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Impact of FDI on Income Distribution in Selected SAARC Countries

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ABSTRACT

This study analyzes the impact of inward foreign direct investment (FDI) on income distribution in five SAARC countries, namely, Bangladesh, India, Nepal, Pakistan and Sri Lanka using panel data from 1980 to 2011. Dependent variable is income inequality measured by Gini coefficient whereas independent variables are inward FDI stock as a percentage of GDP, trade openness (exports + imports / GDP), per capita GDP used as a proxy for economic growth and annual inflation rate measured by consumer price index (CPI). Fixed effects model has been used on the basis of Hausman. The results show that inward FDI stock has a negative and statistically significant impact on income inequality. Trade openness has a positive and statistically significant impact on income inequality. The impact of per capita GDP on income inequality is positive and statistically significant. However, annual inflation has a negative and statistically significant impact on income inequality. The study recommends encouraging more inward FDI, having better distribution policies, increasing exports, reducing imports and keeping inflation within a certain limit for better income distribution.

KEYWORDS: FDI, Fixed Effects, Income Distribution, Random Effects

1. INTRODUCTION

Since the last few decades, there has been a very hot debate on the consequences of globalization for economy. One of the indicators of globalization is foreign direct investment (FDI). While discussing the effects of FDI on host countries, researchers have mostly been optimistic because they often discuss these effects of FDI in terms of economic growth which ultimately leads to sustainable economic development. But one important impact of FDI which is mostly neglected by researchers is income distribution in host countries. Whether FDI is good for income distribution? There are two different views regarding this question. One group of researchers believes that FDI improves income distribution of host countries whereas the other group is of the view that FDI worsens it. Those who think that FDI reduces income inequality argue that FDI leads to economic growth of the host country and then this economic growth becomes a source of income distribution among people of country. According to them, FDI provides host countries with capital. Most of the less developed countries (LDCs) are significantly lacking in capital. Their level of savings is lower than their required level of investment which causes savings-investment gap. FDI fills this gap [30]. Second argument which is presented in favor of FDI is that it transfers modern technology to the host countries. This technology can also be transferred through international trade but FDI is more important than trade. According to [8], FDI is accompanied by modern technology and local firms also adopt this technology by imitating the foreign firms. Third, FDI leads to better skills for management of factors of production in host countries. Fourth, FDI enhances productivity and income of workers. It is not necessary that these benefits of FDI can be achieved at the expense of income disparity [12]. This increase in productivity of labor and more output is a path towards economic growth. According to [18], FDI is a main source of economic growth. FDI is useful for economic growth because it is good for development of human resources through training and education channels. Due to this, it not only increases the productivity of labor but also of other factors of production. FDI can perform better for economic growth if it is directed towards export oriented sectors rather than import substitution sectors. So, FDI leads to higher economic growth [1].

Now the question is whether this economic growth is equally good for the whole population of a country?. The appropriate answer to this question is that FDI can have unequal effects in the short run but in the long run, it improves income distribution. According to [8], FDI plays a positive role in the distribution of income. It brings better technology which is imitated by domestic firms. During this process, the host country passes through two stages of income distribution. In the first stage, they try new technology and apply research for this. For the purpose

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of research, they need few skilled workers. Firms pay almost same wages to skilled and unskilled workers due to less demand for skilled labor. However, when there is transition towards more use of modern technology introduced by foreign firms, the demand for skilled workers is relatively higher as compared to demand for unskilled workers. Due to this higher demand for skilled workers, firms have to pay them higher wages and income inequality rises. But when all of the firms start using modern technology, they hire skilled labor and income inequality falls. This shows that there is an inverted U-shaped relationship between FDI and income inequality. According to [12], FDI may cause the problem of income inequality in the short run but in the long run, it is solved. Therefore, FDI plays positive role in the distribution of income through the channel of economic growth.

Contrary to this, another group of researchers argues that FDI leads to income inequality in host countries. Two points which are over exaggerated in literature in favor of FDI are that it is a source of more employment creation and it leads to improved quality and quantity of goods which make the consumers better off. This is true up to some extent but all of this is not as it seems. Firstly, although FDI leads to increased employment level in host countries, yet the increase in employment is not that much as it should be. The reason is that MNCs use better technology and capital intensive techniques of production which are against employment generation in labor abundant developing host countries. FDI can have either positive or negative role in determining the income distribution of an economy. If MNCs absorb abundant labor of host country, it improves income distribution. Conversely, if it is capital intensive and uses less labor force, it leads to deterioration in income distribution. According to [23], developing countries can have benefits of FDI if it is directed towards agricultural sector and agro-based industries because in this way, MNCs can absorb unskilled labor force of host countries. Secondly, the labor force which MNCs hire is skilled labor and has some minimum level of skills and human capital. Therefore, unskilled labor is hurt. Third, it is also true that FDI is a source of improvement in production as quality of goods improves due to better methods of production. Besides this, variety of goods also increases which is better for consumers. But this is also a fact that MNCs invest in those goods which are mostly useful for a particular group of people only. All of these factors lead to widen the gap between the rich and the poor in the host country. Rich people are benefitted as they have higher human capital and skills. So they can get more jobs in MNCs. They also have access to better goods produced by MNCs. On the other hand, the poor are unable to get jobs in MNCs as most of them are unskilled and lack human capital and they do not have access to products produced by MNCs. Due to this, FDI becomes a source of income inequality in host countries. Finally, although it is true that MNCs are a source of tax collection for host countries, yet it is also a fact that MNCs get tax rebates from the government of host countries. As a result, government is unable to collect much revenue in the form of taxes and those sectors in which private investors do not have much incentive for investment remain backward. The reason is that private sector investors are not willing to invest in these sectors and public sector does not have that much revenue to invest in those sectors. As a result, poor people of the country are hurt. So, instead of decreasing income inequality in host countries, FDI tends to increase it. The gap between the rich and the poor widens due to more FDI. The poor become the poorer and the rich become the richer. According to [13], foreign firms pay higher wages to workers as compared to domestic firms. This is one aspect of causing income inequality. But foreign firms do not equally pay higher wages to all of their workers. They pay higher wages to their top-level employees as compared to their ordinary workers. This is the second aspect of causing income inequality. According to [16], FDI can become a source of income inequality as it raises the wages of skilled workers as compared to that of unskilled workers. FDI causes income inequality not only through the channel of technology transfer as this technology is favorable for skilled labor and adverse for unskilled labor, but also through capital accumulation. Due to capital accumulation, capital owners gain more than labor force and this causes income inequality in host countries. FDI has been proved to be a source of worsening income distribution in urban areas. But it does not cause income gap between rural and urban areas. [33] argues that FDI can cause income inequality through two channels. Firstly, FDI leads to growth of economy and this growth is the cause of inequality among the masses as all of the people cannot get equal benefits from growth. Secondly, FDI can cause income inequality between the skilled and the unskilled workers as MNCs demand skilled labor more than unskilled labor. Apart from other factors, the positive impact of FDI on wages should not be neglected. Inward FDI is considered good for its positive impact on income of workers [8]. It is argued by [6] that foreign firms pay higher wages to their workers. As a result, domestic firms are also required to pay higher wages to their workers if they do not want to lose their workers. As a result, wage level increases.

There is a dire need to analyze the impact of inward FDI on income inequality. For this purpose, we have selected five SAARC countries, namely, Bangladesh, India, Nepal, Pakistan and Sri Lanka.

The rest of the study is organized as follows: Section 2 presents literature review. Section 3 discusses methodology and econometric specification. Section 4 presents empirical estimation and interpretation of results. Section 5 concludes the study and discusses policy recommendations.

2. LITERATURE REVIEW

The views of different researchers regarding the relationship between inward foreign direct investment and income distribution are different. Some are of the view that inward FDI is a source of improvement in income distribution whereas others think that inward FDI is a source of worsening income distribution in the host countries. A review of some of existing studies is as follows:

The effect of economic openness and democracy on income inequality was explored by [22] for 69 countries from 1960 to 1996. Dependent variable was Gini index whereas independent variables were FDI inflows, trade openness, portfolio investment, per capita GDP, square of per capita GDP, level of democracy indicated by democracy index and past income inequality. Firstly, OLS approach was employed to estimate the model in three ways by pooling the developing and developed countries separately. The results implied that in all of these cases, democracy improved income distribution significantly. Trade liberalization also had negative and significant impact on income inequality. However, inflows of FDI increased income inequality significantly. Sensitivity analysis was applied for checking the robustness of results. For robustness, income share of top 20% population as a measure of income inequality was used to replace Gini index whereas random effect, country fixed effect and decade fixed effect estimators were used to replace OLS approach. The results of robustness test showed that level of democracy had a negative and significant impact on income inequality. Impact of FDI on income inequality was positive and significant. However, openness to trade improved income distribution.

The effect of FDI on wage differentials in manufacturing sector in case of Indonesia is analyzed in [19]. The main concern of the study was that whether multinational corporations paid more than the local private firms to the workers having same quality. For this, different statistics were shown and relationship between regressand and regressors was found by using regression technique. Workers were divided into two main groups, namely, white-collar and blue-collar workers. The dependent variable of the econometric model was average wages of manufacturing plant separately for white-collar and blue-collar workers while the independent variables were foreign ownership, government ownership, education level of workers, sector, location and size of manufacturing plant, share of female workers in total labor force and use of inputs in the process of manufacturing. Sector and location with respect to industries and provinces were shown as dummy variables. Three regressions for each type of workers were run separately. In the first regression, effect of education level of workers on their wages was not included. Also, dummy variables of industries and provinces were not included in the model. In the second regression, education level of workers was included. In the third regression, both the education level of workers as well as dummy variables of industries and provinces was included. The results of the situation when workers were free to move across industries and provinces showed that foreign owned firms paid more wages to workers of host countries as compared to local firms. Foreign firms paid higher wages to workers having same level of education. They also inclined to hire those workers having higher level of education. Results were also same when assumption of free movement of workers across industries and provinces was relaxed. The study also found that foreign owned firms hired more female workers and paid lower wage to them. Therefore, more the female workers hired, the less the average wages paid.

[33] analyzed the effect of FDI on wage inequality and wages in five East Asian countries, namely, Hong Kong, Korea, Philippines, Singapore and Thailand from 1985 to 1998. Dependent variable of the model was wage inequality and was measured as the ratio of wages of skilled labor to wages of low skilled labor. Explanatory variables were FDI, unionization, relative skill scarcity and trade ratio. The empirical results obtained from pooled regression were not good; therefore, country-specific effects of FDI, relative skill scarcity and trade were employed. The results implied that more FDI increased wage inequality in Thailand. However, FDI had insignificant impact on wage inequality in other four countries. The results for effect of FDI on wages implied that impact of FDI on wages of both less skilled and skilled labor was positive.

[4] used pooled data for the time period from 1993 to 2002 for 119 countries to find out the relationship between FDI and income inequality. Gini index was used as the dependent variable. The independent variables were inward FDI stock as a percentage of GDP, outward FDI stock as a percentage of GDP, total FDI stock as a percentage of GDP, per capita GDP, GDP and real GDP growth rates. Dummy variables of Asia and Latin American and Caribbean countries were used to check whether the selected countries were located in these regions or not. Pooled ordinary least squares regression was used for the estimation of models. Six models were estimated separately to analyze the impact of inward FDI, outward FDI and total FDI on income inequality, with and without dummy variables of regions. The results showed that there was a highly significant and positive relationship between total FDI and income inequality in these selected countries. The impact of inward FDI as well as outward FDI on income inequality was also positive. Here, coefficient of outward FDI was greater than that of inward FDI which showed that the former was more important in causing income inequality than the latter. These were the results without using dummy variables of regions. With the

introduction of dummy variables of regions, the impact of inward FDI, outward FDI and total FDI on income inequality was still positive. The coefficient of dummy of Asia was negative but insignificant, whereas, the coefficient of dummy of Latin American and Caribbean countries was positive and significant. This showed that distribution of income was unequal in Latin American and Caribbean countries.

The impact of FDI on wage inequality in case of more than 100 developed and developing countries by taking the data from 1980 to 2002 is analyzed by [8]. The objective of the study was to check whether effect of FDI on wage inequality was linear or non-linear and whether it depended on level of development of a country or not. Wage inequality in manufacturing sector was measured by Gini index and Theil index. These indices were used as dependent variables of the model. Independent variables were FDI stock as a percentage of GDP, square of FDI, trade openness, total enrolled students in secondary education as a percentage of total population of the country and per capita GDP. The study grouped the selected countries as developed and developing countries by using the classification of OECD countries and non-OECD countries. The estimation of econometric model through fixed effect regression for pooled data of countries showed that the impact of FDI on wage inequality was insignificant. Therefore, different models were estimated separately for developed and developing countries through fixed effect regression for both Gini coefficient as well as Theil index as indicators of wage inequality. Finally, GMM regression technique was also employed for the estimation of equations. The results indicated that the impact of FDI on wage inequality was negative in case of developed countries which meant that more FDI stock tended to reduce wage inequality in developed countries and this relationship was not found to be non-linear. However, in case of developing countries, there was a negative and non-linear effect of FDI stock on wage inequality. This implied that at the start, more FDI tended to increase wage inequality among skilled and unskilled workers but with increasing FDI stock, wage inequality decreased.

[15] investigated the effect of FDI on income inequality for Mexico from 1990 to 2000 by taking panel data for 32 states. The study used two models for empirical analysis. In the first model, dependent variable was income inequality level in 2000 measured by Gini coefficient, whereas independent variables were Gini coefficient in 1990, an instrument for average FDI inflows from 1993 to 2001 and per capita gross state product in 1990. In the second model, instrument of FDI was found by regressing FDI inflows over 1993 to 2000 on income inequality in 1990, average years of schooling, per capita gross state product in 1990 and distance. Empirical analysis was carried out by employing instrumental variable two stage least squares (IV-2SLS) and OLS techniques. The findings suggested that impact of FDI on income inequality was negative and significant.

[23] explored the impact of FDI on income inequality for Pakistan. The study used time series data from 1971 to 2005. Income inequality was measured by Gini coefficient and it was explained variable of the model. The explanatory variables were FDI as a share of GDP, real per capita GDP, annual inflation, government size, trade openness and agriculture value added as a share of GDP. ARDL technique for long-run and ECM technique for short-run analysis were employed, respectively. The findings implied that impact of FDI on income inequality was positive and highly significant.

[27] studied the effect of economic globalization on income distribution for China from 1979 to 2006. Dependent variable of the model was Gini coefficient. Economic globalization was proxied by FDI to GDP ratio and trade to GDP ratio. Economic growth was proxied by per capita GDP. Another variable of model was spending of government on social insurance for social welfare of people. Long-run relationship between variables was tested by Johansen and Juselius Cointegration test. Gregory-Hansen test was used to check structural change in cointegration vector which suggested absence of structural change in cointegration vector. Cointegration test results implied that impact of trade and FDI on income inequality was negative. This means that economic globalization was good for income distribution in China. The role of spending by government on social insurance in improving the income distribution was also positive.

[14] analyzed the impact of globalization on income distribution in case of Pakistan over the time period from1972 to 2005. Globalization was indicated by FDI, workers remittances and trade openness. Dependent variable was Gini coefficient used as a measure of income inequality. Independent variables were FDI, workers remittances and trade openness. Trade openness was proxied by the sum of imports and exports of the country. The econometric model was estimated by OLS technique. Finally, Moving Average Process technique was used to solve the problem of autocorrelation. The results of OLS regression showed that impact of FDI on income inequality was significant and negative. This suggested that increase in FDI reduced the income disparity. Impact of workers remittances and trade openness on income inequality was also negative and significant.

[26] used industry level data for 101 industries in case of UK manufacturing over the time period of 1983 to 1992 to find the effect of FDI on wage dispersion by using panel data. The dependent variable of the econometric model was wage dispersion of skilled and unskilled workers. Independent variables were FDI, total sales of industry by value, research and development expenditure of industry, value of industry imports, capital stock, the industry

five firm concentrations by sales and region. Wage dispersion was calculated by dividing the wages of skilled labor by the sum of wages of skilled and unskilled labor. Two measures of FDI were used which were employment share of FDI and capital expenditure of multinational companies. Hausman test was employed to check whether fixed effect or random effect was appropriate for panel regression. On the basis of test, panel regression based on random effects was employed for estimation of the model. The results showed that FDI, one period lagged value of FDI and two periods lagged value of FDI when FDI was measured in terms of employment share had a positive impact on wage dispersion. When FDI was measured in terms of capital expenditure, effect of FDI and its first two lags on wage dispersion was also positive. Squared FDI in case of employment share of FDI had a positive impact on wage dispersion whereas squared FDI in case of capital expenditure of FDI had a negative impact on wage dispersion. Robustness of results was checked by using Generalized Method of Moments which also supported the initially estimated results. The study concluded that FDI had a positive effect on wage dispersion of skilled and unskilled workers in case of selected panel.

[3] used state level data for 48 states of United States of America to explore the short-run and long-run impact of inward FDI on income inequality. Dependent variable of the model was top decile income which was used as a measure of income inequality. It showed the income share of top 10% earners. Independent variable of the model was FDI to gross state product ratio. Long-run relationship between FDI and income inequality was checked by using common correlated effects (CCE) estimator which showed that FDI had a negative and significant impact on income inequality in the long run. Panel error correction model was employed to explore the short-run effect of FDI on income inequality. It showed that short-run impact of FDI on income inequality was either insignificant or weakly significant. Robustness of long-run impact of FDI on income inequality was checked by using different indicators of income inequality which were Antikson index, Theil entropy index and Gini index. Again, the study employed common correlated effects (CCE) estimator which showed the robustness of long-run results because long-run impact of FDI on income inequality was found again to be negative and significant. The study used dynamic ordinary least squares (DOLS) technique to check the endogeneity of variables of the model. Heterogeneity of results was checked also by using CCE estimator for each state to verify whether individual effect of FDI on income inequality was also negative for every state individually or not. The results indicated that in the long run, FDI had a negative impact on income inequality for 27 states whereas in 21 states, FDI had a positive long-run impact on income inequality.

[5] examined the impact of technology advancement and globalization on income inequality for 48 U.S. States by using panel data. Globalization was measured by trade and FDI while advancement in technology was measured by research and development (R&D) expenditures. Data was used over the time period from 1988 to 2003. The study used six different indicators of income inequality i.e. top 1% income share, top 10% income share, relative mean deviation (RMD), Gini coefficient, Theil's entropy index and Atkinson index. The model was estimated by employing fixed effects model. First difference estimator was used to check the robustness of results. The results implied that impact of FDI on five out of six measures of income inequality was positive and significant. Impact of trade on income inequality was also positive and significant. However, impact of technology on income inequality was insignificant.

[12] analyzed the impact of FDI on income inequality for ten European countries spanning over the time period from 1980 to 2000. Explanatory variable was FDI to GDP ratio. Stationarity of variables was tested by employing panel unit root based on Augmented Dickey-Fuller test. Panel co-integration was employed for the estimation of model while robustness of results was also checked. Tests for omitted variables, slope heterogeneity and endogeneous regressions were carried out as well. Effect of FDI on income inequality was analyzed for long run as well as for short run. The results showed that in the short run, FDI had a positive impact on income inequality. But in the long run, there was a negative impact of FDI on income inequality. But this was overall result of analysis for all selected countries of the sample. To check whether there was also negative impact of FDI on income inequality individually for every country of the sample, individual tests were carried out. These tests showed that out of ten countries, there was positive impact of FDI on income inequality in case of two countries. These countries were Spain and Ireland. Error correction term showed that FDI and income inequality were endogeneous which implied that there was bi-directional causality between FDI and income inequality.

[30] analyzed the impact of wages in foreign firms on wages in local firms in Indonesia. The study used panel data of 29 industries spanning over 1989 to 1996. Dependent variable of the model was wages paid by local establishments whereas independent variables were capital per worker, value added per employee, weighted average of foreign establishments in industry, wholesale price index, ratio of non-production workers, unemployment rate, material, dummy of time and size of plant etc. The estimations were carried out in two ways. Firstly, the impact was analyzed when workers were assumed to move freely throughout the country. Secondly, the workers could move only between two islands, i.e. Java and Sumarta islands. The analysis in both of the cases showed that wages in

multinational firms had a positive impact on wages in local firms. In the next step, the study employed the analysis by dividing the whole sample into industries with large wage gaps and industries with small wage gaps with their wages compared to wages of foreign establishments. The results indicated that 1 percentage point increase in wages in foreign establishments led to increase wages in local establishments with large wage gap by approximately 5 percentage points. However, the relationship with small wage gap industries' wages was found to be insignificant. These were the results when labor was free to move across the country. The results were same when labor was restricted to move between Java and Sumarta Islands only. On the whole, the study concluded that wages in foreign establishments had positive impact on wages in local establishments in Indonesia.

[28] studied the effect of FDI on labor income inequality and labor income for 14 OECD countries by using panel data over the time period from 1990 to 2010. Income of labor was shown by four measures i.e. annual minimum wage, annual average wage, labor income share and relative wage. The association between FDI and income was analyzed by using first three measures. The relationship between FDI and income inequality among unskilled and skilled workers was found by using fourth measure i.e. relative wage. Explained variable of the model was respective measure of income whereas explanatory variables were FDI stock as a percentage of GDP, labor productivity, trade liberalization and employment rate. Firstly, three models were estimated by using panel regression to analyze the effect of FDI on annual average wage, labor income share and annual minimum wage. The findings showed that impact of FDI on all of three measures of income was positive and significant. Then two lags of FDI were included in the model and the models were estimated for same explained variables again. The effect of FDI and its two lags was still significant and positive. The study also considered the impact of FDI on income inequality among unskilled and skilled labor force by using the variable of relative wage. The estimation of model with and without the inclusion of lag of FDI indicated that FDI significantly increased the wage gap between minimum wage earners and average wage earners. Therefore, the study concluded that FDI was helpful to increase the wages of skilled workers as well as unskilled workers in absolute terms but it also increased the wage gap between them.

The above review of literature reveals that impact of inward FDI on income inequality is ambiguous and needs to be analyzed empirically for selected SAARC countries.

3. METHODOLOGY AND ECONOMETRIC SPECIFICATION.

3.1. Model Specification

Following model has been specified for econometric analysis:

$$\mathbf{Gini_{it} = \beta_0 + \beta_1 FDI_{it} + \beta_2 TO_{it} + \beta_3 GDPC_{it} + \beta_4 INF_{it} + \varepsilon_{it}}$$

Where:

$Gini_{it}$ = Gini coefficient (measure of income equality)
FDI_{it} = FDI stock as a percentage of GDP
TO_{it} = Trade openness (exports plus imports as a percentage of GDP)
$GDPC_{it}$= Per Capita GDP in U.S. $ (proxy for economic growth)
INF_{it}= Annual inflation rate (consumer price index)
ε_{it} = Error term
i = Countries (i = 1, 2,3,…….,5)
t = Years (1980, 1981,1982,…….2011)

3.2. Variable Description and Expected Impacts

3.2.1. Gini coefficient. Gini coefficient has been used as the dependent variable of the model. Gini coefficient (also known as Gini index) measures the inequality of income among recipients of income. It is a widely used indicator of income inequality. The numeric value of Gini coefficient lies between 0 and 1. In percentage form, it lies between 0 % and 100 %. If the value of Gini coefficient is 0, it shows that income is equally divided among all people which means that all people have equal income. It shows perfect equality of income distribution. On the other hand, if value of Gini coefficient is 1, this shows that one person has all income. It is perfect inequality of income distribution. The value of Gini coefficient near to 0 shows better distribution of income whereas value near to 1 shows worsening of income distribution. Value of Gini coefficient is calculated on the basis of Lorenz curve which is graphical representation of income distribution. In the graph of Lorenz curve, cumulative percentage of income recipients is shown on horizontal axis whereas cumulative percentage of national income is shown on vertical axis. The 45-degree line shows perfect equality of income distribution. Lorenz curve lies below 45-degree line because perfectly equal distribution does not hold. The value of Gini coefficient is calculated by dividing the area between 45-degree line and Lorenz curve by the total area under 45-degree line. i.e. G= A/ (A+B). Gini

coefficient is mostly used by researchers for the analysis of income distribution. Some of the studies that used Gini coefficient as an indicator of income inequality are [22], [4], [8], [23], [27], [14], [5], [7], [9], [10] and [24].

3.2.2. Inward Foreign Direct Investment (FDI). The main independent variable of the model is inward FDI. Impact of inward FDI on income inequality may be either positive or negative. Inward FDI may worsen income distribution if it creates less employment due to increased use of capital intensive methods of production. Secondly, if it brings modern technology in the host countries and increases demand for skilled labor more than demand for unskilled labor, it can increase income inequality. On the other hand, inward FDI may improve distribution of income as it fills different gaps in the host economy. It may become a source of more capital formation, can create more jobs and may become a source of betterment of people of host country. Another channel is that it can increase the economic growth of the host country and then benefits of this economic growth may be shared by the masses leading to better distribution of income. Therefore, expected sign of coefficient of inward FDI may be either positive or negative depending upon the relative impacts of FDI on income inequality. We have used inward FDI stock as a percentage of GDP. Proxy for FDI may be used either as FDI flows or FDI stocks. According to [8], FDI is a source of stock of technology in a country. According to [3], FDI stocks are better to capture the long-run impacts of FDI as compared to FDI flows. According to [12], FDI flows show more fluctuations. Therefore, it is better to use FDI stocks as a proxy for FDI. According to [2], inward FDI stock shows influence of multinational companies in political and economic terms. Some of the studies that used inward FDI stock as a proxy for inward FDI are [4], [8], [21], [20] and [3].

3.2.3. Trade Openness. The second independent variable used in the model is trade openness. It has been calculated as the ratio of trade to GDP, i.e. exports + imports / GDP. Exports, imports and GDP have been taken in million U.S. $. The variable has been taken in percentage form. The expected sign of coefficient of trade openness may also be either positive or negative because trade openness may be a source of either increasing or decreasing income inequality in a country. Trade openness may be good for distribution of income as it increases the demand for labor and also their return. But this happens if exports of a country exceed its imports. On the other hand, if imports of a country are greater than its exports, then it may decrease the demand for labor and ultimately returns to labor and may become a source of increasing income inequality. Trade openness may also bring better technology that can improve the productivity of labor but it may decrease the demand for labor due to increased use of capital intensive methods of production and also causing disparity for the demand for skilled and unskilled labor. This may become a source of increasing income inequality. Some of the studies that used trade openness measured by ratio of sum of exports and imports to GDP are [22], [23], [27], [17] and [7].

3.2.4. Per Capita GDP. The third independent variable of the model is per capita GDP taken in current U.S. $. It has been used as a proxy for economic growth. The expected sign of coefficient of per capita GDP is either positive or negative. Economic growth leads to increased income inequality of a country if its fruits are not enjoyed by all people equally. On the other hand, economic growth may lead to decreased income inequality if there is labor absorbing economic growth and better policies of income distribution. This variable has been used by [2], [4], [27], [17], [24], and [23].

3.2.5. Annual Inflation Rate. The fourth independent variable of the model is annual inflation rate taken as consumer price index (CPI). Impact of inflation on income inequality may be either positive or negative. Positive impact of inflation may be due to two reasons. Firstly, increase in inflation rate affects the poor more than the rich as purchasing power of the poor decreases more than that of the rich. Secondly, number of poor may also increase as a result of inflation in the country. Due to this, income inequality may increase. On the other hand, inflation may improve income distribution because higher inflation leads to increase in investment from production side. It may lead to high economic growth and increase in employment creation. Due to this, demand for and returns to labor may increase resulting in better distribution of income. Therefore, it is expected that the sign of coefficient of inflation may be either positive or negative. This variable has been used by [24], [23], [17] and [7].

3.3. Data Sources. Panel data on annual basis over the time period from 1980 to 2011 has been collected for selected five SAARC countries, namely, Bangladesh, India, Nepal, Pakistan and Sri Lanka. The panel used is unbalanced panel with at least 25 observations on each variable for each country. Data has been collected from the Standardized World Income Inequality Database (SWIID, 2011), Version 3.1, developed by [25], World Development Indicators (WDI) and the website of United Nations Conference on Trade and Development (UNCTAD).

4. ESTIMATION AND INTERPRETATIONS

4.1. Empirical Findings. First of all, F-test for fixed effects testing will be used to check whether pooled OLS regression or fixed effects model is appropriate for estimation of the model. Secondly, to choose between fixed effects model and random effects model, Hausman's test will be employed. On the basis of results of both tests, appropriate estimation technique will be employed.

Table1: F-Test for Fixed Effects Testing

Null Hypothesis: OLS is appropriate			
Effects Test	**Statistic**	**d.f.**	**Prob.**
Cross-section F	13.171390	(4,118)	0.0000*

* shows 1% level of significance.
Source: Authors' own calculations

F-test has been used to choose between pooled OLS regression and fixed effects model. The null hypothesis is that there is common constant for all cross-sections and pooled OLS is better for estimation of the model. The alternate hypothesis is that there are different constants for each cross-section and fixed effects model is better for the estimation of the model. If we fail to reject the null hypothesis, then pooled OLS regression is used. On the other hand, if null hypothesis is rejected, then fixed effects model is used. According to results of F-test, as F-statistic is highly significant at 1% level of significance with p-value = 0.0000, therefore, the null hypothesis is rejected and the test suggests that it is appropriate to use fixed effects model for the estimation of our model.

Table 2: Hausman Test Results

Null Hypothesis: Random effects model is appropriate		
Chi-square statistic	D.F	Probability
52.685561	4	0.0000*

* shows 1 % level of significance.
Source: Authors' own calculations

Hausman test has been employed to check whether fixed effect model or random effects model is appropriate for estimation of the model. The null hypothesis of the test is that random effects model is appropriate. As the value of Chi square statistic is higher and p-value shows that null hypothesis of Hausman test is rejected at 1% level of significance, therefore, Hausman test suggests that it would be appropriate to use fixed effects model for estimation of the model. The findings of fixed effects model estimation as suggested by Hausman test and F-test has been shown in Table 3.

The findings are interpreted as follows:

Inward FDI has a negative and statistically significant impact on income inequality. This implies that increase in inward FDI stock tends to improve the income distribution in the selected five countries. The coefficient is statistically significant at 1% level of significance. The findings support the results of [15], [27], [14], [3], [9] and [12].

Trade openness has a positive and statistically significant impact on income inequality. Increase in trade openness worsens the income distribution in the selected five countries. Trade openness is statistically significant at 1% level of significance. The findings support the results found by [23], [5] and [24].

Table 3: Fixed Effects Model Estimation

Dependent Variable: GINI				
Variable	**Coefficient**	**Std. Error**	**t-statistic**	**Prob.**
FDI	-0.355998	0.125137	-2.844870	0.0052*
TO	0.251017	0.033625	7.465141	0.0000*
CPI	-0.130857	0.064230	-2.037326	0.0439**
GDPC	0.005169	0.001233	4.193172	0.0001*
C	25.28324	1.533485	16.48744	0.0000*
R^2	0.619861			

*and ** show the 1% and 5% level of significance, respectively.
Source: Authors' own calculations

Annual inflation measured by CPI has negative and statistically significant impact on income inequality. This implies that increase in inflation tends to improve income distribution. The coefficient is statistically significant at 5% level of significance. The findings support the results found by [23] and [24].

Per capita GDP has a positive and statistically significant impact on income inequality. This means that increase in economic growth is a source of worsening income distribution in the selected five countries. The coefficient is statistically significant at 1% level of significance. The findings support the results of [23], [27] and [17].

As far as the individual impact of inward FDI along with other explanatory variables on income inequality is concerned, we found following results:

In the selected five countries, i.e. Bangladesh, India, Nepal, Pakistan and Sri Lanka, increase in inward FDI by 10 percentage points leads to reduce income inequality by approximately 3.6 percentage points while other things

being fixed. In other words, 10 percentage points increase in inward FDI improves income distribution by approximately 3.6 percentage points. The coefficient of trade openness is 0.25 which implies that other things being fixed, when trade openness increases by 10 percentage points, it increases income inequality by approximately 2.5 percentage points. Inflation measured by CPI has a negative and statistically significant coefficient of -0.13 which implies that other things being fixed, 10 percentage points increase in annual inflation improves income distribution by approximately 1.3 percentage points or it reduces income inequality by approximately 1.3 percentage points. The coefficient of economic growth proxied by per capita GDP is 0.005 which shows that other things being fixed, increase in per capita GDP by 100 units worsens income inequality by 0.5 percentage points. The value of coefficient of determination i.e. R^2 is approximately 0.62 which implies that approximately 62% variation in the explained variable is being explained by explanatory variables included in the model whereas approximately 38% variation in the explained variable is being explained by other variables which are not included in the model as explanatory variables and are assumed to be constant.

5. CONCLUSION AND POLICY RECOMMENDATIONS

Impact of inward FDI on income distribution is an ambiguous issue because some researchers found that more FDI leads to improve the distribution of income in the host country while others discovered that it worsens income distribution. Therefore, it needs empirical investigation. For this purpose, we selected five SAARC countries, namely, Bangladesh, India, Nepal, Pakistan and Sri Lanka. Panel data was used over the time period from 1980 to 2011 with at least 25 observations for each variable for each country. Dependent variable of the econometric model was income inequality measured by Gini coefficient whereas the independent variables were inward FDI stock as a percentage of GDP, trade openness (exports + imports / GDP), per capita GDP used as a proxy for economic growth and annual inflation rate measured by consumer price index (CPI). F-test for fixed effects testing was applied to choose between pooled OLS regression and fixed effects model. The results of F-test suggested using fixed effects model. Hausman test was used to choose between fixed effects model and random effects model which suggested that fixed effects model is appropriate for estimation of the model. The model was estimated by using fixed effects model. The results showed that inward FDI stock has a negative and statistically significant impact on income inequality. Trade openness has a positive and statistically significant impact on income inequality. The impact of per capita GDP on income inequality is positive and statistically significant. However, annual inflation has a negative and statistically significant impact on income inequality. Summing up, we can say that impact of inward FDI on income inequality is negative and statistically significant in the selected five SAARC countries. Inward FDI is a source of improving income distribution in these countries. FDI should not be blamed for worsening income distribution in these countries. There are other factors which lead to increase income inequality in these countries.

As inward FDI leads to improvement of income distribution in these selected countries, therefore, these countries should encourage more inward FDI because it can lead to more investment and increased employment opportunities. Due to this, those people who are unemployed may get employment. Their earnings may increase and ultimately, this may lead to improve income distribution among the poor and the rich. To make trade openness favorable for income distribution, government should try to increase exports and decrease imports of the country but a certain limit should be considered because problem of retaliation can occur by the trade partners of a country if it continues to limit its imports beyond a certain limit and this may result in further decrease of exports of the country. Economic growth can be made good for masses of a country if there are better distribution policies. If there is high economic growth but its distribution is not good, then it is not favorable for the poor. Therefore, economic growth can be made favorable for income distribution through progressive taxation system. Government should keep inflation within a certain limit and it should also compensate the poor against inflation.

REFERENCES

1. Atique, Z., Ahmad, M. H., Azhar, U., & Khan, A. H. (2004). "The Impact of FDI on Economic Growth under Foreign Trade Regimes: A Case Study of Pakistan [with Comments]". *The Pakistan Development Review*, 707-718.
2. Bussmann, M., De Soysa, I., & Oneal, J. R. (2005). "The Effect of Globalization on National Income Inequality". *Comparative Sociology*, *4*(3-4), 3-4.
3. Chintrakarn, P., Herzer, D., & Nunnenkamp, P. (2011). "FDI and income inequality: evidence from a panel of US states". *Economic Inquiry*.
4. Choi, C. (2006). "Does foreign direct investment affect domestic income inequality?" *Applied Economics Letters*, 13(12), 811-814.

5. Chordokrak, C., & Chintrakarn, P. (2011). "Globalization, Technology, and Income Inequality: New Evidence", *International Research Journal of Finance and Economics Issue 6,* 7-14.
6. Driffield, Nigel and Taylor, Karl (2002). "Spillovers from FDI and Skill Structures of Host-Country Firms". Department of Economics, University of Leicester, Discussion Papers in Economics number 02/4.
7. Faustino, H., & Vali, C. (2011). "The effects of globalization on OECD income inequality: a static and dynamic analysis". *DE working papers; No12/2011/DE.*
8. Figini, Paolo & Görg, Holger, (2006). "Does Foreign Direct Investment Affect Wage Inequality? An Empirical Investigation," IZA Discussion Papers 2336, Institute for the Study of Labor (IZA).
9. Georgantopoulos, A., & Tsamis, A. (2011). "The Impact of Globalization on Income Distribution: The Case of Hungary". *Research Journal of International Studıes*, (21), 17.
10. Halmos, K. (2011). "The Effect of FDI, Exports and GDP on Income Inequality in 15 Eastern European Countries". *Acta Polytechnica Hungarica*, 8(1), 123-136.
11. Hausman, J. A. (1978). "Specification Tests in Econometrics". *Econometrica*, 46(6), 1251-1271.
12. Herzer, D., & Nunnenkamp, P. (2011). "FDI and income inequality: Evidence from Europe". Kiel Working Paper No. 1675 | January 2011.
13. Heyman, F., Sjöholm, F., &Tingvall, P. G. (2007). "Is there really a foreign ownership wage premium? Evidence from matched employer–employee data", *„Journal of International Economics*, *73*(2), 355-376.
14. Hussain S., Chaudhry, I. S., & Hasan, M. U. (2009), "Globalization and Income Distribution: Evidence from Pakistan", *European Journal of Social Sciences,*8(4), 683-691.
15. Jensen, N. M., & Rosas, G. (2007). "Foreign direct investment and income inequality in Mexico, 1990-2000". *International Organization*, 61(3), 467-487.
16. Jin, F. (2009). "Foreign direct investment and income inequality in China". Seoul Journal of Economics, 22(3), 311-339.
17. Kai, H., & Hamori, S. (2009). "Globalization, financial depth, and inequality in Sub-Saharan Africa". *Economics Bulletin*, *29*(3), 2025-2037.
18. Khan, M. A., & Khan, S. A. (2011). "Foreign Direct Investment and Economic Growth in Pakistan: A Sectoral Analysis". *Pakistan Institute Of Development Economics Working Papers*, *67*.
19. Lipsey, R. E., & Sjöholm, F. (2004). "Foreign direct investment, education and wages in Indonesian manufacturing". *Journal of Development Economics*, *73*(1), 415-422.
20. Munshi, F. (2010). "Globalisation and Occupational Wage Gap in Developing Countries: 1983-2003". *Bangladesh Development Studies*, *33*(4), 39-50.
21. Onaran, Ö., & Stockhammer, E. (2008). "The effect of FDI and foreign trade on wages in the Central and Eastern European Countries in the post-transition era: A sectoral analysis for the manufacturing industry". *Structural Change and Economic Dynamics*, *19*(1), 66-80.
22. Reuveny, R., & Li, Q. (2003). "Economic Openness, Democracy, and Income Inequality: An Empirical Analysis". *Comparative Political Studies*, *36*(5), 575-601.
23. Shahbaz, M., & Aamir, N. (2008). "Direct Foreign Investment and Income Distribution: A Case Study for Pakistan". *International Research Journal of Finance and Economics*, *21*, 7-18.
24. Shahbaz, M., Aamir, N., & Butt, M. S. (2007). "Rural-Urban Income Inequality under Financial Development and Trade Openness in Pakistan: The Econometric Evidence". *The Pakistan Development Review*, 657-672.
25. Solt, Frederick. (2009). "Standardizing the World Income Inequality Database." *Social Science Quarterly* 90(2), 231-242. SWIID Version 3.1, December 2011.
26. Taylor, K., & Driffield, N. (2009). "Wage dispersion and the role of multinationals: Evidence from UK panel data". http://clahrc-ndl.nihr.ac.uk/gep/documents/conferences/2000/july2000conf/taylor-2000.pdf 1-23.
27. Tian, X., Wang, B., & Dayanandan, A. (2008). "The Impact of Economic Globalization on Income Distribution: Empirical Evidence in China". *Economics Bulletin*, *4*(35), 1-8.
28. Tintin, C. (2012). "Foreign Direct Investment, Labor Income and Inequality: Evidence from OECD Countries". http://fsaraceno.free.fr/INEQ/tintin.pdf. 1-23.
29. Todaro, M., & Smith, S. C. (1997). *Development Economics*. Adiso-Wesely, 6th ed. 1-738.
30. Tomohara, A., & Takii, S. (2011). "Does globalization benefit developing countries? Effects of FDI on local wages". *Journal of Policy Modeling*, *33*(3), 511-521.
31. United Nations Conference on Trade and development available at (www.unctad.org).
32. Velde, D. W. Te, & Morrissey, O. (2004). Foreign direct investment, skills and wage inequality in East Asia. *Journal of the Asia Pacific Economy*, *9*(3), 348-369.
33. World Development Indicators available at (www.worldbank.org).