Working Draft of the Research Paper to be submitted in the 32nd Annual General Meeting and Conference of the Pakistan Society of Development Economist Islamabad on “China-Pakistan Economic Corridor and Regional Integration”

“The Role of the Sectoral Composition of Foreign Direct Investment on Economic Growth: A Policy Proposal for CPEC and Regional Partners”

Mr. Haider Ali
Lecturer (Economics)
Pakistan Institute of Development Economics, Islamabad
Ph: +92-51-9248056
Email: haider@pide.org.pk

Mr. Muhammad Tamoor Asghar
MSc (Economics) Student
Pakistan Institute of Development Economics, Islamabad
Ph: +92-301-4578424
Email: tmwr2009@gmail.com
“The Role of the Sectoral Composition of Foreign Direct Investment on Economic Growth: A Policy Proposal for CPEC and Regional Partners”

Abstract
This paper examined the sector-wise, i.e. agriculture, manufacturing and services, impact of foreign direct investment (FDI) on economic growth. The characteristics of a sector and its linkage to the rest of an economy mainly determines the potential impact of FDI on economic growth. Intuitively, the potential linkage varies across the sectors and; hence, the sector-wise impacts of FDI might vary regarding economic growth. Empirical analysis used panel data of five countries namely China, Pakistan, India, Bangladesh and Sri Lanka over the time of 2000-2015. Robust Standard Error Model is used for this study where the results show that magnitude of FDI only in agriculture and manufacturing sectors has significant positive impact on economic growth. The estimated results showed that the FDI in manufacturing sector has the largest potential as compared to the other sectors in increasing economic growth. The impact of agriculture sector is minor though significant while that of service sector is insignificant.

Keywords: Foreign Direct Investment, Economic Growth, Regional Integration

Jel Classification: F21, F23, L6, L8
1. Introduction

Foreign direct investment (FDI) has been significantly increased for the past two decades particularly in developing countries due to globalization and adoption of liberal policies concerning foreign investment in different sectors of an economy. FDI plays an important role by offering huge opportunities for mostly developing countries to reach faster economic growth through trade and investment (World Bank, 2003). The increasing importance of FDI in the context of regional integration, specially China Pakistan Economic Corridor (CPEC), has revived the debate about the cost and benefits of foreign investment for it is considered an important stimulus for economic growth. Interestingly, the literature is inconclusive regarding the impact of FDI on economic growth of a country both in the short- and long-run. Although most of the studies (e.g. Blomstrom et al. 1994, Borensztein et al. 1998, Alfaro et al. 2004 among others) have shown both theoretically and empirically the positive impact of FDI on economic growth; however, these studies explain this relationship conditional upon other factors i.e. absorption capacity of the country, better endowment of human capital, and supportive business environment. Besides, the positive impact of FDI, in some cases, is not significant in the short-run rather only in the long-run through generating externalities in the form of technology transfers and spillover effects (Aykut and Sayek, 2007).

Theoretically, FDI contributes to economic growth by filling the resource gap in productive areas of an economy whereas an economy is mainly divided among three sectors i.e. agriculture, manufacturing and services. FDI provides the necessary capital that enhance the capacity, technology, knowledge spillovers and management skills of a sector. However, the characteristics of a sector and its linkage to the rest of an economy mainly determines the potential impact of FDI on growth. Intuitively, the potential linkage varies across the sectors and; hence, the sector-wise impacts of FDI might vary regarding economic growth. The capital intensive sector of an economy is often considered limited in the scope for linkages between foreign companies and the rest of the world while other sectors may have a larger impact on growth by various possible linkage-intensive activities. Aykut and Sayek (2007) asserts though the potential positive impacts of FDI is limited to the sector that receives FDI, the other sectors

---

1 See Lipsey (2002) for a detailed review.
also get benefits through many backward and farward linkages - interaction between local suppliers and consumers.

The sector-wise positive impact of FDI on economic growth is subject to certain conditions. The primary sector of the economy, i.e. agricultural sector, has not empirically shown a consecutive positive impact on growth where the FDI often comes in the form of mega projects. Sachs and Warner (2001) and Sala-i-Martin (2003) have shown that such mega projects involve huge capital flows which create increased rent seeking and reduce competition. Therefore, a negative impact on growth might come in case of absence of institution and unproductive activities in the agricultural sector. The secondary sector, i.e. manufacturing sector, is considered the most attractive and effective in terms of the host country’s growth. Manufacturing sector has also many backward and farward linkages in terms of efficiency seeking and market seeking. Franco et al. (2008) asserts that FDI through efficiency seeking enhance the capacity of the manufacturing sector by bring necessary technology and knowledge into an economy. Ekholm et al. (2003) explains that FDI in case of market seeking comes for a sector specific export-platform which supports more the domestic firms rather than the foreign ones. Contrary to the agriculture and manufacturing sectors that are tradable, the service sector is mostly non-tradable and FDI in this sector is by and large in the form of mergers and acquisitions in case of developed countries and in form of privatization in case of developing countries. Klein (2000) explained tourism services and friendly business environment as the main determinants for foreign investment in the service sector. The positive impact of FDI in service sector is due to its farward linkages and FDI can provide the necessary funding and technology to improve capacity to meet increasing demand as well as to improve the quality and to lower the cost of services (Aykut and Sayek, 2007).

This study aims at highlighting how much important is sector-specific FDI in determining the positive impact on economic growth and, resultantly, which sector should be prioritized regarding liberal foreign investment policy. It is important because FDI inflows have imparted asymmetric impact on economic growth of different economies where some countries grew substantially due to high FDI inflow while some countries could not even considerably progress. Besides, it is also important because regional integration, particularly China-Pakistan investment agreements, has taken much importance in recent times for increasing investment flows and
policy makers should know in which sector lies the potential use of the FDI for growth of the economy. This study estimates the impact of sector-wise FDI inflow on the economic growth by employing Robust Standard Error technique on the panel of five countries (all are Asian countries except China but geographically connected) over the time period 2000-2015. Empirical results showed that FDI specific to manufacturing sector has the highest impact while that of in the service sector has the lowest and also insignificant impact on the gross domestic product of the host country.

The next section gives a brief review of the literature on the nexus between FDI and growth. The third section explains the data and methodology used for the estimation which is followed by possible interpretation of the results. Finally, section four concludes our study with some policy recommendations.

2. Literature Review

In the mid of 19th century, a new phenomenon regarding flow of FDI appeared when the direction of the FDI pointed towards more industrialized countries from less industrialized countries. Though the mainstream of FDI form developed countries to developed countries was reported, the FDI showed significant impact on home country rather than host country. Since then, FDI is regarded as the most reliable and effective sources of transferred technology and knowledge (Dunning and Hamdani, 1997).

The World Investment Report (2012) stated that the situation of foreign investment around the globe from 1971-75 was US 20450.61 million dollar where about 75% of the investment was invested in developed countries while remaining in the developing countries. Interestingly, Pakistan just received very meager amount of US 8.6 million dollar. The volume of foreign investment across the world started increasing since 2005 with a change in direction from developed countries to developing countries. The share of foreign investment in the total foreign investment for developed countries declined to 49% while it rose to 51% from 25% for the developing countries. Later on, the World Investment Report (2015) analyzed inflow of foreign investment around the world and reported that a decline of overall foreign investment by 16%.

---

but the share of Asian developing countries in the overall foreign investment increased relative to other regions by 9%.

Pakistan being a developing country faces many economic and non-economic barriers regarding inflow of FDI e.g., obsolete technology, red tapism, low skilled labor, high rate of taxes and tariff, insufficient domestic resources etc (Khan and Ahmed, 2007). FDI is pivotal to maximize the capacity, growth, and development of a country. The major benefits a host country takes from foreign investment are skilled labor, latest technology, market-access, employment opportunity, and an increase in production and government revenue. Various studies e.g. Azam and Khattack (2006), Rayhan (2009), Abdin (2015) have investigated the inflow and impacts of FDI in case of focused countries in this research and found the benefits of FDI inflow in terms of high employment rate, macroeconomic stability, upgraded infrastructure and human resource development.

2.1. Drivers of Foreign Direct Investment

The main factors or drivers of FDI are classified into capability-related drivers, domestic drivers and trade-related drivers. Capability-related drivers are the necessary skills, technology, idea and equity that are required to undertake outward FDI. Inward FDI flows are also considered as a significant capability drivers for the transfer technology to the host country as abundantly as the necessary FDI decision-making skills. Domestic drivers, on the other hand, are the constraints on domestic firms; poor infrastructure, high cost of capital and labor, and limited size of the domestic market that compel a country's firms to boost production facilities of host countries in order to escape these domestic constraints. Drivers of outward FDI for home country are domestic market condition, international business environment, domestic business expectation, cost of production, government policies (UNCTAD, 2006).

Hisarcıklılar (2006) empirically examined 18 developing counties’ outflow of FDI and found that the outflow of FDI in underdeveloped countries had increased with foreign competition to the effect that enhanced imports and inflow of FDI in domestic market of host country. Banga (2009) asserted that roughly exports-to-GDP and imports-to-GDP are consistent trade-related drivers of outward FDI and direct FDI inflows to a home country. Besides, Banga argued that poor infrastructure and high real wages are important determinants of outward FDI.
2.2. Foreign Direct Investment in Asian Countries

In the 20th century, foreign investment rapidly increased both in developing countries with a higher return base due to marginal rate of investment as marginal rate on investment is low(high) when a country has high(low) capital stock (Bano and Tabbada, 2015). This study while analyzing FDI for countries of East Asia, Southeast Asia, and South Asia found quite a high rate of dissimilarity in the pattern of FDI in developed and developing countries mainly due to different marginal rate of return on investment and socio-economic stability.

Buckley et al. (2007a, 2007b) examined pull and push factors of foreign investment in case of Chinese economy with 90 host countries where the pull factors of host country are market size, growth rate, natural resources, political risk, culture limitation, inflation rate and trade openness. On the other hand, the push factors of home country are liberalization policy, distance between host and home country, export tariff. Buckley’s study found that FDI is attracted by internal markets and abundant natural resources while the red tapism and poor institution negatively affect the FDI. Cheung and Qian (2009) examined 31 host country of Chinese outward FDI and concluded that natural recourse and GDP of china are significant factors to attracting foreign investment, but per capita income has inverse relationship with foreign investment.

Azam et al. (2010) empirically analyzed the impact of overall FDI inflow in case of South Asian countries and deduced that FDI in case of Pakistan and Bangladesh has positive and significant impact on the growth of these economies while for India it is insignificant and the growth is negatively affected in case of Sri Lanka. Rehman and Ahsan (2015) analyzed sector wise FDI in Bangladesh from period of 2000-2010 and reported that FDI in manufacturing sector was the highest as compared to agriculture and services sector. India growth dynamics of FDI in services sector was investigated by Sen (2011) where the study reported that FDI growth in services sector has been positive and growth in services sector has also significant impact on the GDP of the country. The empirical evidence show that services sector played a significant role in manufacturing sector’s growth and subsequently in overall output growth. In addition, Banga and Goldar (2007) confirmed that demand for services sector rapidly grew due to FDI inflow in this sector in India and empirical results also confirmed this contribution to the growth and output of this sector and the economy.
2.3. Foreign Direct Investment and Regional Integration

The history of multilateral trading system goes back to World War-II when General Agreement on Tariffs and Trade (GATT) was the new motivation or reflection on regionalism. In the beginning of regionalism initiatives, most of the developing countries were empty shells in economic achievements. In addition, European amalgamations like European Economic Community (ECC) and European Free Trade (EFTA) was also not proved a successful story of economic regionalism during 1970s and 1980s.

In the 20th century, economic regionalism has spread to all developed and underdeveloped countries and, this time, with positive impacts on many countries. Ngongang (2009) showed that regional integration became key instrument in rapid enhancement of private and foreign investment in the continent of Sub-Saharan Africa where leading role performed by some other drivers e.g. firming up trust due to democratic government, synchronization of regional policy, abolition of trade hurdles, elimination of permits and development of African continent. Yeyati et al. (2003) highlighted market size of country in regionalisms significant effect for attracting of FDI. Te Velde and Bezemer (2006) argued that regional investment is highly associated with provisions of FDI whereas the situation of county in the region also matters. Chen (2006) empirically shows that regional integration has promoted FDI in case of Regional Trade Agreements (RTA) and Stander Harmonization (SH) policies. Chen’s study found that regionalism enhanced market structure, accessibility and reduced trade cost. Furthermore, if a country associated with more than one regionalism it could attract additional FDI due to robust economics of scale.

Disoska and Toshevska (2016) asserts that the European Union (EU) has pursued neoliberal policy and preferred export-led growth to attract foreign investment by diminishing labor cost and improving investment due to international competition. But this situation has not proved productive for economic growth and raised unemployment in European community.

2.4. Foreign Direct Investment and Other Economic and Socio-Economic Factors

Ethier (2013) analyzed FDI competition between domestic and international firms. This study by Ethier also asserted that FDI competition enhanced between domestic and international firms due
to, plant scale economics, firm specific costs/tariff and transportation costs. The empirical results confirmed that the competition is based on firm location and services.

Weber (2000) analyzed the levels of tariff imposed on FDI. The documented cost and market size determine the behavior of domestic and International firms. The policies about tariff inversely impact on investment behavior. Balanced the market and economy after tariff polices used five various techniques such that, export accommodate, foreign direct investment accommodate, export limitation, foreign direct investment checked, blockaded entry. Benassy (2007) analyzed the relationship between FDI with quality of institutions in case of developing countries. The poor quality institution and red tapism in developing countries is obstacle for high FDI inflow. The result of research confirmed that the relationship between poor institutions and FDI inflows is negative because incompetent labor and administration in these institutions.

Ahmed and Ahsan (2011) analyzed trade activity and employment opportunities, which effect constancy in growth of Pakistan. The results finalized that manufacturing and agriculture sector is not satisfactory contributions in economic growth, with passage of time these sectors growth rate and employment opportunities stagnant or decline. The contribution of services sector in economic growth is satisfactory with passage of time growth rate of services sector and job opportunities enhanced. Ma (2009) analyzed modernization in Chinese peoples and economy, key component is FDI. The empirical research specified, there is no red tapism in china and institution performance favorable to attract more FDI.

The asymmetric information and vague evidence of developing countries not provide concluded remarks about high inflation and low FDI respectively. Inflation rate of domestic and foreign country are change the net returns and optimal investment decisions of investor. Sayek (2009) investigates under what specific conditions the behavior of FDI becomes vertical. The inflow of FDI is substantially based on factors of production. When there is no optimal decision in foreign investment this situation raised inflation rate in domestic and international market. Inflation rate increased and decreased depend on foreign investment behavior (vertical or horizontal).

Optimistic behavior raised inflow of FDI. The current literature analyzed FDI influence in china show ambiguous result. The inflow of FDI at national level is positive but there is specific province show inverse relationship. Chinese government was energetic for foreign investment and technology ratiocination up for elimination of domestic insufficiency. Lee and
Lio (2016) analyzed the relationship between corruption and FDI. They finalized FDI fetched economic interest, employment opportunities, and up-to-date lifestyle, outstrip provincial barriers minimize the corruption and positive influence of FDI. Geographic variation is profitable or not for firms is still ambiguous. Lang (2003) and Morck et al. (2008) analyzed positive relationship between international diversification and firms activities. The result shows that when domestic industry diversification has inverse relationship with shareholders, cross country investment diversification becomes high and profitable.

3. Data, Methodology and Results

This study aims at analyzing the impact of sector-wise FDI inflow on economic growth in case of China, Pakistan, India, Bangladesh and Sri-Lanka by taking data from FY-2000 to FY-2015. These countries belong to Asian region (except China but) with close geographic boundaries and a high inflow of FDI after year 2000. Though the regional integration analysis calls for including other countries in the Asia region, this study is limited to these countries mainly due to data constraints.

3.1. Data Sources and Description

The sector-wise data of FDI and real interest rate is taken from Handbooks of the State Bank of Pakistan and the Board of Investment in case of Pakistan; Statistical Year Book of China in case of China; Annual Reports of the Reserve Bank of India in case of India; Survey Reports of the Statistics Department of Bangladesh in case of Bangladesh and Annual Reports of the Central Bank of Sri Lanka and Annual Reports of the Board of Investment in case of Sri Lanka. The data on GDP and real effective exchange rate are taken from the World Development Indicators (WDI)’s website. Initially, the data on sector wise FDI for various countries is converted into US dollar (millions) terms for estimation when the FDI is categorized into three sectors mainly Agriculture, Manufacturing, and Services sectors. The variables of real interest rate and real effective exchange rate are used as control variables for the model as it is standard practice in the literature related to FDI and growth relationship. Sensitivity analysis is done by incorporating other macroeconomics variables, i.e. government expenditure and gross capital formation, in the
model but the results are robust even to inclusion of these variables. The detailed breakdown of the data into three different sectors is given in appendix-A.

The following notations are used to explain the variables.

**Dependent Variable:**

GDP  Gross Domestic Product (Current US $ Millions)

**Independent Variables:**

FDI\textsubscript{AGR}  FDI in Agricultural Sector (Million US$)

FDI\textsubscript{MNU}  FDI in Manufacturing Sector (Million US$)

FDI\textsubscript{SER}  FDI in Services Sector (Million US$)

RI  Real Interest Rate (\%)

REER  Real Effective Exchange Rate

**3.2. Panel Data Estimation**

The analysis calls for panel data estimation which can be represented by the following equation that pools both time series and cross section data.

\[
y_{i,t} = \alpha_i + y_t + \sum_{k=1}^{K} \beta_{i,t} X_{k,i,t} + \varepsilon_{i,t},
\]

where ‘\(i\)’ represents the number of countries; ‘\(t\)’ the number of years used in the analysis and ‘\(k\)’ the number of explanatory variables. This is a general form of the model where different models can be derived by making different assumptions concerning the parameters of this model. This study has used (natural) log of all the variables except real interest rate and real effective exchange rate for estimation so that elasticities can be derived. First, the Hausman test is applied that is used to deduce which model between the Fixed Effects Model and Random Effects Model should be used for estimation and interpretation of the coefficients of independent variables. Hausman test tests the null hypothesis that difference in coefficients is not systematic against the
alternative hypothesis that it is systematic. The following Table 1 shows the result of the Hausman test.

### Table 1: Hausman Test Result

<table>
<thead>
<tr>
<th>Coefficients</th>
<th>(b) fixed</th>
<th>B (random)</th>
<th>(b-B) difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>FDI\textsubscript{AGR}</td>
<td>0.132</td>
<td>0.161</td>
<td>-0.029</td>
</tr>
<tr>
<td>FDI\textsubscript{MNU}</td>
<td>0.248</td>
<td>0.608</td>
<td>-0.360</td>
</tr>
<tr>
<td>FDI\textsubscript{SER}</td>
<td>0.077</td>
<td>0.076</td>
<td>0.001</td>
</tr>
<tr>
<td>RI</td>
<td>-0.005</td>
<td>0.020</td>
<td>-0.025</td>
</tr>
<tr>
<td>REER</td>
<td>0.021</td>
<td>0.010</td>
<td>0.011</td>
</tr>
</tbody>
</table>

Chi-square = 13.25  
Probability>chi-square = 0.0211

The insignificant probability value i.e. 0.02 (less than 0.05) implies that the null hypothesis should be rejected and Fixed Effects Model is preferred over Random Effects Model for efficient estimates. Now the result of Fixed Effect Model is given in the following Table 2.

### Table 2: Fixed Effects Model Results

<table>
<thead>
<tr>
<th>GDP</th>
<th>Coefficients</th>
<th>Std. Err.</th>
<th>T test</th>
<th>P&gt;T</th>
</tr>
</thead>
<tbody>
<tr>
<td>FDI\textsubscript{AGR}</td>
<td>0.132</td>
<td>0.035</td>
<td>3.830</td>
<td>0.000</td>
</tr>
<tr>
<td>FDI\textsubscript{MNU}</td>
<td>0.248</td>
<td>0.064</td>
<td>3.890</td>
<td>0.000</td>
</tr>
<tr>
<td>FDI\textsubscript{SER}</td>
<td>0.077</td>
<td>0.049</td>
<td>1.560</td>
<td>0.124</td>
</tr>
<tr>
<td>RI</td>
<td>-0.005</td>
<td>0.013</td>
<td>-0.390</td>
<td>0.695</td>
</tr>
<tr>
<td>REER</td>
<td>0.021</td>
<td>0.004</td>
<td>5.200</td>
<td>0.000</td>
</tr>
<tr>
<td>INTERCEPT</td>
<td>21.370</td>
<td>0.434</td>
<td>49.270</td>
<td>0.000</td>
</tr>
</tbody>
</table>

R-square = 0.8924  
F-test = 23.95

The overall performance of the model seems good as it can explain about ninety percent of the variation in the dependent variable and most of the coefficient signs are consistent with the theory. In addition, the t-stat of the explanatory variables shows that all variables are relevant to the model except the independent variable of real interest rate which has often found insignificant in most of the studies. Interestingly, FDI inflow in the manufacturing sector has the largest elasticity with GDP where one percentage change in the inflow of FDI in this particular
sector can bring a change of about twenty five percent in the gross domestic product. This positive and significant impact is because manufacturing sector has not only the strongest backward and forward linkages with the other sectors of the economy but also has a major part in the production side of the economies used in our analysis. Besides, there is a high marginal return of capital in this sector due to frequent advance technology adoption.

FDI inflow in agriculture sector has also significant and positive impact on the GDP. Being the real sector and backbone of an economy, agriculture sector has important role but the relatively less elasticity of this coefficient can be due to lower marginal productivity of labor and use of obsolete technology in this sector especially in case of Pakistan, Bangladesh and Sri Lanka. Besides, there are many risks involved in this sector along with imperfect financial markets which make this sector less beneficial for investment. FDI in service sector contributes the least in terms of GDP growth and many studies in the literature have proven that FDI in service sector is not well paid in terms of domestic growth as these investments have both huge and long streams of income outflows from the country later on. But the positive impact of FDI in service sector demonstrate that it can enhance the GDP if provides the necessary funding and technology to improve capacity of the host country in terms of improving the quality and lowering the cost of services so that this sector becomes competitive.

Real interest rate has a negative but insignificant coefficient that shows when cost of capital increases it negatively affects the GDP of the economy by slowing down the business and economic activities. The insignificant value of real interest rate depicts that other factors like producer confidence on the business environment and fiscal restrictions are playing more influentially than the market price of investment for the economic growth. Last but not the least, the real effective exchange rate is positively affecting the gross domestic product as the increase in the real effective exchange rate makes the domestic products cheaper for the foreign countries.

3.3. Heteroskedasticity Test
Heteroskedasticity is basically the violation of one of the assumptions of the regression model that variance of the model is iid i.e. identically and independently distributed. When this condition does not hold, the variance varies across the observations which in fact do not make
the estimates biased though the estimates are no more efficient. Therefore, estimates cannot be reliable and, in some cases, the standard errors and t-values are not even correct to be interpreted. Heteroskedasticity is more likely to be present in the cross-section data and it is why robust standard errors should be calculated to interpret the results with more confidence.

LM test is one of the widely used tests for heteroskedasticity where variance of each observation is regressed on the independent variable. There would be no heteroskedasticity in the model if the variance residual would be unrelated to any independent variable. Another test to detect whether there exist heteroskedasticity in the model or not is White General test. This test, in addition to Breusch-Pagan LM test, also accounts for nonlinear relationships that could occur in the model. These two tests are executed where the null hypothesis is of constant variance (No heteroskedasticity/Homoskedasticity). The results of White's and Breusch-Pagan’s test are given in the following Table 3.

### Table 3: White's and Breusch-Pagan Test Results

<table>
<thead>
<tr>
<th>Source</th>
<th>Chi-Square</th>
<th>Degree of freedom</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heteroskedasticity</td>
<td>39.20</td>
<td>20</td>
<td>0.0063</td>
</tr>
<tr>
<td>Skewness</td>
<td>14.37</td>
<td>5</td>
<td>0.0134</td>
</tr>
<tr>
<td>Kurtosis</td>
<td>0.49</td>
<td>1</td>
<td>0.4835</td>
</tr>
<tr>
<td>Total</td>
<td>54.06</td>
<td>26</td>
<td>0.0010</td>
</tr>
<tr>
<td>Chi-Square = 39.20</td>
<td></td>
<td></td>
<td>Probability &gt; Chi-Square = 0.0063</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Breusch-Pagan for Heteroskedasticity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chi-Square = 5.82</td>
</tr>
<tr>
<td>Probability &gt; Chi-Square = 0.0159</td>
</tr>
</tbody>
</table>

Both the tests indicate the presence of heteroskedasticity in the model as the probability is less than 0.05 so we cannot accept the null hypothesis of constant variance or homoskedasticity. This calls for the estimation of robust standard errors which yield consistent estimates of the true standard errors. In this way, the result estimates can be interpreted with more confidence. Thus, the robust standard error model is appropriate liner BLUE model under the problem of heteroskedasticity. The result of Robust Standard Errors model is given in the following Table 4.
These results also strengthen the previous findings as the impact of FDI in manufacturing sector on economic growth is still the highest one relative to the other sectors of an economy. The other sectors, agriculture and manufacturing almost hold the same coefficient as was yielded in the previous estimation. The result also shows that robust standard errors are relatively high to that of Fixed Effects Model results’ standard errors. Standard errors get lower in robust analysis for FDI in agriculture-sector while it remains the same in case of real effective exchange rate variable. Interestingly, the real interest rate is now affecting GDP positively but the value is again insignificant. Therefore, it can be concluded with confidence that the major impact of FDI on economic growth is through manufacturing sector, FDI in agriculture sector comes on second and FDI in service-sector imparts insignificant impact on economic growth.

### 4. Conclusions/Policy Recommendations

This study has estimated the impact of sector-wise inflow of FDI on the economic growth while using the panel data on five geographically connected countries over the time period of 2000-15. FDI has long been considered as an important variable for the growth of a country as it provides the necessary capital for the economic and business activities. Also, it has been considered as an important variable in enhancing the living standard of people of the host country because it can be used to raise the production capacity of a nation by generating the employment opportunities and market efficiency. However, it is important that positive impact of FDI inflow on economic growth depends on the assumption, which sector receives this investment and how much that
particular sector in integrated with the other sectors of the economy and directly to the economy. The recent debate on regional integration and increased flow of investment between and among the partner countries (e.g. China Pakistan Economic Corridor) has revived the debate on which sector should be given priority for FDI inflow and which sectors should be highly restricted for the foreign investments.

The result of this study suggests that the real sectors of the economy i.e. agriculture and manufacturing are the one through which FDI inflows can impart positive impact on the economic growth. Besides, result suggests that FDI in manufacturing sector has the significant positive impact with the highest coefficient relative to other sectors of the economy due to high marginal return on capital and its backward and forward linkages with the other sectors of the economy. It can be deduced that policies related to foreign investment in this sector should be lenient and supportive for foreign investors. FDI in agriculture sector has a positive and significant impact on the economic growth but the lower coefficient expressed that this sector has lower marginal impact on the gross domestic product. The possible reason could be that FDI rises rent seeking and reduces competition in agriculture sector. FDI in service sector is not significantly affecting the economic growth which means the FDI in this sector should be confined and made conditional upon other factors e.g. technology transfer.

In a nutshell, the role of the sectoral composition of the foreign direct investment is crucial for significant and positive impacts on economic growth and; therefore, economies should accordingly adopt set of flexible and restricted policies regarding foreign investment into a sector of the economy. Flexible and more supportive policies to attract FDI in the real sectors of the economy can affect positively and significantly the economic growth.
References


Bano, Sayeeda and Jose Tabbada (2015), “Foreign Direct Investment Outflows: Asian Developing Countries”, *Journal of Economic Integration*, 30(2); 359-398


Khan, M. Arshad and Ayaz Ahmad (2007), "Foreign Aid, Blessing or Curse: Evidence from Pakistan", The Pakistan Development Review, 46(3); 215-240


Te Velde, D.W. and Bezemer, D. (2006), “Regional Integration and Foreign Direct Investment in Developing Countries”, *Transnational Corporations*, 15(2); pp.41-70


Appendix-A

Agriculture / Primary
Agricultural  
Forestry  
Livestock  
Mining  
Fishing  
Husbandry  
Major/ Minor Crops

Manufacturing / Secondary
Beverages  
Ceramics  
Construction Industry  
Cotton and cotton based products  
Energy industry  
Food industry  
Glass industry  
Metallurgical industry  
Power and Electrical industry  
Steel  
Textile and Clothing industry  
Transport and Transport Equipment (Automobiles)  
Cement  
Chemical and Petro Chemical Industry  
Consumer goods industry (all consumables)  
Edible oil and Gas  
Fertilizer industry  
Fuel extraction industry  
Leather and Leather products  
Paper and Pulp  
Rubber and Rubber products  
Sugar  
Tobacco and Cigarettes

Services / Tertiary
Business and Personal services  
Communications (telephone, broadband etc.)  
Pharmaceutical and Medical instrument  
Whole sale and Retail trade  
Hotels and Tourism  
Education, Research, and all services  
Real Estate