it} - 0.09\ IQ_{it} + \mu_{it} \quad (31)$$

For specification IVA, the required model for random effect technique is as follows:

$$EG_{it} = \gamma_0 + \gamma_1 GKF_{it} + \gamma_2 HC_{it} + \gamma_3 FDI_{it} + \gamma_4 TA_{it} + \gamma_5 IQ_{it} + \omega_{it} \quad (32)$$

For specification IVA, the required result of the random effect technique is as follows:

$$EG_{it} = 1.45_0 + 0.09\ GKF_{it} - 0.00\ HC_{it} + 1.05\ FDI_{it} - 0.02\ TA_{it} - 0.00\ IQ_{it} + \omega_{it} \quad (33)$$

For specification IVB, the required model for fixed effect technique is as follows:

$$EG_{it} = \gamma_{0i} + \gamma_1 GKF_{it} + \gamma_2 HC_{it} + \gamma_3 FDI_{it} + \gamma_4 TA_{it} + \gamma_5 FTA_{it} + \gamma_6 IQ_{it} + \mu_{it} \quad (34)$$

For specification IVB, the required result of the fixed effect technique is as follows:

$$EG_{it} = 7.6_{0i} + 0.05\ GKF_{it} - 0.0\ HC_{it} + 1.50\ FDI_{it} - 0.0\ TA_{it} - 0.00\ FTA_{it} - 0.10\ IQ_{it} + \mu_{it} \quad (35)$$

For specification IVB, the required model for random effect technique is as follows:

$$EG_{it} = \gamma_0 + \gamma_1 GKF_{it} + \gamma_2 HC_{it} + \gamma_3 FDI_{it} + \gamma_4 TA_{it} + \gamma_5 FTA_{it} + \gamma_6 IQ_{it} + \omega_{it} \quad (36)$$

For specification IVB, the required result of the random effect technique is as follows:

$$EG_{it} = 1.52_0 + 0.09\ GKF_{it} + 0.00\ HC_{it} + 0.95\ FDI_{it} - 0.02\ TA_{it} + 0.00\ FTA_{it} - 0.00\ IQ_{it} + \omega_{it} \quad (37)$$

Table 4: Governance as Conditional variable

| | IVA | | IVB | |
|---|---|---|---|---|
| | **FE** | **RE** | **FE** | **RE** |
| **C** | 7.72**<br>(4.09) | 1.45<br>(1.08) | 7.63**<br>(4.12) | 1.52<br>(1.22) |
| **GKF** | 0.05<br>(0.06) | 0.09**<br>(0.05) | 0.05<br>(0.06) | 0.09**<br>(0.05) |
| **HC** | -0.04<br>(0.09) | -0.00<br>(0.06) | -0.05<br>(0.09) | 0.00<br>(0.06) |
| **FDI** | 1.11***<br>(0.35) | 1.05***<br>(0.30) | 1.50**<br>(0.88) | 0.95<br>(0.78) |
| **TA** | -0.05**<br>(0.02) | -0.02<br>(0.01) | -0.05*<br>(0.02) | -0.02<br>(0.02) |
| **IQ** | -0.09<br>(0.10) | -0.00<br>(0.03) | -0.10<br>(0.10) | -0.00<br>(0.03) |
| **FTA** | | | -0.00<br>(0.01) | 0.00<br>(0.01) |
| **$R^2$** | 0.34 | 0.23 | 0.34 | 0.24 |
| **d** | 1.04 | 0.92 | 1.05 | 0.91 |
| **F-stats** | 2.92*** | 4.26*** | 2.66*** | 3.58*** |
| **OBS** | 74 | 74 | 74 | 74 |
| **H Test-P** | 0.15 | | 0.15 | |

*-Standard Errors are reported in parentheses*
*-The significance level indicated by (*). One (*) indicates significance at the 10% level, (**) indicates significance at the 5% level, while (***) indicates significance at the 1% level.*

The inclusion of institutional quality (IQ) as a conditional variable in the base equation turns trade accessibility (TA) insignificant, although gross capital formation (GKF) and foreign direct investment (FDI) is significant at the 5% and 1% significance level respectively. However many researchers found a significant positive impact of institutional quality on trade accessibility (Dollar & Kraay, 2003) found improved institutional quality embraced trade accessibility, moreover (Méon & Sekkat, 2008) found both positive and negative impact of institutional quality on trade accessibility based on different sectors and goods. The variable institutional quality possesses an insignificant nature itself. The following result

depicts that there is no impact of institutional quality on economic growth.

## CONCLUSION

The finding of trade accessibility and foreign direct investment (FTA) interaction term implies that trade accessibility not necessarily promotes FDI spillover effect in case of SAARC economies. However, it is important to study the substitute and complement the relationship between FDI and trade openness, especially in case of SAARC economies that either both variables that are FDI and trade openness acted as a substitute or complement to each other. Particularly SAARC region absorbed comparatively less FDI inflow as compare to remaining Asia, in case of trade deficit SAARC should focus on declining trade barriers, bilateral trade treaties and must shift towards from import oriented economies to export-oriented economies.

Furthermore, this study used the ratio of the sum of export and import as a proxy for measuring trade openness the researcher can also check the robustness of result by using the value of export as a percentage of GDP only instead of a sum of export and import as a proxy for trade openness.

Table 5: Combined results

| | IA | IB | IIA | IIB | IIIA | IIIB | IVA | IVB |
|---|---|---|---|---|---|---|---|---|
| | RE | RE | RE | RE | RE | RE | RE | RE |
| C | 1.66<br>(1.11) | 1.35<br>(1.16) | 3.24***<br>(0.86) | 3.57***<br>(1.03) | 1.49<br>(1.02) | 1.48<br>(1.21) | 1.45<br>(1.08) | 1.52<br>(1.22) |
| GKF | 0.08**<br>(0.03) | 0.09***<br>(0.03) | 0.07*<br>(0.03) | 0.06*<br>(0.03) | 0.09***<br>(0.03) | 0.09**<br>(0.03) | 0.09**<br>(0.05) | 0.09**<br>(0.05) |
| HC | -0.00<br>(0.07) | 0.00<br>(0.05) | 0.01<br>(0.04) | 0.02<br>(0.04) | -0.00<br>(0.05) | -0.00<br>(0.05) | -0.00<br>(0.06) | 0.00<br>(0.06) |
| FDI | 1.04***<br>(0.31) | 1.00<br>(0.70) | 1.43***<br>(0.24) | 1.07*<br>(0.64) | 1.05***<br>(0.28) | 1.06<br>(0.71) | 1.05***<br>(0.30) | 0.95<br>(0.78) |
| TA | -0.02<br>(0.01) | -0.02<br>(0.02) | -0.00<br>(0.01) | -0.01<br>(0.02) | -0.02<br>(0.01) | -0.02<br>(0.02) | -0.02<br>(0.01) | -0.02<br>(0.02) |
| INF | | | -0.37***<br>(0.07) | -0.36***<br>(0.07) | | | | |
| GE | | | | | -0.04<br>(0.10) | -0.04<br>(0.10) | | |
| IQ | | | | | | | -0.00<br>(0.03) | -0.00<br>(0.03) |
| FTA | | 0.00<br>(0.00) | | 0.00<br>(0.00) | | -0.00<br>(0.00) | | 0.00<br>(0.01) |
| $R^2$ | 0.19 | 0.23 | 0.44 | 0.45 | 0.23 | 0.23 | 0.23 | 0.24 |
| d | 0.94 | 0.92 | 1.09 | 1.07 | 0.92 | 0.92 | 0.92 | 0.91 |
| F-stats | 5.17*** | 5.02*** | 13.1*** | 10.9*** | 5.07*** | 4.18*** | 4.26*** | 3.58*** |
| OBS | 89 | 89 | 87 | 87 | 89 | 89 | 74 | 74 |
| H Test- P | 0.51 | 0.20 | 0.27 | 0.38 | 0.22 | 0.27 | 0.15 | 0.15 |

Table C: Comparison of Expected and Estimated Outcome

| DEPENDENT VARIABLE: ECONOMIC GROWTH | | | |
|---|---|---|---|
| VARIABLE | EXPECTED RESULT | OUTCOME | REMARKS |
| GROSS CAPITAL FORMATION | POSITIVELY SIGNIFICANT | POSITIVELY SIGNIFICANT | GROSS DOMESTIC INVESTMENT ACCELERATE ECONOMIC GROWTH |
| HUMAN CAPITAL | POSITIVELY SIGNIFICANT | INSIGNIFICANT | LOW LEVEL OF EFFICIENCY/ IMPROPER UTILIZATION OF HUMAN RESOURCE |
| FOREIGN DIRECT INVESTMENT | POSITIVELY SIGNIFICANT | POSITIVELY SIGNIFICANT | FDI BOOST GDP PER CAPITA |
| TRADE ACCESSIBILITY | POSITIVELY SIGNIFICANT | NEGATIVELY SIGNIFICANT | TRADE DEFICIT/ HEAVILY RELY ON IMPORT |
| INFLATION | NEGATIVELY SIGNIFICANT | NEGATIVELY SIGNIFICANT | HIGH INFLATION CAUSE DECREASE IN GDP PER CAPITA |
| GOVERNMENT EXPENDITURE | NEGATIVELY SIGNIFICANT | INSIGNIFICANT | UNEFFECTIVE UTILIZATION OF PUBLIC FUND |
| INSTITUTIONAL QUALITY | POSITIVELY SIGNIFICANT | INSIGNIFICANT | ABSENCE OF ADEQUATE GOVERNANCE |
| INTERACTION TERM (FTA) | POSITIVELY SIGNIFICANT | INSIGNIFICANT | LOW LEVEL OF OPENNESS IN TRADE |

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