“Factors Influencing FDI Inflows in South-Asian Countries: A Panel Data Analysis”

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Abstract

Foreign direct investment (FDI) is played a vital role for boosting up the economies of developing countries. Hence, it is necessary to know the factors that determines the flows of FDI in the developing countries. This study has attempted to investigate how different factors affect the inflow of foreign direct investment in South Asian Countries. To attain the objective this study has collected data on the respective variables for 45 years and considered seven countries. The relationship between different economic variables and their overall impact on FDI inflows have been examined through various panel models like basic pooled OLS estimation, entity fixed effect model, time fixed effect estimation and random effect model. The outcome of this study is that GDP of the country is the main factor behind the FDI inflows in South Asian countries.

Key-words: Foreign Direct Investment (FDI), South-Asian Countries, GDP, panel data
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<tr>
<th>Abbreviation</th>
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<tr>
<td>ADP</td>
<td>Annual Development Program</td>
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<tr>
<td>ASEAN</td>
<td>Association of Southeast Asian Nations</td>
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<td>BIT</td>
<td>Bilateral Investment Treaty</td>
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<td>BRICs</td>
<td>The countries of Brazil, Russia, India and China</td>
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<td>EU</td>
<td>European Union</td>
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<td>FDI</td>
<td>Foreign Direct Investment</td>
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<td>GDP</td>
<td>Gross Domestic Product</td>
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<td>ICT</td>
<td>Information and Communications Technology</td>
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<td>IMF</td>
<td>International Monetary Fund</td>
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<tr>
<td>LCU</td>
<td>Local Currency Unit</td>
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<td>MENA</td>
<td>Middle East and North Africa region</td>
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<tr>
<td>OECD</td>
<td>The Organisation for Economic Co-operation and Development</td>
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<td>OLS</td>
<td>Ordinary Least Square Estimates</td>
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<td>NAFTA</td>
<td>North American Free Trade Agreement</td>
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<td>R&amp;D</td>
<td>Research and Development</td>
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<td>SAARC</td>
<td>South Asian Association for Regional Cooperation</td>
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<td>SSA</td>
<td>sub-Saharan Africa</td>
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<td>USD</td>
<td>United States Dollar</td>
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<td>VAR</td>
<td>Vector Autoregressive Analysis</td>
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<td>WDI</td>
<td>World Bank Development Indicator</td>
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Chapter 1: Introduction

1. Introduction
South Asian countries become liberalized in 1990s and early 2000s. Since then this region gets attraction of the foreign investors. In the recent years many South Asian countries are experiencing high volume of FDI inflows. Albeit, FDI inflows in the SAARC member countries are low compared to other countries in Asia. All the SAARC member countries are developing nations. FDI is generally considered as a great tool of economic growth and development. However, SAARC member countries are not very much successful in getting FDI. Hence, the burning question to the policy makers of South Asian countries is what factors played vital role in getting FDI. General consensus is overall economic policy oriented economic fundamentals along with national policy oriented determinants are the factors behind the flows of FDI. According to UNCTAD (1996), government incentives like tax holiday facilities played a pivotal role in attracting FDI. Brewer (1993) also emphasized on government policies that can have direct or indirect effect on the flows of FDI. Albeit, Contractor (1991), Caves (1996), and Villela and Barreix (2002) provided evidence that national and international government policies have little influence on FDI inflows especially when economic fundamentals are considered as the determinants of FDI inflows. Nunnenkamp (2002) also sought that common economic factors are still the main determinants of FDI inflows since 1980s.

To the best knowledge of the author, there are only a few studies that have considered overall economic policy oriented fundamentals as the determinants of FDI inflows. Nevertheless, study done by Globerman and Shapiro (1999), and Banga (2003) are the prominent studies that have focused on government policies on the flows of FDI. Globerman and Shapiro (1999) tried to identify the role of government international policies on FDI in Canada and found that multilateral policies have statistically significant impact on FDI inflows. On the other hand, Banga (2003) tried to identify the role of overall economic policy oriented variables on FDI inflows in fifteen developing countries. Using random effect model, the author has found that bilateral and regional investment treaties played the major role in attracting FDI in developing countries.

After careful review of the existing literatures on the determinants of FDI inflows, current study has attempted to see the impact of economic fundamentals on the flows of FDI in SAARC member countries. The main reason behind the selection of SAARC
member countries is all the member countries are developing countries and are highly
dependent on FDI for economic growth and development. The main objective of the
present study is to identify the impact of overall economic policy oriented economic
fundamentals on the flows of FDI in South Asian countries. To attain the objective,
present study has collected data on FDI and economic fundamentals for the period
from 1972 to 2016 on seven SAARC member countries. Using different panel
estimation techniques, this study found that market size (GDP) played the vital role in
getting FDI in the South Asian countries. The author expects that this study will help
the policy makers to have firsthand knowledge on the determinants of FDI inflows in
South Asia and take necessary policies to attract foreign investors.

1.1 Research question
Factors that have influence on the flows of FDI are multidimensional (Athukorala,
2009). Broadly, factors that determines the flows of FDI are categorized into two
groups: Overall economic policy variables and national policy variables. In the existing
literatures on FDI inflows, it is observed that the most common factors of FDI inflows
are market size, market expansion rate, trade liberalization, exchange rate, clustering
effects of firms, political stability, good governance, tax incentives, availability and cost
have identified market size as the major determinant of the flows of FDI. Similarly, out
of many other traditional determinants of the flows of FDI, Sahoo (2006) and Khachoo
and Khan, (2012) also found evidence that market size played as the main factor
behind FDI inflows. The common consensus in the existing literature is that market
size measured in GDP are the most common and popular determinants of FDI inflows.
The main objective of the current study is to identify role of economic fundamentals
along with market size on the flows of FDI in SAARC member countries. To attain the
goal, present study is systematically search the answer of the following questions.

A. What are the factors that have statistically significant impact on FDI inflows in
South Asian countries?
B. To what extent economic policy oriented variables have impacted on the flows
of FDI in South Asian Countries?
1.2 Objective of the Study
Developing countries of the world are usually looking for capital inflow in their very own economies either in direct or indirect form. The reason behind that is in general, the developing countries do not have sufficient national savings to finance in different socio-economic mega project. Getting finance from national or international lending agency is quite expensive as the capital comes with high interest rate. Hence, FDI is a lucrative option to get capital. Government of the majority developing countries are looking for FDI and took different initiatives to attract foreign investors. The policy makers are also interested to figure out a list of influential determinants of the flows of FDI. Many studies in the past have focused on a particular dimension of the determinant of FDI. The main objective of this study is to identify the effect of overall economic policy oriented factors on the flows of FDI in South Asian countries. To be more specific, this study aims to explore the effect of the economic determinants on the flows of FDI in seven SAARC member countries over the period of 1972 to 2016 using a panel econometric model.

1.3 Sustainability
FDI contains direct investment from the other developed countries. The South-Asian country has great need of FDI to improve their economic, social and environmental scenario. Now-a-days, the world is targets achieving sustainable development goals. The strategy outlined in the SDGs goal is to seek economic as well as social development considering the benefits for present and future generation.
In case of FDI inflow, the new business and entrepreneur activities have been growing up. The role of FDI inflow is based on three main pillars of economic sustainability, which consist of economic growth, income distribution, and reinvestment. This circle of economic solvency can provide future economic opportunities which are sustainable. Moreover, economic sustainability carried out the social improvement. FDI inflow has positive influence on reduction of gender inequality, enhancement of social welfare, knowledge infrastructure and good governance. To improve human development, FDI has worked like fuel because it has contribution in skill and knowledge gathering. Social effect is also closely related to economic growth which generates a dynamic economic system that can allocate financial sources to social sustainability projects like an increased employment because of the work force demand, increased years of life because of better medical assistance and an evolution
in poverty eradication which is one of the main goals of the society. The social as well as economic relationship among the countries will be developed which ultimately affects the sustainable progress.

At present, climate change and environmental destruction are a major concern for the whole world. For the last couple of decades, environmental degradation has accelerated across the whole world in the form of huge emission of greenhouse gas, high deforestation rate, extreme loss of biodiversity etc. Hence, it is a dire need of investing in climate change reduction projects and do green business to reduce the environmental degradation. For example, FDI can be a useful tool to achieve greenhouse gas emissions reduction goals by investing in the green project and thus helping home country’s government of bearing the whole burden. Most imperative targets where FDI can play a major role is helping in clean energy production and clean tech innovation by investing in green projects. So, sustainability in environment can be possible through FDI inflow. Taking that into account, it can be said that a strong connections between the sustainable development and FDI exists for the economic, social and environmental sustainability. FDI is a very important factor in the battle of achieving the SDGs as in the most countries of the world, the private initiatives is gradually taking the place of the public efforts. So, FDI should be encouraged in South-Asian countries for seeking the present as well as future benefits for the economic, social and environmental sustainability.
Chapter 2: Literature Review

2. Literature Review

Factors that determines FDI inflows are multi-dimensional (Athukorala, 2009). From this statement readers can understand that the determinants of FDI are diverse and there is no complete list of FDI determinants. From the literatures on FDI inflows, it is usually observed that the most popular determinants of foreign direct investments are market size, potential growth of market, openness of trade, exchange rate volatility, clustering effects of firms, political stability, institution, taxes, trade restrictions, trade effects, labour cost, productivity, and infrastructure.

Mohamed and Sidiropoulos, (2010) have been conducted a study on 12 MENA countries and 24 major receipts of FDI developing countries. The researchers have tried to find out the determinants of FDI using panel data. Study findings showed that the size of the host economy, the government size, natural resource and institutional variables are the major determinants of FDI inflows in MENA countries. Moreover, authors have suggested that MENA countries should minimize the trade barrier as well as improve their financial system to attract more FDI. Addison and Heshmati (2003) also conducted a research on 110 countries which has explained the determinants of FDI inflows using data from 1970-1999. Using fixed and random effect model, the study revealed that democracy and ICT have significant positive effects on the FDI inflows. In addition, democratization assistance has positive externality on influencing foreign investors. Authors have recommended that the ‘low ICT equilibrium trap’ should be broken down to enhance the FDI inflows.

Beside these, factors that influenced the enhancement or declining trend of FDI inflows were identified through a secondary research on African as well as Asian countries. Political and macroeconomic variables, growth and infrastructure development trend, performance of government, regulatory environment, investment promotion strategy and trade relationship conditions are often determines FDI inflows (Dupasquier and Osakwe, 2005). It is suggested by the researchers that countries should pay proper attention on maintain and improving relationship with the existing investors. Moreover, it is also important that they should offer incentives to attract the foreign investors. To achieve the sustain growth and development, it is the time to capture the opportunities of FDI because the market of this globalized world is very much competitive, especially in developing countries (Dupasquier and Osakwe, 2005).
Another paper by Asiedu, (2002) has explained how the determinants of FDI have been varied in countries of sub-Saharan Africa (SSA) compared to others. This study has tried to find out the reason behind the reduced FDI inflows in SSA. They found that infrastructure development as well as higher return on capital promotes FDI to non-SSA countries but have no impact on SSA. Openness to trade has affected both the SSA and non-SSA countries but the impact is low in SSA. Geographical location is another influencing factor that reduce FDI inflows in SSA. In addition, return on investment, openness of the host country, political risk, ratio of government consumption to GDP, inflation rate, GDP growth rate, taxes and tariff and labor cost are the major determinants of FDI (Asiedu, 2002). The BRICS economies have recently became a popular destination of FDI inflows. Jadhab, P. (2012) has focused on the determinants of FDI in BRICS countries. According to this study, economic, political and institutional factors have huge influence on FDI inflows in Brazil, Russia, India, China and South Africa. The comparative weightage of these factors were also explored. From the holistic approach, this research has considered 10 years (2000-2009) panel data of BRICS. Author has used the panel unit-root test and multiple regression model. The author took market size, trade openness and natural resource, inflation rate and macroeconomic stability as the economic determinants of FDI inflows. On the other hand, political stability or no violence, regular quality, voce and accountability, rule of law and enforcement, control of corruption, government effectiveness were considered as the political and institutional factors which might motivate the FDI inflows. From the analysis, it can be mentioned that market size measured by the real GDP is a significant determinant of FDI. It means most of the investment in the countries of BRICS are motivated by the market seeking purpose. In addition, trade openness, availability of natural resource, law and enforcement policy and accountability are found statistically significant variables to attract the FDI. Apart from it, trade openness have been found positive effect on FDI inflow. Although, the study identified natural resource availability has negative on FDI inflows in BRICS member countries.

In a recent study by Vita and Kyaw (2008), structural VAR analysis has been conducted to find out the determinants of capital flow (FDI and portfolio flows) in five developing countries across different time period. The research work has considered the quarterly data for the period 1976-2001. In that study, an empirically tractable structural VAR model of determinants of capital flows is developed; and variance
composition and impulse response analysis were used to investigate the temporal
dynamic effects of shocks to push and pull factors on FDI and portfolio flows. The
findings of the study are to some extent different from the other empirical analysis.
Authors have concluded with evidence that shocks to economic activity (e.g. foreign
output and domestic productivity) can influence the actual variation in capital flows.
Another research by Vogiatzoglou, K. (2007) has estimated a dynamic panel-gravity
model of bilateral FDI. It has investigated the location determinants of FDI inflows in
South and East Asia and tried to find out the short-run and long-run effects. The study
has focused on the gravity model in which the gravity-specific variables have been
found significant. Beside this, host-market size have been found as a significant
predictor of FDI inflows in South and East Asia. Lee and Kang (2007) have categorized
traditional and non-traditional predictors of FDI inflows. Traditional factors like market
size, government policies, and infrastructure played a vital role in FDI inflows.
Availability of local skills has been identified as an important predictor of non-traditional
determinants of FDI inflows. Ekanayake and Kornecki (2012) listed real per capita
income and expenditure on education, research and development expenditure, and
capital expenditure as the potential significant predictor of FDI inflows. In addition,
Ekanayake and Kornecki (2012) pointed out per capita state taxes, unit labour cost,
manufacturing density, unionization, and unemployment rate has negative impact on
FDI inflows. Another important study by Zheng, P. (2009) has figured out market size,
balance of trade, labour costs, and country’s political risk, policy liberalization are the
key factors behind the FDI inflows in Asian countries. This study provides first hand
evidence to the readers that export volume, market size, and cost of borrowing carried
important role for FDI inflows in China’s, whereas geographical distance and cultural
diversity played important role for FDI inflows in India. In the recent past, Nisar,
Boateng, Hua and Wu (2015) provided evidence that real GDP and sector wise GDP
of the country, exchange rate and trade openness have a statistically significant role
on FDI inflows. Likewise, Seetanah and Rojid (2011) also identified trade openness
as a major factors of FDI inflows in Mauritius.

Like trade openness, many researchers identified exchange rate as another critical
predictors of FDI inflows. Blonigen (2005) provided evidence that depreciation of
exchange rate increase the flow of FDI. Sekkat, K. (2012) also agreed that exchange
rate depreciation has huge influences on FDI inflows. Apart from it, Sekkat, K. (2012)
argued that trade openness, institutions and good infrastructure influenced the FDI inflows. Although, Faeth, I. (2005) has found exchange rate appreciation discouraged FDI in the medium-term, but encourage FDI inflows in the long run. Apart from economic factors of FDI inflows, Todo (2011) has suggested that entry costs to the foreign markets have played an important role on FDI inflows. Tondl and Antonakakis (2011) have identified low wage rate in the country and attractive tax rates have positive influence in bringing FDI. Similarly, Obwona (2001) also found that tax holiday facilities positively influence FDI inflows. Das, B. (2017) has suggested human capital and good governance play crucial roles in promoting FDI inflows. Similar findings have been provided by Kobrin (2004) where the author argued that human resource of a country played a vital role in increasing the FDI inflows. Sakali (2013) also argued that high quality of the workforce contributes to FDI inflows. In a recent study, Bae (2015) has enriched FDI inflows related literatures by offering a new insight. The author identified ICT is playing vital role in these days to increase FDI inflows. Bae (2015) claimed that ICT contributed to increase FDI inflows by (i) lowering entry barriers (as information searching costs reduced), (ii) reducing inventory costs, and (iii) plummeting government corruption. Reduction of these three things can increase productivity, which have attracted more FDI inflows. Bae (2015) has used fixed effect models and Hausman-Taylor models using a panel data set of 199 countries from 1970 to 2010. The study result revealed that ICT infrastructure has positive role in increasing FDI inflows and this predictor is statistically significant. In a similar study, Addison and Heshmati (2003) have found that ICT is an important determinant of FDI flows in developing countries. Temouri and Jones (2016) have found the technological intensity has a strong impact on decision for FDI. Beside these, Kok and Ersoy (2009) have found that the communication variable is the most important determinant of FDI.

After having gone through the vast literatures on FDI inflows, present study attempts to investigate the effect of economic determinants on FDI in South Asian countries. To the best knowledge of the author, few studies have focused on the economic determinants of FDI inflows in South Asian countries. This research study may contributes to the existing literatures by empirically examining the effect of economic determinants on FDI inflow using different panel data models. To provide a precise estimate, this study has taken seven South Asian countries as the sample.
Chapter 3: Theoretical Framework

3.1 Fast and Slow Variables

3.1.1 Fast Variables
Variables that are influenced by the circumstances around are called fast variables. More specifically, fast variables usually change faster in any condition by the changes in the circumstances around. Fast variables are sensitive and can be considered as the independent variables.

3.1.2 Slow Variables
The variable that takes time to be influenced by the changes in the circumstances around is called slow variables. Significantly, the slow variable changes or influences slowly in any condition by the changes in the circumstances around. Slow variables are less sensitive and often considered as the dependent variable. Present study has attempted to attain its objective by considering FDI inflows as the slow variable, and GDP, secondary education, lending interest rate, official exchange rate, inflation, GDP deflator, external debt stocks etc. as the fast variables.

FDI as Slow Variable
As FDI inflow is the subject matter of the study, it is considered as the slow and dependent variable which is being influenced slowly by the fast variables considered in this paper such as GDP, exchange rate, inflation etc.

GDP as Fast Variable
In this study, GDP is considered as fast variable. The reason behind this consideration is that if a country’s GDP increases, usually its FDI inflows also increased.

Secondary Education as Fast Variable
Secondary education (number of people) is considered as the fast variable as it indicates the availability of skilled labour. If skilled labours are available more in numbers, then it attracts the foreign investors to invest in a country in the form of FDI.

Lending Interest Rate as Fast Variable
Lending interest rate refers to the bank interest rate. Bank and other financial institutions usually offer the short and medium-term financing to the private sector in
return of interest rate. When lending interest rate is high, it increases the cost of capital and thus distracts the FDI investors rapidly.

**Official Exchange Rate as Fast Variable**

Official exchange rate refers to the exchange rate determined by the national authorities or to the rate, that is, determined legally in sanctioned exchanged rate market. If the currency of a domestic country appreciates, it often distracts the foreign investors and vice versa.

**Inflation as Fast Variable**

Inflation is usually measured by the annual growth rate of the GDP implicit deflator which shows the ratio of price changes of an economy as a whole. If the inflation rate of an economy increases, it automatically discourages the foreign investors to invest hastily.

**External Debt Stocks as Fast Variable**

Total external debt refers to debt owed by non-residents repayable in currency, goods, or services. Total external debt is the sum of public, publicly guaranteed, and private non-guaranteed long-term debt, use of IMF credit, and short-term debt. Short-term debt includes all debt having an original maturity of one year or less and interest in arrears on long-term debt. Data are in current U.S. dollars. When external debt stocks of a country changes, it also influences the inflow of FDI.

If economic policy oriented variables are slow, then its effect on the FDI inflows are difficult to find out. In the economic policy of a nation, national FDI policy of an economy and international FDI policy clearly play a vital role in getting increased number of FDIs.

### 3.2 Economic Policy

Economic policy is the set of policies that are, in general, taken by a government body of a country to manage its economy. It refers to the systems of setting levels of taxation, government budgets, money supply and interest rates as well as the labour market national ownership of an economy.

Economic policy of a nation plays significant role in getting FDI. Economic policy consists of macroeconomic stabilization policy, trade policy, industrial policy,
regulatory policy, policies designed to create economic growth and development, and policies dealing with redistribution of income, wealth and property, anti-trust policy etc. Economic policies that help getting FDI of an economy are significantly trade policy, exchange rate policy, capital count transaction policy related to FDI, corporate tax rates, national FDI policy, and international FDI policy.

3.3 Overall Economic Policy
Overall economic policy of an economy belongs to economic variables. Economic factors played vital role in determining FDI inflows in the developing countries. For example, when inflation rate a country goes high then it discouraged foreign investors to invest large amount inside the country.

3.4 National FDI policy
Host country’s government FDI policy, often known as national FDI policy of an economy plays significant role in getting FDI. Under national FDI policy, policies like tax holiday and non-fiscal incentive are used to attract FDI. For instance, if tax holiday facility is offered then foreign investors come forward to invest high amount in the home country. Hence, it can be said that national FDI policy is definitely not a slow variable but a fast variable.

3.5 International FDI policy
Bilateral investment treaties and regional investment agreements are usually considered as important international FDI policies. As said, these two policies are considered as the tools of international FDI policy which have impact on FDI inflows. If any mutual investment agreement has been signed by a host and investor country, it definitely increases the number of investment in both countries. International FDI policy is also known as a fast variable that helps FDI inflows.
3.6 Policy Related Variables that Influencing Tangible and Intangible Infrastructure

The policy variables that influence tangible and intangible infrastructure with a delayed effect pattern are explained underneath.

3.6.1 Tangible Infrastructure

Tangible infrastructure refers to the capital intensive assets of a country that have high location specificity and are not relocated to another use. The most common example of the tangible assets of a country are airports, seaports, land ports, gas pipelines, electricity grids, and other immovable assets. To ensure proper tangible infrastructures requires large sunk costs. This huge costs are recovered by the productive usage of these assets over the long period of time. Annual Development Program (ADP) is an important factor of developing tangible infrastructures inside the country by capital investment.

3.6.2 Intangible Infrastructure

The term intangible infrastructure refers to the set of factors that helps to improve human resources and smooth the ways of business activities. These factors can be might be institutional, political, legal, or socio-economical. It mostly refers to the knowledge driven areas such as education, health and technology. If the secondary education rate of a country improves, it increases the availability of skilled numbers of labours which later brings increased FDI inflows. Similarly, if a country can manage to keep mild inflation rate for long period of time, it may also help FDI inflows to be increased.

3.7 Expecting FDI Inflows

If tax and tariff rates are lower, it means the restrictions on FDI are relaxed. In such a situation, a country can expect more FDI inflows. For instance, if the host country’s economic policy or national FDI policy changes in positive manner, such as a reduction in tax rate, it has affected the FDI inflow. Tax is a major part of a company's expenses. Tax stability certificate given by the recipient country ensures the tax rate stability and secures investment environment. This sort of activities increases the opportunity of a country getting more FDI. If there is any agreement been signed on between both the host country and recipient country on FDI inflow and outflow, then it can be expected to have FDI inflow at a higher scale.
3.8 Not expecting FDI Inflows
When the host countries’ government changes its overall economic policy or the national FDI policy or the international policy for FDI, then it creates no profit or less profit for the host country and the recipient country should expect low FDI inflows. For example, if the host country’s government increase the rate of tax on FDI outflow, it can hinder the FDI inflow for a recipient country. And, the same situation goes for the host country’s national FDI policy as well. If the international FDI policy changes which makes no or less profit or return on FDI for the host country, then the recipient country can expect low or less FDI inflows.

3.9 Variables that Attract FDI Inflows According to “Theory”
Factors that influence FDI are multidimensional. The most common determinants of FDI are market size, trade openness, total labor force, labor costs, labor productivity, political risks, infrastructure of the country, economy’s growth rate, tax rate, tax holiday facilities, inflation, total reserve of the recipient country, human capital, tariff policy and trade liberalization. This paper considers the following variables as the proxy different factors. GDP for measuring growth, secondary education for measuring skilled labours, lending interest rate for measuring cost of capital, official exchange rate for measuring real exchange rate, GDP deflator for measuring inflation rate, external debt stock for measuring financial health of recipient country.

**GDP**
The role of GDP growth in attracting FDI inflow has always been controversial. In the existing literatures, Lunn (1980), Schneider and Frey (1985) and Culem (1988) have found that GDP growth has significant positive impact on FDI inflows. According to, Artige and Nicolini (2005) market size is one of the most influential factors of FDI and usually measured through GDP or GDP per capita.

The Growth Hypothesis developed by Lim (1983) revealed that a rapidly growing economy provides relatively better opportunities for making profits through FDI inflows, than the countries that are growing slowly or not growing at all. Hence, it can be concluded that countries with high volume of GDP or countries that maintained high GDP growth rate in the recent years are more likely to be successful in attracting FDI.
Secondary Education
If a country's primary, secondary and tertiary education system develops, it might help in attracting FDI. According to Goldsbrough (1979), Saunders (1982), and Flamm (1984), a country's education system ensures certainty of skilled labour which helps in bringing FDI inflows. Hence, it can be concluded that when a country's education system, more specifically secondary education system improved, then the number of skilled labor may also increases. As a result, production rate might be higher foreign investors are more attracted to invest.

Lending Interest Rate
Interest rate plays a vital role in attracting FDI. It is a rate that goes both ways, as anyone has to pay if she/he borrows or receive if she/he saves. When an economy’s interest rate declines, it attracts the investors of foreign country to invest more as of getting more return from investment. Reduced interest rate works as an incentive towards the foreign investors to invest more in recipient countries (ODI, 1997 and Shamsuddin, 1994).

Exchange rate
Exchange rate plays a vital role in attracting FDI. The relationship between FDI and exchange rate is inverse. In the literatures, some studies found significant relationship between FDI and exchange rate and some did not find any. This result is not surprising, as the inflows of FDI can also influence the appreciation or depreciation of recipient country through increased demand of local currency of home country, while the appreciation or depreciation of exchange rate of the recipient country can also influence the FDI inflow of that country.

GDP Deflator
Like exchange rate, GDP deflator is another important variable that has potential to attract the FDI inflows. It measures the price levels of domestically produced final goods and services of an economy. It measures the rate of inflation or deflation with respect to a specific price of the base year. In this paper, GDP deflator has been used as the proxy of inflation to see its effect on FDI inflow. When rate of inflation increases, it also increases sales tax rate. Thus, it discourages foreign company’s to invest. Hence, FDI inflow decreases.
**External Debt Stock**
Debt stock also helps in getting FDI. It has strong influences on FDI inflow in the country with higher stock returns.

**Environment**
Countries that have friendly business environment for investment (for example ease of doing business) are supposed to attract more FDI compared to others. Similarly, countries that allows easy and safe return of the investment to the home countries of the investor also attracts FDI.

**Trade Openness**
Countries with open market are more likely to attract the FDI inflows. The reason is more open the markets of the recipient county, the more they are liberalized for trade which is an incentive for investors.

**Costs of Labor**
Cost of labour has significant impact on the inflow of FDI. The importance of cheap labour in the production process is considered as one of the most significant determinants of FDI inflows. Different studies in the literatures have shown that low wage attracts FDI.

**Political Risk**
If the recipient country’s political condition is not stable, then it hinders the inflow of FDI. The reason is that the political instability discourages foreign investors to invest in a country where the political condition is instable.

**Effectiveness of Government policies**
Government policies of a country are always important for a country’s FDI inflows. Favorable government policies works as an incentive to the foreign investors. For example, in these days bilateral investment treaties and regional agreements on investment have played immense role in getting FDI.

**Bilateral Investment Treaty**
A bilateral investment treaty is an agreement between two countries that make a contract or treaty for private investment by their nationals and companies in both countries. It aims to increase the investment in the economy of both countries and protect the investment.

**Regional Agreements on Investment**
The agreements or treaty which is prepared among the countries of a particular region with the aim of the economic development through FDI is considered as regional
agreements on investment. Various types of regional investment agreements are exist currently in this world. The most common regional agreements on investment are *European Union (EU), NAFTA, ASEAN, OECD, BRIC, SAARC etc.*

### 3.10 Direct and Indirect Policies that Attracts FDI

**Direct Policies**
- Favorable industrial policies that offer fiscal incentives
- Efficient administrative system and reduce the problem of red tape.
- Establishment of Export Processing Zones
- Ensure good infrastructures
- Supply of skilled and semi-skilled workforce
- Policies on continuous improvement of macroeconomic indicators
- Public-private partnership along with privatization opportunities
- Development of fully functional financial market
- Ensuring the application of concurrent labour market policy, trade policy, and export promotion policy
- Interactions among research institutions and other firms
- Encouragement of R&D
- Labour mobility
- Supply side management
- Encouraging technological capabilities

**Indirect Policies**
- International, regional and bilateral treaties including BITs and WTO
- Work on reducing political risk and instabilities
- Ensuring proper usage of natural resources
- Make ties with countries using historical relation, languages, races etc.
- Reducing the rate of corruption
- Help in establishing powerful labor organization, labor law and labor ministry
3.11 Foreign Direct Investment Theories: An Overview of the Main FDI Theories by Lipsey, R.E

In recent times, both at national and international level, foreign direct investment (FDI) is receiving more focus as a tool of economic growth. In the existing literatures of FDI, it is observed that there are many theories have tried to explain the determinants of FDI. Among many theories of FDI, the most comprehensive theoretical framework has been given by Robert E. Lipsey (2001) and John H. Dunning and Sarianna Lundan (2008). Robert E. Lipsey, a famous economist, who believed that FDI is a significant component of economic growth of all countries around the world.

To understand the basics of FDI, the first thing is to understand the simple motivations that cause a company or an individual to invest overseas rather than export or outsource manufacturing to country wide firms. There are many research papers that have documented different aspects of foreign direct investments and provide essential evidences on the motivations of FDI. Economists, i.e., J. Dunning, and S. Hymer believe that FDI is a vital element for the economic growth of all countries, particularly for the developing or least developed countries. There are some proofs to aid the idea that FDI promotes the competitiveness among neighbourhood firms. Blomstrom (1994) revealed evidence in support of this view from Mexican and Indonesian perspectives. But Smarzynska (2002) has discovered that nearby suppliers in Lithuania are benefited spill over from imparting overseas clients. Caves (1996) in his study have found that the efforts made by the way of numerous countries in attracting foreign direct investments are due to the ability of the effects on economic system.

The most common benefits from which FDI recipients countries may benefitted are enhanced productivity, managerial abilities, knowhow, international manufacturing networks, decreasing unemployment, and access to outside markets. Borensztein (1998) have supported these thoughts and explored about FDI as a method of accomplishing generation spill-over’s, with greater contribution to the financial boom.

From the above discussion, it can be said that there are many economists described the motivations of FDI from different perspectives and there is no single commonly accepted theory on FDI inflows. As a result, this paper has concentrated mostly to describe the Lipsey’s contribution identifying the motivations behind FDI inflows. The purpose of this section is to outline the basic motivations of FDI through the discussion of Lipsey’s contribution. Lipsey, R.E (2001) has discussed FDI inflow from both micro
and macroeconomic point of views. According to macroeconomic view, FDI is the capital inflow from country of origin to a host country. The FDI statics is found from a country’s balance of payments. Microeconomic view of FDI inflows has explained FDI as the investment from one country to another from a particular investor. It also monitor the consequences of the multinational companies’ investment. Lipsey (2001) also highlight on domestic market size and differences in factors cost as the influential factors of FDI flows.

To measure FDI, flows, and stocks of direct investment are the simplest clear quantitative signs of FDI. The activity is repeatedly not in the same industry as the stock or has not evolved from the same home country or same host country (Lipsey 2006). For this purpose, feasible, emphasized studies have emerged on activity, such as consequence or employment, rather than those emerged on balance-of-payments stocks and flows.

The relationship between FDI and growth is quiet complicated. FDI is surrounded by two things but several sets of functions. The first thing has mentioned about the international finance, or macro view. The second might mention about the technical organization, or micro view. The international finance regard FDI as a certain form of the flow of capital across national frontier, from home countries to host countries.

The technical organization tries to explore the outcome to the financier, and to home and host countries. These consequences glow from their trade, labour, production, and their flows and stocks of rational capital, boundless by the capital flows and stocks in the balance of payments. Lipsey, R.E (2006) concluded that ‘effort to find a coherent relationship between the enlargement of FDI inflows and national economic growth do not yield strong and balanced relationships’.
4. Methodology

The main purpose of the current study is to identify the role of various economic determinants on FDI inflows in SAARC countries. To see the impact, present study has develop an economic model and concerned econometric model. In the economic model, FDI is a function of economic determinants or economic policy oriented factors.

\[ FDI = f(\text{Economic determinants} / \text{economic policy oriented factors}) \]

In the econometric model, FDI is the dependent variable, and GDP, secondary education, lending interest rate, official exchange rate, inflation and external debt shocks have been considered as the explanatory variables.

\[
(FDI) = \beta_0 + \beta_1 (GDP) + \beta_2 (\text{Secondary Education}) + \beta_3 (\text{Lending Interest Rate}) \\
+ \beta_4 (\text{Official Exchange Rate}) + \beta_5 (\text{Inflation}) \\
+ \beta_6 (\text{External Debt Stocks}) + \mu
\]

4.1 Economic Policy Oriented Factors

Economic factors that are influenced by the government policy directly is considered as economic policy oriented factors. These variables are mostly macro-economic variables. In table 1, the name of the determinants, concerned variables, their unit of measurement and potential signs have been mentioned.

<table>
<thead>
<tr>
<th>Name of the Factors</th>
<th>Variable</th>
<th>Unit of Measurement</th>
<th>Potential Signs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Market Size</td>
<td>GDP</td>
<td>(USD)</td>
<td>+</td>
</tr>
<tr>
<td>2. Availability Labour</td>
<td>Secondary Education</td>
<td>(Number)</td>
<td>+</td>
</tr>
<tr>
<td>3. Cost of Borrowing</td>
<td>Interest Rate</td>
<td>(Percentage)</td>
<td>-</td>
</tr>
<tr>
<td>4. Value of Currency</td>
<td>Official exchange rate</td>
<td>(Local Currency Unit per USD, period average)</td>
<td>-</td>
</tr>
<tr>
<td>5. Inflation</td>
<td>GDP deflator</td>
<td>(Annual Percentage)</td>
<td>-</td>
</tr>
<tr>
<td>6. Financial Condition</td>
<td>External debt stocks</td>
<td>Total (current USD)</td>
<td>-</td>
</tr>
</tbody>
</table>
4.2 Sample Size and Data Sources
The study design of the current study follows panel study methods. Present study has collected data on some selected economic factors of seven South-Asian countries for the period from 1972 to 2016. The data set is mainly collected from World Bank Development Indicators (WDI). One thing need to mention here that, there were some missing data in the complete data set. To handle the data set, the author has used multiple imputation method in STATA.

4.3 Empirical Methodology
4.3.1 Empirical Methodology: Panel Data Models
Panel data is the combination of both cross-section and time series data. It is also called longitudinal data. There are two major benefits of using panel data. Firstly, more reliable estimates of the parameters can produce from panel data. The reason is panel data model allows to control unobservable factors that vary across units but not over time and/or unobservable factors that vary over time but not across units. This feature of panel data model helps to reduce estimation bias. The second benefit of panel data is identification and measurement of effects are possible. There are different methods of analysing panel data and the most common models are fixed-effects and random-effects regression models. Different panel data estimation techniques have been used to estimate the study model. In this section, the author describes how different estimation techniques work for estimating the model.

4.3.2 Basic Panel Data Analysis: Pooled OLS Estimation
Pooled OLS Estimation is the simplest way to analyze panel data. This technique allows pooling observations over time and running an OLS. Pooled OLS estimation treats each observation as an independent entity. Pooled OLS estimation works in the following way.
Let’s assume the basic panel model is $Y_{it} = \alpha + \beta X_{it} + \mu_{it}$
Where $i = 1, \ldots, N$ and $t = 1, \ldots, T$.
Basic panel model contains N individuals, which are observed over T periods.
Pooled OLS model assume that $\alpha$ and $\beta$ are same for all $i$ and all $t$. The pooled OLS estimation model provides consistent estimators for $\alpha$ and $\beta$ only when the zero conditional mean assumption $E [\mu_{it} | X_{i1}, \ldots, X_{iT}] = 0$ is satisfied. Violation of this assumption causes the estimators to be biased and inconsistent.
4.3.3 Panel Data Model: Assumption on Error Term for Random Effect and Fixed Effect Estimation

Consider the basic linear panel data model \( Y_{it} = \alpha + \beta X_{it} + \mu_{it} \)

Where \( i = 1, \ldots, N \) and \( t = 1, \ldots, T \),

In panel data models, it is assumed that error term \( \mu_{it} \) is divided into two parts.

\( \mu_{it} = u_i + v_{it} \)

In this specification, one part \( u_i \) does not vary over time and another part \( v_{it} \) varies over time. The term \( u_i \) is without a time subscript. It reflects factors that are unobserved and do not vary over time for the individual. It may include factors such as genes, early childhood environment, parental background, certain personality traits etc. Here, \( u_i \) is the cross-section (country) specific effect. This is called one way-error component model.

In two-way error component model error term \( \mu_{it} \) is divided into three parts:

\( \mu_{it} = u_i + f_t + v_{it} \)

where, \( f_t \) is a time specific effect. Note that the term \( f_t \) is without the cross-section subscript. Here, \( f_t \) has same effect on all cross-sections. The cross-sectional specific effect \( u_i \) and the time specific effect \( f_t \) are not directly observable and have to be estimated. Assumption made on \( u_i \) and \( f_t \) determines what type of panel data model need to use.

4.3.4 Panel Data Model: Random Effect Estimation

Panel data models are analysed as either random effects models or fixed effects models. In the random effect model, it is assumed that \( E [v_{it} | X_{i1}, \ldots, X_{iT}] = 0 \).

It means unobserved factors that are fixed over time and independent of the value of the X variables for all time periods. Random effects assumption is similar to the zero conditional mean assumption. The assumption says that unobserved, time-invariant, factors such as ability, preferences, parental background are independent of all included X variables. For instance, if Y denotes earnings and X schooling, it says that such unobserved factors are independent of the level of schooling. But this is exactly what experts often do not believe. As a result assumption of the random effects model is unrealistic.

4.3.5 Panel Data Model: Entity Fixed Effect Estimation

In the fixed effect model, the assumption is relaxed and allows for:

\( E [v_{it} | X_{i1}, \ldots, X_{iT}] \neq 0 \)
Here, it is assumed that the unobserved factors that is fixed over time and is not independent of the value of the X variables for all time periods. Without an experiment, this is the most realistic case. Even if fixed effect allow for this particular type of break of the zero conditional mean assumption, the fixed effects model may still produce consistent estimates of the causal effect. To get more specific, consider the fixed-effect model:
\[ Y_{it} = \alpha + \beta X_{it} + u_i + v_{it} \]
Where, \( X_{it} \) is a vector of exogenous regressors and \( v_{it} \) is independent over time and across individuals. By the fixed effects assumption, it is not possible to rule out correlation between \( u_i \) and \( X_{it} \). As an example, \( u_i \) could represent unobserved ability (at least the part of it that does not vary over time).

### 4.3.6 Panel Data Model: Fixed Effect Estimation with Time Effects

Time fixed effect model can provide reliable estimates when unobserved factors vary over time but not across units. Time fixed effect regression model looks like following.
\[ Y_{it} = \beta X_{it} + u_i + f_t + v_{it} \]
Where, \( \mu_{it} = \mu_{it} = u_i + f_t + v_{it} \).
Here it is observe that error term is divided into three parts. Component \( f_t \) represents all unobserved factors that vary over time but not across units.
In time fixed effect model, it is assumed that net effect of unobservable factors on \( Y \) for \( T \) time period are constant over time. It is a fixed parameter and defined as \( \gamma_i \).
Therefore, the fixed effects model can be rewritten as following.
\[ Y_{it} = \beta X_{it} + \alpha_1 + \alpha_2 + \ldots + \alpha_N + \gamma_1 + \gamma_2 + \ldots + \gamma_T + v_{it} \]
The unobserved error component \( v_i \) has been replaced with a set of fixed parameters. The unobserved error component \( f_t \) has been replaced with a set of fixed parameters. T parameters then control the net effects of all unobservable factors that vary over time but not across units.
Chapter 5: Result and Discussion

5.1 Descriptive Statistics

Result and discussion part of the present study starts with the descriptive analysis of variables considered for this study. Table 2 represents the basic statistics of the variables considered for this study.

Table 2: Basic Statistics for the variables of Interest

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>315</td>
<td>315</td>
<td>315</td>
<td>315</td>
<td>315</td>
</tr>
<tr>
<td>Mean</td>
<td>9.641e+10</td>
<td>1.040e+07</td>
<td>34.55</td>
<td>8.254</td>
<td>9.511e+09</td>
</tr>
<tr>
<td>Standard Deviation (SD)</td>
<td>2.701e+11</td>
<td>2.239e+07</td>
<td>27.68</td>
<td>7.842</td>
<td>1.311e+10</td>
</tr>
<tr>
<td>Minimum (Min)</td>
<td>1.246e+07</td>
<td>446</td>
<td>3.930</td>
<td>17.63</td>
<td>326,000</td>
</tr>
<tr>
<td>Maximum (Max)</td>
<td>4.880e+12</td>
<td>1.010e+08</td>
<td>129.1</td>
<td>80.57</td>
<td>5.490e+10</td>
</tr>
</tbody>
</table>

Descriptive statistics above shows the number of observation, mean, Standard deviation, minimum and maximum value for all the dependent and explanatory variables. In this study foreign direct investment serves as the dependent variable, and GDP, secondary education, lending interest rate, official exchange rate, inflation, and external debt stocks are the most important explanatory variables. Each variables have 315 observation for a panel of 7 developing countries in South Asia. From the descriptive statistics table, it is also observe that the mean value of foreign direct investment (measured in million US$ and as BOP) in South Asian countries is 1.159e+09. Similarly, the average value of the explanatory variables such as GDP is 1.159e+09, secondary education is 1.040e+07, lending interest rate is 13.57, official exchange rate is 34.55, inflation 8.254, and external debt stock is 9.511e+09.

5.2 Empirical Results

Panel data, also called cross sectional time series data, are data where same entities (panels) like people, firms, and countries were observed at multiple time points. The objective of the study is to find out the impact of different economic fundamentals on FDI inflow in South Asian countries. For the study purpose author use a panel data set of 7 countries for the year from 1972 to 2013. With the help of STATA 13 software,
author performed different panel data analysis tools to obtain the objective. Two types of panel analysis were done for the study— one is basic panel models (Fixed effect and Random Effect Model) along with pooled OLS.

**Basic Panel Models**

For the basic panel model analysis author uses robust standard errors. Using robust standard errors is a common practice in econometrics analysis. The intuition of robust standard errors is robust standard errors are typically bigger than OLS standard errors in economic applications. That's why using robust standard errors are viewed as an effort to be conservative. In case of large sample size heteroskedasticity tests will almost surely turn up positive, so using robust standard error approach is appropriate.

**Pooled OLS Estimation Result**

<table>
<thead>
<tr>
<th>Variables</th>
<th>OLS</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td></td>
</tr>
<tr>
<td>GDP</td>
<td>0.0233***</td>
</tr>
<tr>
<td></td>
<td>(0.00304)</td>
</tr>
<tr>
<td>Secondary education</td>
<td>45.44</td>
</tr>
<tr>
<td></td>
<td>(31.89)</td>
</tr>
<tr>
<td>Lending interest rate</td>
<td>9.363e+06</td>
</tr>
<tr>
<td></td>
<td>(2.333e+07)</td>
</tr>
<tr>
<td>Official exchange rate</td>
<td>4.897e+06*</td>
</tr>
<tr>
<td></td>
<td>(2.675e+06)</td>
</tr>
<tr>
<td>Inflation</td>
<td>-1.000e+07*</td>
</tr>
<tr>
<td></td>
<td>(5.951e+06)</td>
</tr>
<tr>
<td>External debt stocks</td>
<td>-0.0970**</td>
</tr>
<tr>
<td></td>
<td>(0.0390)</td>
</tr>
<tr>
<td>Constant</td>
<td>-4.120e+08</td>
</tr>
<tr>
<td></td>
<td>(3.955e+08)</td>
</tr>
<tr>
<td>Observations</td>
<td>315</td>
</tr>
</tbody>
</table>

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

One way of analysing panel data by just pooling all the observations of the study and running an OLS by treating all the observations are independent.

The response variable for this study is FDI (net inflow). The explanatory variables of interest are GDP, secondary education, lending interest rate, official exchange rate, inflation, and external debt stocks. Present study is figuring out whether or not any
evidence of relationship between the dependent and explanatory variables after controlling for other explanatory variables. To do that we set up a series of hypothesis test which have corresponding null hypothesis. The null hypotheses are as follows-

First in the population there is no relationship between FDI and GDP after controlling all other explanatory variables considered in the model.

Secondly, in the population there is no linear relationship between FDI and secondary education after controlling all other explanatory variables considered in the model.

Thirdly, in the population there is no linear relationship between FDI and lending interest rate after controlling all other explanatory variables considered in the model.

Fourthly, in the population there is no linear relationship between FDI and official exchange rate after controlling all other explanatory variables considered in the model.

Fifthly, in the population there is no linear relationship between FDI and inflation after controlling all other explanatory variables considered in the model.

Finally in the population there is no linear relationship between FDI and external debt stocks after controlling all other explanatory variables considered in the model.

After running t test the corresponding p values for each explanatory variable have been found. It is noticed from the output table that corresponding P values of the explanatory variables secondary education, lending interest rate, official exchange rate, and inflation are not particularly low. As a result, there is not enough evidence to reject the null hypothesis of no linear relationship.

On the contrary corresponding P values of explanatory variables GDP and external debt stock are quite low. As a result, it is possible to reject the null hypothesis of no linear relationship between FDI and GDP, and FDI and external debt stock. Hence, an evidence have been found that there is a linear relationship between FDI and GDP, and FDI and external debt stock.

It is observed that the coefficient of GDP is positive. It means GDP of the country increases the levels of FDI inflows. There is also a numerical interpretation for this relationship. For an increase in one unit of GDP there is on average an increase in the value of FDI inflow of 0.0233 unit.

On the other hand, negative coefficients have observed in case of external debt stock variable with significant p values. It means higher external debt stocks of the country reduces the levels of FDI inflows. The numerical explanation of this relationship is one unit increase in external debt stock reduces the FDI inflow by 0.0970 unit.
Entity Fixed effect regression

Apart from pooled OLS regression model, the author have employed entity fixed effect regression to control for omitted variables that differ among panels but are constant over time. In the present study model the author is interested in examining the effect of GDP, secondary education, lending interest rate, official exchange rate, inflation, and external debt stocks on FDI inflow. It is assumed that there are other effects than the explanatory variables considered in the model that are different among countries but constant over time, like, for example, geographical location, that is not included in the model but influence FDI. The fixed effect model allows for heterogeneity among countries by allowing having its own intercept value. The term fixed effect is due to the fact that although the intercept may differ across countries, but intercept does not vary over time. That means, it is time invariant.

<table>
<thead>
<tr>
<th>Table 4: Entity Fixed Effect Regression Model Test Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variables</td>
</tr>
<tr>
<td>---------------------------------------------------------</td>
</tr>
<tr>
<td>GDP</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Secondary education</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Lending interest rate</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Official exchange rate</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Inflation</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>External debt stocks</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Constant</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Observations</td>
</tr>
<tr>
<td>Number of Country</td>
</tr>
<tr>
<td>Country FE</td>
</tr>
</tbody>
</table>

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

The author have used fixed effect model to analyse the impact of explanatory variables that vary over time. The reason is fixed effect can explore the relationship between the
dependent and explanatory variables within country. Each country has its own individual characteristics that may or may not influence the dependent variables. For example geographical condition of a particular country could have some effect on FDI inflows. For using fixed effect model, it is always assumed that there might have something within the individual country which could bias the dependent or independent variables. As a result, to avoid biasedness the author tried to control this with the help of fixed effect model. Fixed effects remove the effect of time invariant features. Hence, through fixed effect model we can assess the net effect of the predictors on the outcome variable FDI inflows.

Fixed effect model also assumes that time invariant characteristics are unique to each country and it should not be correlated with other individual characteristics of the countries. Coefficients of the predictors along with P values are displayed in table 4. Each coefficient indicates how much dependent variable changes when predictor changes by one unit. Two-tail P values test the hypothesis that each coefficient is different from 0. To reject the null hypothesis, P value of the corresponding explanatory variable has to be lower than 0.05. If it is happen then we can say that the variable has a significant influence on the outcome variable.

From table 4, it is observed that in the fixed effect model FDI inflow is the outcome variable and GDP, secondary education, lending interest rate, official exchange rate, inflation, and external debt stocks served as the explanatory variables. From the fixed effect output it is also observed that none of the explanatory variables except GDP are significant at 5 percent level. It means all the coefficients of the explanatory variables except GDP are not significant to explain the outcome variable FDI inflow. Like pooled OLS estimation outcome, entity fixed effect estimation also provide evidence that the explanatory variable GDP is significant to explain the outcome variable FDI inflow. It indicates that one unit increase in GDP increases the FDI inflow by 0.0195 unit. Finally, it can be said that the fixed effects model controls all the time invariant differences between the individuals, so the estimated coefficients of the predictors cannot be biased because of omitted time invariant characteristics.

**Fixed Effect with Time Fixed Effect Regression**

In the time fixed effect model, the author considers there are unobserved effects that vary across time rather than across country that have impact the FDI inflow. For instance, national economy may have some impact on GDP in the same way but it
may be different at different point of time. To control for such unobserved variable that may vary by time, author run time fixed effects regression model. Such model may look like-

\[(FDI)_{it} = \gamma t + \beta_1 (GDP)_{it} + \beta_2 (Secondary
ducation)_{it} + \beta_3 (Lending
terest Rate)_{it} + \beta_4 (Official Exchange Rate)_{it} + \beta_5 (Inflation)_{it} + \beta_6 (External Debt Stocks)_{it} + \mu\]

So, the intercept includes the variation of time rather than panels. Estimation model will then be: Estimated net ODA inflow = Time Fixed Effects + bi (Explanatory Variables)_{it}

In time fixed effects model, it is assumed that the slope for FDI inflow is the same for all years but the intercept is different.

Table 5: Fixed Effect with Time Fixed Effect Regression Test Result

<table>
<thead>
<tr>
<th>Variables</th>
<th>Fixed Effect (1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP</td>
<td>0.0193***</td>
</tr>
<tr>
<td></td>
<td>(0.000836)</td>
</tr>
<tr>
<td>Secondary education</td>
<td>90.23</td>
</tr>
<tr>
<td></td>
<td>(57.26)</td>
</tr>
<tr>
<td>Lending interest rate</td>
<td>2.837e+07</td>
</tr>
<tr>
<td></td>
<td>(8.797e+07)</td>
</tr>
<tr>
<td>Official exchange rate</td>
<td>5.688e+06</td>
</tr>
<tr>
<td></td>
<td>(1.084e+07)</td>
</tr>
<tr>
<td>Inflation</td>
<td>-1.581e+07</td>
</tr>
<tr>
<td></td>
<td>(1.392e+07)</td>
</tr>
<tr>
<td>External debt stocks</td>
<td>-0.156</td>
</tr>
<tr>
<td></td>
<td>(0.0998)</td>
</tr>
<tr>
<td>Constant</td>
<td>-1.238e+09</td>
</tr>
<tr>
<td></td>
<td>(1.144e+09)</td>
</tr>
<tr>
<td>Observations</td>
<td>315</td>
</tr>
<tr>
<td>Number of Country</td>
<td>7</td>
</tr>
<tr>
<td>Country FE</td>
<td>YES</td>
</tr>
<tr>
<td>Year FE</td>
<td>YES</td>
</tr>
</tbody>
</table>

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

From table 5, it is observed that in the time fixed effect model FDI inflow performed as the outcome variable and GDP, secondary education, lending interest rate, official exchange rate, inflation, and external debt stocks served as the explanatory variables.

From the time fixed effect output, there is clear evidence that GDP is significant at 5
percent level. The coefficient of GDP is 0.0193 and the sign is positive. It means for an increase in one unit of GDP there is on average an increase in the flow of FDI inside the country by 0.0193 unit. This outcome supports the theory of the relationship between GDP and FDI inflow. This outcome is fully consistent with the outcome got from the time fixed effect model and with the pooled OLS regression model. All other coefficients in this model are not significant to explain the outcome variable FDI inflow.

**Random Effect**

Table 6: Random Effect Model Test Result

<table>
<thead>
<tr>
<th>Variables</th>
<th>Random Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP</td>
<td>0.0233***</td>
</tr>
<tr>
<td></td>
<td>(0.000356)</td>
</tr>
<tr>
<td>Secondary education</td>
<td>45.44*</td>
</tr>
<tr>
<td></td>
<td>(23.88)</td>
</tr>
<tr>
<td>Lending interest rate</td>
<td>9.363e+06</td>
</tr>
<tr>
<td></td>
<td>(2.875e+07)</td>
</tr>
<tr>
<td>Official exchange rate</td>
<td>4.897e+06</td>
</tr>
<tr>
<td></td>
<td>(5.533e+06)</td>
</tr>
<tr>
<td>Inflation</td>
<td>-1.000e+07</td>
</tr>
<tr>
<td></td>
<td>(9.093e+06)</td>
</tr>
<tr>
<td>External debt stocks</td>
<td>-0.0970</td>
</tr>
<tr>
<td></td>
<td>(0.0591)</td>
</tr>
<tr>
<td>Constant</td>
<td>-4.120e+08</td>
</tr>
<tr>
<td></td>
<td>(6.936e+08)</td>
</tr>
<tr>
<td>Observations</td>
<td>315</td>
</tr>
<tr>
<td>Number of Country</td>
<td>7</td>
</tr>
</tbody>
</table>

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

In the random effect model time invariant unobserved factors are assumed to be random and not correlated with the explanatory variables of the model. This allows time invariant unobserved variables to act as explanatory variables. For example political situation of the country is assumed to be independent of political rights variable. But this is exactly what people often don’t believe. So if there is reason to believe that time invariant unobserved factors have some influence on the dependent variable then random effect model can be used. The advantage of using random effect model is time invariant variables can be incorporated here.

Unlike fixed effect model, interpretation of the coefficients of random effect model is tricky since it include both the within-entity and between-entity effects.
In the case of the model considered for this study, table 6 represents the average effect of predictors over dependent variable when an explanatory variable changes across time and between countries by one unit.

Two-tail p-values test the hypothesis that each coefficient is different from 0. To reject this, the p-value has to be lower than 0.05. One could also choose an alpha of 0.10. If this is the case then it is possible to say that the variable has a significant influence on the dependent variable. This study considers a variable is significant only when the p value is lower than 5 percent.

From the random effect model output, it is observed that none of the predictors are significant at 5 percent level to explain the dependent variable FDI inflow.

5.3 Diagnostic Tests / Post Estimation

**Testing for Time-Fixed Effects**

After running the fixed effect model someone might be interested whether time fixed effects are needed for the study or not. This kind of test is usually performed after running entity fixed effect model. By running testparm command author tries to see if there is any necessity to run time fixed effect model after running entity fixed effect model. Basically it is a joint test to see if coefficients for all years are jointly equal to zero. If it is then no time fixed effects are needed but if not then it is ideal to run time fixed effect model.

Table 7: Testing for Time Fixed Effect Result

<table>
<thead>
<tr>
<th>F (45, 7)</th>
<th>Prob&gt;chi2</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.09</td>
<td>0.0005</td>
</tr>
</tbody>
</table>

H₀: Coefficients for all years are jointly equal to zero
Hₐ: Coefficients are not jointly equal to zero

From table 7 it is seen that probability value is less than 5%, so null hypothesis is rejected. It means that the coefficients for all years are not jointly equal to zero, therefore time fixed effects are needed in this case.
Testing for Random Effects: Breusch-Pagan Lagrange Multiplier (LM)

The Breusch-Pagan Lagrange multiplier (LM) test helps to decide between a random effects regression and a simple OLS regression. The Breusch-Pagan Lagrange multiplier (LM) test is usually run just after running random effect model to see whether random effect model is appropriate or not.

The null hypothesis in the Breusch-Pagan Lagrange multiplier (LM) test is that variances across entities are zero. Meaning there is no significant difference across units (i.e. no panel effect).

Table 8: Testing for random effects: Breusch-Pagan Lagrange Multiplier (LM) Result

<table>
<thead>
<tr>
<th>Chi2 (1)</th>
<th>Prob&gt;chi2</th>
</tr>
</thead>
<tbody>
<tr>
<td>2145.29</td>
<td>0.0001</td>
</tr>
</tbody>
</table>

H₀: Pooled OLS regression Model is appropriate  
H₁: Random Effect Model is appropriate  

Table 8 represents the result of Breusch-Pagan Lagrange multiplier (LM) test. Here, it is observed that the probability value is less than 5 percent. As a result, it is a must to reject the null hypothesis. Hence, the conclusion is random effects is appropriate. This is an evidence that there have been significant differences across countries. Therefore, running random effect model can provide better estimate compared to pooled OLS model run outcome.

Testing for cross-sectional dependence: Pasaran CD test output

According to Baltagi (2008), cross-sectional dependence is a problem in macro panels with long time series (over 20-30 years). Although it is not that much of a problem in case of micro panels (few years and large number of cases). Pasaran cross-sectional dependence test is used to test whether the residuals are correlated across entities. Cross-sectional dependence can lead to bias in tests results (also called contemporaneous correlation). Present study deals with macro panels as it considers 7 least developed countries and 45 years data on one dependent variable and 6 explanatory variables. For this reason this study attempts to test cross-sectional dependence with the help of Pasaran cross-sectional dependence test. The test result is presenting in table 9.
Table 9: Pasaran Cross-Sectional Dependence Test Result

<table>
<thead>
<tr>
<th>Average absolute value of the off-diagonal elements</th>
<th>Pesaran’s test of cross sectional independence</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.631</td>
<td>23.309</td>
<td>0.0003</td>
</tr>
</tbody>
</table>

H₀: Residuals are not correlated  
Hₐ: Residuals are correlated

From the output table 9, it is observed that Pesaran's test of cross sectional independence is 23.309, Probability is 0.0003 and average absolute value of the off-diagonal elements is 0.631.

As probability value is less than 5 percent, it is ideal to reject the null hypothesis. Rejection of null hypothesis indicates that residuals are correlated. It means there is cross-sectional dependence.

So it can be said that Pesaran's test result of cross sectional independence doesn't allow trusting fully the test result of basic panel data model.

5.4 Comparing different models

After running all the basic panel data models and relevant post estimation authors put all the test result in a single table to compare the test result. In this part author focused on which result will be taken into account as the final study result.

So far, four different types of basic panel models result are presented. According to pooled OLS estimation GDP and external debt stock are found to be significant to describe FDI inflow. When moved to entity fixed effect model only GDP is found as the significant predictor to explain the dependent variable. Similarly, in the time fixed effect model GDP variable is found to be statistically significant to explain the dependant variable FDI inflow. Random effect model provides that none of the predictors are statistically significant to explain.

Breusch-Pagan Lagrange multiplier (LM) test suggests considering the result of random effect model when comparing with pooled OLS model. As a result author doesn't consider pooled OLS estimation result as the present study outcome. Again time-fixed effects test suggest considering the test result of time fixed effect model.

On the basis of different post estimation results author has taken both entity fixed effect and time effect model test result. Therefore, present study only focus on entity
fixed effect and time effect model estimates as preferred model. Considering the outcome of entity fixed effect and time effect model estimates, it is found that GDP seems to be the most motivating factor of FDI inflows in South Asian countries and other factors have less or no impact. Foreign investors usually invested in the big market. The reason is business activities are high and there is higher possibilities of good returns of investment in the big market. One of the influential indicator of domestic market size is GDP of the country. As a result, countries with high volume of GDP attracts higher FDI flows. Considering this, policy makers of the developing countries must focus on increasing the size of their very own economy along with the maintenance of other factors for getting higher FDI inflows.
Chapter 6: Conclusion

Conclusion
The common consensus regarding Foreign Direct Investment (FDI) is it played vital role in ameliorating the economies of developing countries. Hence, policy makers of the developing countries are quite interested to know about the factors that have huge influences on FDI flows. Actually, there are so many factors that have influence on FDI flows directly or indirectly. Hence, this study attempted to figure out the impact of some macroeconomic variables which have impact on FDI in SAARC member countries. The principle objective of the current study is to figure out the effect of economic determinants on FDI inflows in South Asian countries. This study considered a panel of the seven South Asian countries: Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka, for the period from 1972 to 2016. The author applied basic panel pooled OLS estimation, entity fixed effect estimation, fixed effect estimation with time effect and random effect estimation in the analysis to identify the effect of economic policy oriented variables on FDI. The result suggests that GDP of the country is the main factor behind FDI inflows in South Asian countries. Some other predictors considered for the study such as secondary education, lending interest rate, official exchange rate, inflation, and external debt stocks have been found insignificant in motivating FDI inflow in SAARC member countries. It means, GDP seems to be the most motivating factor of FDI inflows in South Asian countries and other factors have less or no impact. Considering this, policy makers of the SAARC member countries should take initiatives to increase the size of their own countries to attract more and more FDI as it is considered as an influential tool of economic development and growth.

As said before, there is no complete lists of factors that have influences on FDI inflows. To be very specific, there are so many economic and non-economic factors that have influences on FDI inflows. Albeit, in this study the author focused only to the economic determinants that affect FDI inflows in South Asian countries. The author considered it as the limitation of the current study.
List of References


