Globalization and Poverty: A Divisional Study on Bangladesh (1990-2010)

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Abstract- This paper investigates the nexus between economic aspect of globalization and poverty across the six key divisions of Bangladesh. Arguments are based on theories of dualistic development and structural transformation process in low income countries. In this model economic globalization of Bangladesh is measured by three major features which are trade of merchandise and services, FDI and remittance inflow. Additionally a control variable is taken which is population. So for this statistical panel regression is used i.e. fixed-effect model and random-effect model. The lack of data deficiency did not let us execute any statistical procedure to choose any specific model. In this paper both the model have uniform outcome. The empirical findings in both the model are consistent with conventional wisdom for remittance inflow. Population and trade have traditional affiliation with poverty, but statistically insignificant in both model. However the positive FDI link implies that it totally contradicts with normal norm. Then the emphasis is on dummy variable analysis. In the dummy variable analysis Dhaka division is excluded to get rid of the dummy variable trap and to make comparison with five other divisions. Each of the division has directly proportional relationship with poverty. Additionally it was found to be statistically significant apart from Khulna division. To conclude, the fruits from economic globalization are unequally divided across divisions.

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I. Introduction

Globalization and poverty both are ubiquitous and ambiguous term (Globalization, Poverty and Inequality, 2003).But it does not mean they are vague issue. However globalization is a multi-dimensional concept (Santarelli and Figini, 2006). Social, political and economic aspects are the central dimension of globalization (Marber, 2004). Additionally there are other numerous aspects of globalization. Likewise, poverty is a complex phenomenon and it arises chiefly from economic, political and environmental factors (Winters, McCulloch and McKay, 2004). Besides there are also several reasons causing poverty. Furthermore there are different dimension of measuring poverty and globalization. Globalization can be measured through globalization index. And it can also be calculated using openness of the economy i.e. trade liberalization process (Bhagwati and Srinivasan, 2002). On the other hand poverty can quantified using health, consumption and income levels. And Todaro and Smith (2009) mention Amartya Sen's view of poverty

who contemplated as capability to function approach. As a LDC poverty is nothing new in Bangladesh, rather quite prevalent. At the same time globalization is not a new phenomenon in Bangladesh. Bangladesh embraced globalization rigorously during the 1990's despite hesitant commencement in the mid 1980's. This paper is going to focus in the economic aspect of globalization and income perspective of poverty on the chief six regions in Bangladesh.

There are substantial controversy about globalization and poverty nexus in the previous work. This is because the empirical studies are found on both sides. UNCTAD (2002) proved the fact that globalization deteriorates poverty for LDC. Bhagwati and Srinivasan (2002) measured globalization in terms of trade liberalization for India and China. He discussed during the eighties India and China stick to rigorous trade liberalization process. As a result their economy had an extensive economic growth. They achieved economic growth with the help of exporting labor intensive goods. Consequently economic growth had tremendously affected poverty but positively. At the other end, Dollar and Kraay (2002) cross country regression found that trade does not ease poverty over 72 developing countries. His view of globalization was openness of the economy. The main setback here is that globalization does not lead to fairer distribution of income. This is because the prize of globalization is not distributed equally which is economic growth.

The theoretical literature regarding globalization and poverty has worked diversely for different countries. Neo classical theory of growth advocates that free trade and opening up the domestic economy would generate economic growth. This is because each country would be able to specialize in the sector they are efficient. Furthermore the country would be utilizing its abundant factor of production and exporting the goods produced by them. Kuznets (1955) inverted U hypothesis has declared that economic growth would be divided unequally in the initial stage. Later, after a certain point of time it would be distributed equally. Ultimately this would help to ameliorate poverty. However there are empirical evidences attained both for and against on numerous countries.

Bangladesh was basically divided across six major divisions. But after late 2000 one more division was added. The main six divisions are Khulna, Barisal, Chittagong, Sylhet, Dhaka and Rajshahi. These six

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divisions incorporate the whole Bangladesh. This study gauged the impact of economic globalization on the six major divisions across Bangladesh. Additionally to get a clearer scenario of reward distribution of economic globalization dummy variable analysis is done across the six divisions. To be precise this analysis has looked into whether the remuneration from economic globalization is distributed across divisions in the form of poverty reduction. Therefore the study has compared Dhaka division with the other five divisions since Dhaka is the capital city and undoubtedly one of the affluent cities in Bangladesh. In the earlier studies related to Bangladesh it showed that economic globalization has followed the ideal wisdom i.e. lowered poverty. But in fact despite of widespread economic globalization poverty has persisted in particular division of Bangladesh. Therefore the government of Bangladesh was not able to take corrective measure in view of the fact that they were unaware. This research will look into each division which is deprived from economic globalization in the form of poverty eradication. This is the reason for giving importance on this division wise research. Previously there have been a lot of investigations on calculating the impact of economic globalization and poverty. Earlier, the studies were on panel studies which are calculating the impact of globalization on all the LDC including Bangladesh. Nevertheless the impact of economic globalization and poverty has been empirically tested on South Asian and Asian countries. Moreover there are time series reports specifically on Bangladesh on poverty and economic globalization. There are reports on the main divisions of Bangladesh regarding the growth, poverty and income inequality. Furthermore very few studies are done on the globalization and poverty divided across six key regions. The study of economic globalization on poverty according to the key six divisions of Bangladesh is the very first time to the best of my knowledge. This was the foremost motivation behind this research topic. This examination would also enlighten the government about certain component of economic globalization acting in favor or against poverty across divisions.

Initially, after the introductory remarks an illustration of the research question and research objective is given in the first section of this study. Then in the second chapter brief background about the globalization, economic globalization and poverty of Bangladesh has been given. The third part consists of investigating the empirical evidences found in the previous literature regarding this topic. Fourthly, the theoretical framework regarding poverty and economic globalization is examined. Section 5 draws up the research design and then interpreting the empirical results found. Finally it discusses about the limitation and gives concluding remarks to finish it off.

a) *Research objectives*
- To find what does globalization and economic globalization signify.
- To find what are the different aspects of economic globalization.
- To evaluate the relationship between economic globalization and poverty across the six main divisions of Bangladesh.

b) *Research questions*
- What is globalization?
- What is economic globalization?
- What are the main aspects of economic globalization?
- What is poverty?
- What is the network between economic globalization and poverty in the core six divisions of Bangladesh?

II. Background

Globalization is not a new phenomenon. It is prevalent in most of the countries of the world. Globalization has different dimensions. Zhou, Biswas, Bowles and Saunders (2011, 2) mentioned in the economic perspective globalization means liberalization of trade in goods and services and free movement of direct and portfolio capital. He further indicated that apart from the economic point of view "there is no uniquely accepted definition of globalization". The impacts of globalization can be looked at with different perspectives. Zhou, Biswas, Bowles and Saunders (2011, 2) stated the work of Scholte (2000) in his paper, which identified that there exist at least five broad definition of globalization in the literature. Initially, globalization represents movement of goods and capital from one country to another. This is called internationalization. In the second place globalization is a process of liberalization. The process of liberalization intends to remove barrier and import restriction between countries imposed by government. This is aimed for more accessible and border less world economy. After that globalization represents universalization, this means "the process of spreading various objects and experiences (e.g., a specific television program) to every country". Then he portrayed globalization as "modernization or westernization, which means the process of spreading various objects and experiences (e.g., a specific television program) to every country". Lastly he depicted globalization as "deterritorialization, which means reconfiguration of geography so that social space is no longer wholly mapped in terms of territorial places and territorial borders".

Basically globalization can be measured through globalization index. This is calculated by several intellectual authors and authenticated institutions.

a) Economic globalization

Todaro and Smith (2003, 510) elucidate globalization in more economic perspective "as the increased openness of economies to international trade, financial flows and foreign direct investment (FDI), rapid growth of knowledge and innovation which seems more visible in the developed countries". Furthermore Jenkins (2005) defined economic globalization which is quite consistent with Todaro and Smith (2003). He explained it "as increasing integration of a national economy with the world economy through exchange of good and services, capital flows, technology, information, and labor migration"(Jenkins, 2005, 4).

b) Poverty

Poverty is such a snag which is found in every country of this world. The presence of poverty is inevitable and extent of poverty is dissimilar in different country. Poverty is such a problem which is prevalent in developing countries relative to developed countries. Primarily a person is said to be poor if he or she is unable to fulfill its subsistence living. Subsistence living refer to a situation where a person is just satisfying its basic needs such as shelter, food, clothing, water and other essential things. To be more specific subsistence living imply a situation where it is hardly sufficient to sustain a life. In general, least developed country report (2002, 39) expresses poverty as "a situation in which a major part of the population lives at or below income levels sufficient to meet their basic needs". Ijaiya and Umar (2004, 3) expressed "poverty as disempowerment viewed from three dimensions: socio-economic, political and psychological". He elucidated political disempowerment as poor people's deprivation in the political say and agenda. Moreover "psychological disempowerment refers to poor people's internalized sense of worthlessness and passive submission to authority". Lastly socio-economic indicate the lack of access to resources indispensable for their subsistence living.

Basically poverty is a multi-dimensional problem. Correspondingly the problem of poverty arises from several different aspects. Poverty can be measured through dimensions such as nutrition, health, consumption and income levels. So poverty is like hydra that used to have many head. The easiest and simplest among the dimension to measure poverty is the income dimension. Basically if a person is unable to sustain a minimum level of income is said to be poor (Globalization, Growth and Poverty, 2002). And the threshold of that income is called the poverty line. Moreover to make it analogous worldwide there is an international poverty line. Todaro and Smith (2009, 828) explicate international poverty line as "and international real income measure, usually expressed in contrast dollars (e.g. $1 per day), used as a basis for estimating the proportion of the world's population that exists at bare levels of subsistence". Santarelli and Figini (2002, 4) said

"this threshold is defined relative if it is determined annually with respect to the population's average level of income, absolute if it is determined with respect to the monetary value of a bundle of necessary goods and services, updated every year to take account of the variation in prices and bundle composition".

Lastly, the measures discussed above have critical defects.

In this paper we concentrate on the economic aspect of globalization on poverty. Therefore the issue of how the globalization has affected poverty in the previous literature is taken up in the next chapters.

III. Empirical Evidence

Globalization has many dimensions. But in this paper is based mainly on the economic aspect of globalization and its relationship with poverty. Economic globalization refers to greater economic integration with the rest of the world without any constraint (International Trade Report, 2011a). Additionally the empirical evidences are quite mixed among economic globalization and poverty (Human Development Report, 2011). According to Reuveny and Li (2003), Mahler (2004) and searching the literature we found that there are four major modes of economic globalization.

a) Trade

Trade refers to the exchange of services and goods of the local economy with the rest of the world. Theoretically the more unrestricted the economy implies vast amount of trading of goods and services of the local economy with the rest of the world. So in this case the Heckscher-Ohlin model is chief to explain the situation. This model of international trade tries to explain that countries will produce those goods in which they have abundant factor of production. Thus it make both the parties well off if they trade with each other.

Reuveny and Li (2003, 579) expressed that "building on this model, Stolper and Samuelson (1941) predicted that trade would raise the incomes of the owners of abundant factors and reduce the incomes of the owners of scarce factors". Developed countries are bestowed with skilled labor and capital in comparison to developing countries. Moreover developing countries are endowed with unskilled labor. Consequently, export from LDC would benefit its copious factor which is unskilled labor and ameliorate the income inequality of LDC which ultimately reduces the lower income group. Hence, the poverty rate also decelerates. Wood (1994) found evidence on Stolper-Samuelson model and completely consented with the model. Conversely Robbins (1996) found evidence which does not comply with the model.

Bhagwati and Srinivasan (2002) empirically found that freer trade would help the poor countries by exporting labor intensive goods. Besides, it would ultimately lessen the poverty. The main theme is that trade would surge economic growth. And economic growth would diminish poverty. However the major setback arises when the distribution of growth is unevenly distributed. This is how it elevates the poverty population. Therefore Dollar and Kraay (2002) cross country regression found that trade does not ease poverty over 72 developing countries. But Harrison (1996) result was skeptical about trade and poverty.

Nevertheless we got variation in the end result of developed country as well. McMillan and Harrison (2006) got positive and statistically significant relation between high income countries. However Hill and Rapp (2009) verdict was totally opposite. On the contrary Rodriguez and Rodrik (1999) demonstrated skeptical conclusion.

Nonetheless when it comes to Asia the end upshot are quite diversified. Wade (2004) study on East Asian countries resulted in negative relation and statistically significant upshot. Bhattarai (2011) analysis on Bangladesh, Nepal and Pakistan got that trade has increased poverty. But reverse culmination for India and Sri Lanka.

In conclusion, the impact of trade on poverty is not consistent across region. As a result trade has affected poverty distinctly for different countries.

b) *Foreign direct investment*

FDI mainly refer to flow of foreign investment into host country as MNE. Foreign firms bring in lots of capital and technology into host country. The injection of capital would work as investment boost into the local economy. And modern technology is a provision to heighten their productivity a step ahead. So, according to neo classical theory both capital and technology would promote economic growth. Kuznets (1955) inverted U hypothesis explains that during the early stages of economic growth the income distribution is very likely to be unequal. Later, the growth would help to contract income inequality and poverty.

Portes (2008) attained reverse acquaintance between poverty and FDI for developed country. Moreover he directed that FDI was made in capital intensive sector and skilled labor. Developed country has abundance of capital and skilled labor compared to developing country. Thus it helped to amplify the income of the lower income group and finally abbreviate poverty. Baddeley (2006) report on the developed economy established that FDI augments poverty. Basically government is deprived from the advantage of FDI for tax holiday and other financial incentive given to the foreign firms. Therefore the reward could not be distributed to the lower income group in developed

country. Besides, Rodrik (1997) was skeptic about the link between FDI and poverty.

De Mello (1997) investigation on developing countries acquired negative bond between poverty and FDI which was also statistically supported. He stated that foreign investor that came into developing country were basically into labor intensive sector. And developing country has overflowing supply of labor compared to developed country. Subsequently the employment rate convalesces and poverty rate drops (Stiglitz, 1998).

According to the Globalization, Growth and Poverty (2002) report it is stated that FDI has alleviated poverty in some of the Asian countries like Malaysia and Taiwan. Whereas, it is also revealed that FDI did not lessened poverty extensively in Asian countries like Bangladesh. The most relevant reason behind poverty could be foreign firms give threat of leaving the host country which lowers the wages of workers (Nafziger, 1997).

Finally to wrap it off, the impact of FDI on poverty is not coherent across region. At the end of the day FDI effect was doubtful toward minimizing poverty.

c) *International labor mobility*

Labor mobility in the perspective of globalization is to emigrate from one country to another in search of better jobs. Labor mobility is quite favorable for the developing country due to the fact they have more surplus labor in terms of developed country. It brings in reasonably high amount of foreign revenue known as remittance. Remittance levitates the income of the remittance recipient country. This broadens the horizon of the income and its source. Eventually the poverty rate is dampened.

Jongwanich (2007) study on international migration has an inverse relation as well as econometrical significance with poverty. This is due to labor migration builds up remittance into the home country. Hereafter, this increases the income and smooth's the consumption of the low income group. Stark and Levhari (1982) detected direct relation between poverty and international migration. This shows international migration would not be beneficial to poor. He explained that migration can be costly scheme. It is mainly for the well–off households. And only they are capable of undertaking migration process and later send remittance. For that reason the poor people are neglected from the remittance payment. At the end of the day inequality progresses which tends to exacerbate poverty. UNCTAD (2010) report advocates that there is still a sizable debate on this nexus.

Ahamed and Ehsan (2005) insisted that international labor migration is one of the strategies for dipping poverty in Bangladesh. Hussain, Chaudhary and Hassan (2009) did regression on Pakistan and showed that international migration lessened poverty in

Pakistan. The relation was indirectly proportional and statistically verified. Basically, income soar would make the distribution of income in Pakistan more even or cut down the gap between the rich and poor. Hereafter, the poverty would be eradicated.

In SACEPS paper (2007) it is clearly stated that remittance does reduce poverty an income inequality for South Asian countries to a certain extent. Simultaneously in the World Migration Report (2010) this topic is discussed and said it is still a controversial topic. Conclusively, labor mobility and poverty has abstruse findings. Last of all there are no uniform findings in context of remittance and poverty nexus.

d) Financial capital flow

Financial flow of capital can only be possible in the event of financial liberalization. Financial liberalization refers to the deregulation of domestic market and capital account. In simpler terms it means opening up the economy financially. Financial liberalization causes the mobilization of savings and allocating saving into investment in the most productive sector. This is how allocation of resources in the productive sector raises productivity. This rise in productivity would react positively into the economy. This is how the economic growth would buildup. And neo classical theory confirms that rise in productivity would proceed to economic growth. Additionally Kuznets (1955) inverted U hypothesis confirm that economic growth would dwindle income inequality and weaken poverty after a certain stage.

Bacchetta and Wincoop (1998) tested the attachment between financial openness and poverty for emerging markets which is adverse and statistically significant. They described financial openness would increase the capital flow into that particular country and consequently investment would stimulate. This stimulation in investment promotes economic growth. And economic growth ultimately assists to drive down poverty. Rodrik (1998) investigated about financial liberalization and poverty on developing country which ended up having a positive correlation between them.

Jalilian and Kirkpatrick (2002) study about financial liberalization and poverty on 16 developed countries lead to indirect relation. In other words the more financially open the economy the lesser would be the extent of poverty. On the other hand Rodrik (1998) result was conflicting from previous one. Arestis and Caner (2004) report represent financial liberalization would hamper the economy through financial crisis. And financial crisis would make the situation of poverty much aggravated.

Contrariwise, Edison et al. (2002) found diverse evidence for East Asian countries. So to finish off, financial liberalization effect on poverty is vague. This is because some of the country has positive influence and some of them had negative influence on poverty.

From the empirical evidence found in the previous literature it can be concluded that the impact of economic globalization on poverty acquired distinguish consequence. There are no consistencies in the findings. Therefore an ambiguous bond between economic globalization and poverty is asserted. The next chapter will build the theory on economic globalization and poverty which might condense the ambiguity confusion.

IV. Theoretical Framework

a) Kuznets hypothesis

Kuznets (1955) explained that during the initial stage of economic growth the distribution of income would be highly unequal. It means that a large share of pie would be shared by only a small percentage of population. But at a later stage the fruits from economic growth would be divided equally. The equal distribution of income in the country would cause the gap of rich and poor to squeeze. Henceforth, the poverty rate would go downward.
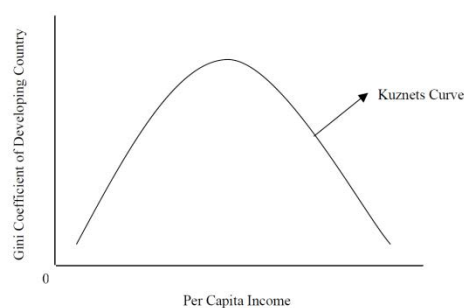
Figure 9 : Kuznets Inverted U hypothesis.

Source: Todaro and Smith(2009, 227)

In the diagram above the U-shape illustrates the Kuznets (1955) theory. The vertical axis is labeled as gini coefficient. Gini coefficient is an estimate for measuring income inequality. And the horizontal axis is characterized as per capita income. This is a gauge of income. We can clearly see that in the primary stage it degenerate the income inequality and it carries on. This is how it impairs poverty rates as well. But after a certain point of time the income inequality starts to decelerate and the downturn goes on. In turn, the poverty rate drops down gradually.

Kuznet (1955) hypothesis will not be counted if practically it is not validated. There are lots of authors whose research is consistent with the Kuznets findings for example Adelman and Morris 1973. Barro (2000) findings was similar with Kuznets one. Conversely, Deininger and Squire (1998) outcome contradicted with Kuznets view. The writers above got evidence both from developed and developing countries.

b) Comparative advantage

Different countries of this world are bestowed with different resources. For instance, Middle East countries like Saudi Arabia and Qatar have oil. Conversely, African countries like South Africa has gold and diamond mine. Therefore different resource endowment reflects that different countries are efficient in producing different product. Basically, a single country cannot produce all the goods efficiently and productively that it requires. Consequently if all countries produce goods in which they have comparative advantage and trade those with each other then each party would be beneficial (Krugman and Obstfeld, 2006). They also proved that if every country work according to the theory of comparative advantage the overall world output would expand. Krugman and Obstfeld (2006, 26) said "a country has a comparative advantage in producing a good if the opportunity cost of producing that good in terms of other goods is lower than it is in other countries". David Ricardo is the mastermind and the inventor of the theory of comparative advantage.

If a country allots all its effort and resources in the sector in which they have comparative advantage then they will be able produce goods further efficiently and productively. As a result, the overall output of the world would upsurge. So now each country would have more goods to trade with each other. As mentioned earlier, one aspect of economic globalization is free trade across nations. Thus globalization would lead to free trade of goods and services. In other words globalization triggers more trade openness and for which movement of goods becomes simpler.

Bhagwati and Srinivasan (2002) discussed about the globalization process during the early 1980's for countries like China and India. He revealed that during the early 1980's India and China was implementing globalization process through opening up their economy to the rest of the world. To be precise, they were implementing trade liberalization policy i.e. free trade. So free trade implies abolishing any type of barriers or restriction related to trade. They stated free trade steered to economic growth during that period in India and China. And economic growth escorted to a massive reduction in poverty rate in that period. UNCTAD (2002) found that trade slashes poverty for least developed country.

Nonetheless, model of comparative advantage encompasses certain glitches. Firstly it does not take into account the notion of transportation cost. Transportation cost is a vital cost in international trade. If the transportation cost is high then it would add to the price of the good. Eventually the price of the goods would be higher. This shatters the cost advantage. Likewise, the comparative advantage theory is a one factor model. The theory assumes that only factor of production is labor. It neglects other important factor of production such as capital.

In opposition, we also came across a number of negative empirical evidence. Bhattarai (2011) analysis on South Asian countries obtained mixed result. In other words trade aggravated poverty for Bangladesh, Nepal and Pakistan. Harrison (1996) result was skeptical about trade and poverty.

c) Neo classical theory

Economic growth is prompted by several elements as far as neo classical theory of growth is concerned (Meade, 1961). Firstly by providing training and education to the labor augments the growth process (Meade, 1961). He says this process enhances the productivity of workers which ended up in economic growth. Then accelerating the amount of capital can stimulate growth (Meade, 1961). Moreover capital can be raised by increasing the quantity of savings and investments. Furthermore modern technology can provoke growth (Meade, 1961). And this modern technology is originated from investment in research and development. Lastly larger extent of labor generates economic growth (Meade, 1961).Nevertheless Meade (1961) asserted that neo-classical economists supports the subsequent approaches should be inspired:

1. Completely competitive market.
2. Privatization of state owned enterprises.
3. Opening up the economy from closed to open i.e. more exposed to the rest of the world.
4. Motivating more FDI and unrestricted trade by opening the local economy to the rest of the world.

Perfectly competitive market is a situation where inefficient producer are driven out of the market (Sloman and Wride, 2009). This is because in perfectly competitive market impeccable information and severe competition prevails in the economy. Mosedale (2004) argue that competition is a technique of reducing poverty in least developed country. The situation of stringent competition would encourage efficiency. And efficiency is the main root of higher productivity. The growth of productivity implies higher income. This is how when income rises poverty decays. However Godfrey (2008) was in favor of competition for abating poverty but his main concern was in the competition law and legislation. He claims that LDC law and order system is fairly weak compared to developed country. The competition policy would not be operating properly in the poverty reduction process if the law concerning the competition is not effective.

Usually LDC state owned enterprises are inefficient compared to developed countries one. The privatization of all the state owned enterprise would make the industry further efficient. Consequently improved efficiency would lead to better productivity. Additionally higher productivity denotes excess income. When income rises then less people will fall below under

the poverty line. This is how poverty would be eradicated. Generally, majority of the LDC government employs more employers than needed. Typically, most of the LDC has labor surplus economy. This is the main goal behind hiring additional labor. During the privatization process the extra worker would be sacked. In other words they would make them redundant to become efficient. The redundancy would increase the unemployment rate. And rise in unemployment would exacerbate poverty.

The Heckscher-Ohlin model of international trade is a more dynamic and realistic model than the comparative advantage model. This is due to its assumption. This model emphasizes on the fact that each country should produce those goods in which they have abundant factor of production. Fundamentally, each country is bestowed with different input. For instance, some countries are endowed with labor other with capital. So we can claim developed country has more capital in contrast to LDC. As a result they should produce more capital intensive goods. The purpose behind that is to produce the goods as efficiently as possible. If a country is more capital intensive then the cost of producing the good with profuse factor is relatively economical. Naturally, scarce factor of production would be expensive to engage in the production process. Therefore if each country produces its goods according to its factor endowment then the overall world output would expand. Furthermore if they trade then both countries would be benefited by getting more of the good. For example, if each country produces all the goods it need then they have to devote resource in the production process for which they do not have plentiful input. Thus they would get less of both the good.

However this model is bit unrealistic in the sense that it requires more than two inputs to produce certain good. In addition the theory is based on a given state of economy and with a given production function and does not accept any change.

Romer and Frankel (1999) empirically found that trade is one of the reasons for economic growth. And economic growth would support to wipe out poverty. Additionally the UNCTAD (2002) also proved the fact that trade improves poverty for LDC. However, Dollar and Kraay (2002) cross country regression found that trade does not ease poverty over 72 developing countries. This is because of the unequal distribution of reward from economic growth.

Opening up the economy not only encourages import and export of goods and services, but foreign investment with it as well. Theoretically, Kotrajaras (2010, 13) revealed "there are several ways FDI can facilitate an economic growth". Kotrajaras (2010, 13) said "in neoclassical growth models with diminishing returns to capital, FDI has only a short-run growth effect as countries move towards a new steady state". In this view, Kotrajaras (2010, 13) said "FDI-related technological spillovers offset the effects of diminishing returns to capital and keep the economy on a long-term growth path". Moreover, he clarified "endogenous growth models imply that FDI can promote long-run growth by augmenting the existing stock of knowledge in the host economy through labor training and skill acquisition". Therefore, with the benefit of knowledge dissemination and increased capital stock, FDI is a gift especially for developing countries. Ultimately, it has a central influence on stimulating economic growth and eventually attenuating poverty. There are lot of empirical evidence found for FDI and poverty in literature such as Stiglitz, 1998; De Mello (1997).

However there is certain empirical evidence which goes against foreign direct investment and poverty. Rodrik (1997) was skeptic about the link between FDI and poverty. Baddeley (2006) report on the developed economy established that FDI augment poverty.

d) Poverty

Poverty has numerous faces which are caused by several factors and have various repercussions. It has both financial and non-financial dimension. There are many obstacles and barriers which attribute to poverty. Additionally these constraints reinforce each other. In LDC it is primarily characterized by the succeeding characteristics:

- Lack of entitlement or parental asset: In developing country the poor people has less access to resources in comparison to developed country. Land can be used for cultivation or other production services. Land resource can be used as a source of income. This income can act as a dose to exterminate poverty. In LDC people are poor because they do not have the privilege of parental asset. This is because their parents also endured poverty. For which they do not have the capacity to devote land to their children. And those who get the access to land they do not have enough resource to invest for production.

- Trade created poverty: In LDC there exist a lot of infant industries in contrast to developed countries. Infant industries are those which are new and quite inefficient compared to the industries in the developed country. Therefore they have to be protected by the government. Without the government intervention they cannot survive in the market. However trade from other countries would flood LDC with cheaper goods. And the infant industry products would not be able to be price competitive with the foreign goods unless they are highly protected by tariff or non-tariff barrier. As a result, inflow of foreign goods would drive the infant industry out of the market because of weak price competitiveness. Thus it would create a lot of

unemployment for which income falls. This is how poverty will worsen in LDC by trade. But the advantageous thing is that trade would lead LDC the access of cheaper goods.

- Lack of education and training: Illiteracy is quite common in LDC. LDC comprises huge amount of population. And governments of LDC do not have sufficient funds to promote education and training for the mass population. So the illiteracy rate is quite high for LDC which is very unlikely in developed country. The lower literacy rate and lack of training denotes that they cannot get good jobs. In other words their source of revenue further lessens. Lower income mean they cannot satisfy the minimum level of subsistence for living. Hence they are associated in the poverty web. However, there are certain detrimental effects of government providing education and training which is brain drain. Specifically, individuals from LDC migrate to developed country permanently for superior income.

- Failure of public services to reduce poverty: In most of the LDC essential public services such as electricity, roads and highways are provided by the government. To be exact these services are provided by state owned enterprises i.e. nationalized industry. The nationalized industries are likely to be inefficient than privatized industry. Electricity is vital for the production process. Basically irrigation process needs massive amount of electricity. Failure to provide it in adequate quantity during the harvesting season would hamper the agriculture production. Hindrance in the agriculture production would primly hurt the poor. This is because most of the poor in LDC make their living on agriculture. Hence the poor people would not be able to generate higher income. In this case they would not be able to get out from the mesh of poverty. But nationalized industry employ more workers than it is needed which might help to foster employment rate.

- Cruel market forces: In LDC the market conditions are harsh for the poor people, convenient for the rich people. In other words poor do not have the easy access to credit like the wealthy. This is due to the fact that the low income group does not have ample security on the basis of which loan is sanctioned. Specially, in the rural areas the poor farmers are exploited by the rich landowners. Furthermore the poor do not have access to subsidized pesticide and fertilizer. The influential and rich farmers have networks with key person and institution. By this link only the influential farmers and landowners get the resource. On the other hand the poor farmer has no contact with these person or institution. As a result to get hold of this resource is awfully tough for them. Finally all these

factors act as an obstruction to the production process. For which they could not yield income for their subsistence easily and thus remain poor.

- Centre-periphery approach: Basically, in majority of LDC most of the services, facility such as good hospitals, airports, university etc. and industry are all centered toward the capital city. The opposite situation prevails in the developed country where popular services are available in small town as well. In general most of people in LDC live in small town and villages. Usually majority of the areas apart from the capital city in LDC are deprived in contrast to developed country. From these we can argue that preponderance of economic activity occurs in the capital city of LDC. Therefore the people in other region are not economically active paralleled to the capital city. Consequently higher population living in the deprived area is one of the sources of poverty.

After reviewing the theoretical framework the equivocal connection between economic globalization and poverty is quite clear. Subsequently, the next chapter follows on building the research design.

V. Research Design

a) Methodology

The study spotlights mainly the economic aspect of globalization. Furthermore how this economic globalization affect the chief divisions of Bangladesh. The key divisions are Khulna, Rajshsahi, Dhaka, Chittagong, Barisal and Sylhet. However Rangpur division is not included as it was announced the one of the key divisions very late in the late 2000. Previously there has been several works on economic globalization and poverty in the perspective of Bangladesh. Also, numerous studies had been completed on the developed, Asian, African, OECD, North America, Gulf and Latin American countries. In those reports economic globalization mainly represents foreign direct investment, total trade of merchandise and services, international labor migration and international financial flow of capital.

However Bangladesh has been liberalizing financially but only one sided. There are lot of incentive and other policies which motivates the financial capital to enter into Bangladesh. That's why there are quite a number of foreign banks life insurance companies. Additionally few foreign financial institutions also exist in Bangladesh. Plus, there are two stock exchanges in Bangladesh one is in Dhaka and the other one in Chittagong. According to the efficient market hypothesis Bangladesh has a weak form of efficient market system. The weak form means that historical price and data are ineffective in predicting subsequent share price deviations in both the stock exchange in Bangladesh. But Bangladesh government has been very generous from the view point of financial flow of capital coming

into Bangladesh. But in the financial capital flow viewpoint Bangladesh lags behind in comparison to FDI and international labor migration. Hence international flow of capital has been globalized but not to a greater extent as FDI and trade. Additionally weak form of capital market efficiency do not brings in extensive inflow of international capital in contrast to others modes of economic globalization in Bangladesh. Then again the Bangladesh government policy is absolutely opposite of financial capital flowing out of the economy. Several restrictions are imposed when citizen of the country want to invest money into foreign economy. Bangladesh is particularly a LDC having superfluous extent of physical labor and scarcity of financial resources. So if the financial funds are left to move out from the country then the economy would be in genuine predicament. As a result the economy might head towards financial crisis. Therefore to get rid of erroneous impact on economic globalization the study did not take into consideration this in economic globalization process. Besides, economic globalization does not give any biased result for different divisions that's why it is detached. Fundamentally economic globalization would trigger influx of foreign financial capital in to the region that has stock exchange. Consequently the circumstances might be biased for some regions for which it is excluded.

The analysis in this paper is absolutely based on quantitative study which is complemented by theory. Therefore secondary data is the primary source of data. By the help of secondary data the study concentrated on statistical correlation, panel regression and dummy variable analysis in this paper. Basically Stata 12 is the statistical software for implementing this statistical technique. And this study of economic globalization on the division is done for the first time to the best of our knowledge.

b) Dependent variables

This paper totally accentuated on quantitative study of the interplay between poverty on economic globalization throughout out the six principal divisions of Bangladesh. Moreover poverty is the dependent variable in this paper. We would quantify it across the main six divisions of Bangladesh. So, to quantify the poverty we will use head count rate (HCR). Indicators for Monitoring the Millennium Development Goal (2003, 7) describes poverty head count rate as "the proportion of the national population whose incomes are below the official threshold (or thresholds) set by the national Government". BBS calculates HCR using the (CBN) method since 1995. Basically "in CBN method it is a process of counting the poor on the consumption expenditure threshold and which is expressed in percentage term" (BBS, 2011a). Consumption expenditure contain expenditure on food items which are rice, wheat, pulses, milk, oil, meat, fish, potato,

other vegetables, sugar and fruits (BBS, 2011a). They produce this basket on the basis of 2122kcal per day scheme. It also comprises nonfood items. Malik and Januja (2011) used HCR to measure poverty for Bangladesh, Pakistan and India. He described HCR as a measure of poverty is very easy to calculate. Plus, the HCR based on the national thresholds are more reliable and accurate. Contrariwise, the problem occurs upgrading over time. McLeod (2007) also used HCR to quantify poverty. Although McLeod (2007) mentioned HCR cannot be internationally compared but he consented with Malik and Januja (2011). The headcount rate of poverty is calculated by HIES by BBS. The problem is that it is done after every five years for every division. So the data range is 1990, 1995, 2000, 2005 and 2010. The data of headcount rate from 2000 to 2010 is collected from the electronic web site of BBS. And the data of headcount rate of six divisions from 1990 to 1995 is collected from the MDG (2005) report.

c) Independent variables

The independent variable in this paper is economic globalization. In this paper first aspect of economic globalization is free trade. So we free trade is computed as the total value of exports and import of merchandises and services in a single yea. It is measured at current prices in US dollar and at current exchange rate. Jan (2002) listed free trade as one of the dimension of globalization. In that report they measured free trade by total value of goods and service exported and imported. The problem with this measure is it is not inflation adjusted and giving us an overestimated value of free trade. But Reuveny and Li (2004) and Mahler (2003) used import and export of goods and services as a percentage of GDP to quantify free trade. However this method is quite contradictory. Rodriguez and Rodrik (1999) criticize this method of calculation as they are highly correlated in conjunction to other sources of inadequate economic performance. The trade data which is the total value of import and export of good and services have been collected from the BBS (2010a) through CD-ROM. The trade data according to six main divisions of Bangladesh is taken from the year 1986 to 2010.

The second independent variable is FDI. FDI is gauged as total inflow of FDI into Bangladesh. Hussain, Chaudhary and Hassan (2009) discussed that FDI is one of the feature of economic globalization. They used FDI inflow to measure the FDI in Pakistan. We have estimated it using US dollar at current prices and at current exchange rate. The problem with this measure it is not inflation adjusted and giving us an overestimated value of FDI inflow. However there are a number of authors who took FDI as a percentage of GDP. Among them are Reuveny and Li (2004) and Mahler (2003). This research acquired FDI inflow other than FDI as a percentage of GDP because with a view to attaining raw

impact of FDI inflow on poverty. Foreign Direct Investment data has been attained from BBS (2010b) by CD-ROM. The FDI data according to six main divisions of Bangladesh is taken from the year 1986 to 2010

Lastly the third independent variable is international labor migration. International labor migration would be determined by the revenue that it brings in i.e. remittance inflow. It is weighed using US dollar at current prices and at current exchange rate. In the literature various authors took remittance variously. The problem with this measure it is not inflation adjusted and giving us an overestimated value of remittance inflow. South Asia Centre for Policy Studies SACEPS paper (2007) clearly states international labor migration is counted on the basis of the remittance inflow. This investigation has taken remittance inflow other than remittance as a percentage of GDP for grasping the crude impact of FDI on poverty. The remittance data according to six main divisions of Bangladesh from the year 1986 to 2010 have been acquired from the Bangladesh Bank (2011) in a CD-ROM which is the central Bank of Bangladesh.

Finally this analysis considers a domestic factor which has been regularly used in the previous studies. Bangladesh is a labor surplus country. Its population is more than 170 million. In addition the working population of Bangladesh is more than 50 million (UNCTAD, 2000). Such a massive amount of working population can be influential to economic globalization process. This study takes population as one of the control variable. Dreher and Gatson (2008) also took population as one of the control variable in their study on globalization and inequality. He clarified that higher population mean greater amount of working labor force. This indicates more people working and contributing to the process of economic growth. And economic growth might play a role in plummeting poverty. Furthermore the population data divided across the six divisions of Bangladesh was acquired from BBS (2011b) population census from 1986 to 2010.

d) Model

Initially the study commence with statistical correlation to find the association of poverty and economic globalization on the main six divisions of Bangladesh. For an effective analysis, it will embark upon a panel regression scheme comprising data from the essential six divisions of Bangladesh, on Stata 12. Thus in general the regression formulation will be as,

$$POV = B_0 + B_1 POP + B_2 TRAD + B_3 FDI + B_4 REM + e$$

Where

B_0=Intercept, B_1.....B_4= Coefficients, POV=Poverty, FDI=Foreign Direct Investment, REM= Remittance, POP=Population, TRAD=Total trade of goods and services, e= Error term

In this study the dependent variable is poverty and the data of poverty is calculated after every five years. The poverty head count rate data is calculated on a five years average basis. So to make the all the independent variable uniform with the dependent one it is converted into five year average. The first model would be random effect model and the second model would be fixed effect model. The research would work on both these model and then compare the final result of the two models. Both of these models operate to eliminate omitted variable bias. Fixed effect model assume that specific impact is correlated to the independent variable. Random effect model assumption is the other way round. It specific effects are uncorrelated with the independent variable. Random effect model can infer on larger extent of population. This is because they assume that errors are normally distributed. Fixed effect model can infer particularly on a specific subject. However a specific model could not be selected in this model. The lack of data deficiency did not allow us to perform Durbin-Wu Test or Hausman Specification Test to choose the particular model. This problem arises because of the five year average problem. Finally perform dummy variable analysis is completed divided through major divisions. Dhaka is the capital city of Bangladesh which happens to be affluent division among all. This is to compare all other divisions with Dhaka.

e) Hypothesis

Bangladesh has been adopting economic globalization tremendously during the mid-1990. And at the same time the headcount rate of poverty has been succeeding a decelerating trend. Consequently our hypothesis is economic globalization has slacken poverty in the six key divisions of Bangladesh. Precisely, trade shrinks poverty in the major six divisions of Bangladesh. Then FDI inflow slashes poverty in the main six regions of Bangladesh. Additionally, remittance inflow lowers the poverty of the principal six states of Bangladesh. Lastly population eases the poverty rate in six key divisions of Bangladesh. As a result the following results are expected which are B1<0 B2< B3<0 B4 <0.

VI. Panel Data Model of Poverty in Bangladesh

a) Correlation matrix

Correlation measures how intensely two variables are related (Guajarati, 2005). In the table below we can see that trade of merchandise and services and remittance inflow has high correlation with poverty. The correlation of poverty with trade and remittance inflow is .7117 and .8397 respectively. Moreover the negative sign indicates that there exists inverse relation between them and values closer to one signify perfect relation with each other. In other words if one variable increase then the other one would decrease in the same

percentage and vice versa. Population has correlation of -.1510 with HCR which is very low. This means HCR bond with population is not strong. We can say this as value close to zero has relationship totally random. Lastly FDI has a correlation of -.4270. This value denotes moderate correlation with HCR.

Table 1 : Correlation Matrix

	HCR	TRAD	REM	FDI	POP
HCR	1.0000				
TRAD	-0.7117	1.0000			
REM	-0.8397	0.7675	1.0000		
FDI	-0.4270	0.8414	0.3931	1.0000	
POP	-0.1510	0.2876	0.0464	0.4105	1.0000

b) *Random effect model*

$$y_{i,t} = \beta_{o,i} + \beta_{1,i}X_{1,i,t} + \beta_{2,i}X_{2,i,t} + \beta_{3,i}X_{3,i,t} + \beta_{4,i}X_{4,i,t} + e_{i,t}$$

$i = 1....6$, and $t = 1....5$, for 1990, 1995, 2000, 2005, 2010.

1=Dhaka, 2=Chittagong, 3=Sylhet, 4=Barisal, 5=Rajshahi, 6=Khulna Y=Headcount Rate

X_1=Population X_2=Trade of goods and services X_3= Remittance inflow X_4=Foreign Direct Investment

Table 2 : Random-effects model variables and coefficients

Variable	Coefficients
Headcount ratio	Random Effects Model (Stan. Errors)
Population(POP)	-.0000842(.0001198)
Total trade of goods and services (TRAD)	-.0000885(.0011199)
Remittance inflow(REM)	-.0381724(.010833)*
Foreign Direct Investment(FDI)	.0005818(.0442537)
Intercept	67.94756(3.907078)*

Significant at 1%

Table 3 : Random effect GLS regression findings

Random-effects GLS regression		Number of obs		30
Group variable:	id	Number of groups		6
R-sq:	within = 0.7472	Obs per group:	min =	5
	between = 0.5938		avg =	5.0
	overall = 0.7138		max =	5
corr(u_i, X)	= 0 (assumed)	Wald chi2(5)		68.17
		Prob > chi2		0.0000

In the model above Yi represent dependent variable which is headcount rate according to different regions. There are six divisions so the value of i is given from one to six. It is explained above which number denotes which region. The time period of this model is for 1990, 1995, 2000, 2005, 2010. β_0 represent the intercept term. And β_1, β_2, β_3 and β_4 are the coefficient of the independent variables. Then X_1, X_2, X_3 and X_4 are the respective independent variables and each of its names is specified above. Nonetheless, the intercept term is statistically significant at 1% level of significance. The model has R square of 74.72%. This means almost ¾ of the variation of headcount rate of poverty is explained by all the independent variables which are population, trade of goods and services, remittance inflow and FDI. It is assumed that the error in this model is normally distributed.

Remittance inflow has a p value of 0.000 (Appendix 1, table 8) for which it is significant at 1% level of significance. As a result we can reject the null hypothesis. So it is consistent with Ahamed and Ehsan (2005) findings. Additionally it has a negative relation with the headcount rate. The negative relation implies that if remittance inflow would increase by .0381724 % then headcount rate of poverty decrease by 1%, ceteris paribus. Moreover the correlation between headcount

rate and remittance is negative .8397(table-1) and statistically significant (Appendix 1, table 11). So the negative result indicates opposite link between remittance and headcount rate. Particularly, if remittance inflow increases then poverty would decrease and vice versa. The value close to one denotes high correlation i.e. very close relation with one another. Thus it can be inferred that a remittance inflow has an impact on sinking poverty across six main division of Bangladesh. Remittance inflow can also get rid of vicious cycle of poverty in Bangladesh. Nurkse (1952) said country with low level of national income has smaller capacity to save. The low real income is the outcome of low productivity. And low productivity is due to lack of capital. The issue behind shortage of capital is small capacity to save and so the circle is vicious. Remittance would increase the national income of the Bangladesh. This is how the productivity would galvanize. It is only possible because of sufficient capital which in turn is largely due to the capacity to save. And the capacity to save rises due to increase in the rise in national income. Thus remittance inflow would eradicate the vicious circle of poverty.

FDI has a very high p value (appendix-1, table 8) for which it is statistically not significant. Besides, it has directly proportional connection with the headcount rate of poverty. Directly proportional link denotes a rise in the FDI inflow would also increase headcount rate. Particularly, here FDI is creating the situation of poverty further inferior in the main six divisions of Bangladesh. Stark and Levhari (1982) detected direct relation between poverty and remittance inflow. This shows FDI inflow would not be beneficial to poor. FDI does generate a huge flow as investment into the major divisions of Bangladesh. The foreign capital investment of foreign investor complemented by the labor of Bangladesh would create economic growth in Bangladesh. The main question is how the growth is distributed among the population. Since positive nexus exists between headcount rate of poverty and FDI then it is most obvious that the reward of economic growth is distributed unequally.

Then again total trade value of goods and services do not have any impact on headcount rate of poverty. This is due to the fact that the p value is very high (Appendix 1, table 8). For this reason the null hypothesis cannot be rejected. The bond between total trade of goods and services and headcount rate of poverty is negative although they are not statistically meaningful. The negative association signifies opposite movement concerning head count rate of poverty and total trade of goods and services. This means as headcount rate of poverty declines then trade of goods and services enlarges, ceteris paribus. To be specific, if the total value of trade of goods and services rises by .0000885 % then headcount rate of poverty would fall by 1% and vice versa if all other thing remain constant. Besides, there exists negative correlation between headcount ratio and trade of goods and services. The correlation is negative .7117 which is statistically significant (Appendix 1, table 11). So, reverse link suggests that as one variable increases the other decreases. Subsequently as trade of goods and services escalates then head count rate decelerates. And value of .7117 represents moderate link between the two. Therefore the conventional wisdom holds for trade and poverty. So if Bangladesh works in corresponding to comparative advantage theory then they can emphasize on the production of goods and services in which they have comparative advantage. The theory of comparative advantage would guide the production to proliferate. As a result, Bangladesh would be beneficial because they would be left with extra goods than previously. Hence they have more goods to trade with other countries. Additionally trade expansion is a tool of economic growth (Romer and Frankel, 1999). Bhagwati and Srinivasan (2002) empirically found that freer trade would help the poor countries to lessen the poverty. This is how the negative nexus between poverty and trade can be defended.

c) *Fixed effect model*

$$y_{i,t} = \beta_{o,i} + \beta_{1,i}X_{1,i,t} + \beta_{2,i}X_{2,i,t} + \beta_{3,i}X_{3,i,t} + \beta_{4,i}X_{4,i,t} + e_{i,t}$$

$i = 1....6$, and tt $1....5$, for 1990, 1995,2000,2005,2010.

1=Dhaka, 2=Chittagong, 3=Sylhet, 4=Barisal, 5=Rajshahi, 6=Khulna

Y=Headcount Ratio

X_1=Population X_2=Trade of goods and servicesX_3= Remittance inflow X_4=Foreign Direct Investment

Fixed-effects model variables and coefficients

Variable	Coefficients
Headcount ratio	Fixed Effects Model (Stan. Errors)
Population(POP)	-.0001338(.000129)
Total trade of goods and services (TRAD)	-.0010759(.0013744)
Remittance inflow(REM)	-.038419(.010911)*
Foreign Direct Investment(FDI)	.104803(.0782799)
Intercept	66.32416(3.884355)**

*Significant at 5%, ** significance at 1%*

Table 5 : Fixed-effect GLS regression findings

Fixes-effects GLS regression			Number of obs		30	
Group variable:		id	Number of groups		6	
R-sq:	within =	0.7773	Obs per group:		min =	5
	between =	0.0197			avg =	5.0
	overall =	0.4970			max =	5
corr(u_i, X)	=	0 (assumed)	F(4,20)		17.45	
			Prob > F		0.0000	

In the model above Yi represent dependent variable which is headcount rate according to different regions. There are six divisions so the value of i is given from one to six. It is explained above which number denotes which region. The time period of this model is for 1990, 1995, 2000, 2005, 2010. β_0 represent the intercept term. And β_1, β_2, β_3 and β_4 are the coefficients of the independent variables. Then X_1, X_2, X_3 and X_4 are the respective independent variables and each of their names is identified above. The fixed effect model also brings about almost the same conclusion as in the previous model. The model has R square of 77.73%. This means more than ¾ of the variation of headcount rate of poverty is explained by all the independent variables which are population, trade of goods and services, remittance inflow and FDI. The probability of F is 0.000 and at the same time critical value of F is 17.45. Thus the null hypothesis can be rejected due to it is statistically significant. It is significant at 1 percent level of significance. Subsequently, from the significance it can be claimed that regression has got explanatory power. Moreover this model errors has got autocorrelation.

Firstly, the p value of the intercept is .000 and its corresponding critical value is 17.07(appendix-1, table 9). This indicates null hypothesis can easily be rejected and it is statistically valid at 1 percent level of significance. Then remittance inflow and poverty is found to be econometrically valid. The p value is .002 (Appendix 1, table 9) so it is significant at 5 percent level of significance. And on top of there exists inverse tie. Specifically, a rise in the remittance inflow would ameliorate the poverty in the main six division of Bangladesh. Fundamentally, a rise in international labor migration swells income distribution of the foremost divisions of Bangladesh through inflow of remittance. Basically, income soar would make the distribution of income in Bangladesh more even or cut down the gap between the rich and poor. Hereafter, the poverty phenomenon would be eradicated. Hussain, Chaudhary and Hassan (2009) did regression on Pakistan and got analogous conclusion for Pakistan. The relation was indirectly proportional and econometrically verified.

Additionally, population has no impact on poverty in the principal six regions of Bangladesh due to statistically insignificant. Additionally reverse relation was found among them. To be exact, higher population in a LDC implies more labor who can contribute to the production process. Bhagwati and Srinivasan (2002) discussed in his paper about the same fact. He denoted that countries like India and China used their population as one of their equipment to alleviate poverty. He said population can be used as labor and it can be used to produce labor intensive goods. And then they exported labor intensive goods to other countries. Thus it initiated economic growth in India and China during the eighties. Lastly the economic growth was one of their therapies for enhance poverty in China and India in that era. According to Lewis's two sector model of underdeveloped economies, it consists of two sectors.

A traditional sector which is in the rural area mainly overpopulated, whose main source of living is agriculture. Their marginal productivity is zero. The other sector is modern industrial sector where the marginal productivity is very high. Todaro and Smith (2009) discussed Lewis's two sector model which concluded that movement of surplus labor from rural traditional sector to modern industrial sector can be done without any loss of output. As a result the transferring of labor means the number of labor contributing in the efficient sector would increase. Thus they can be able to produce more industrial goods. And globalization would guide them to export those goods. Furthermore globalization also fetches foreign investor into the host country. This is how they would be able to get jobs in that company. Lastly both these would create employment and increase their level of income. Thus it would help to wipe out poverty.

This fixed effect model has one core glitches. The error in the fixed effect model has serial autocorrelation (Appendix 1, table 9). The data deficiency is one of the foremost reasons behind it. And for data deficiency operation of any econometric procedure was not possible to remove the autocorrelation.

d) *Dummy variable analysis*

$$y_{i,t} = \beta_{o,i} + \beta_{1,i}X_{1,i,t} + \beta_{2,i}X_{2,i,t} + \beta_{3,i}X_{3,i,t} + \beta_{4,i}X_{4,i,t} + \gamma_1 D_1 + \gamma_2 D_2 + \gamma_3 D_3 + \gamma_4 D_4 + \gamma_5 D_5 + e_{i,t}$$

$i = 1....6$, and $t = 1....5$, for 1990, 1995,2000,2005,2010.

1= Chittagong, 2= Sylhet, 3= Barisal, 4= Rajshahi, 5= Khulna

Y=Headcount Ratio

X_1=Population X_2=Trade of goods and services X_3= Remittance inflow X_4=Foreign Direct Investment

D_1=Chittagong D_2= Sylhet D_3=Barisal D_4=Rajshahi D_5=Khulna

Table 6 : Dummy variables and coefficients

Variable	Coefficients
Population(POP)	-.0001338(.000129)
Total trade of goods and services (TRAD)	-.0010759(.0013744)
Remittance inflow(REM)	-.038419(.010911)***
Foreign Direct Investment(FDI)	.104803(.0782799)
Intercept	52.41544(9.321855)*
Dummy Variables	
Chittagong	14.97012(8.596546)***
Sylhet	17.94576(10.40749)***
Rahshahi	21.61628(8.900585)**
Khulna	11.66455(8.805559)
Barisal	17.25562(8.968591)***

*Significant at 1%, ** significance at 5%, ***significance at 10%*

Table 7 : Dummy variable regression

Random-effects GLS regression			Number of obs	30	
Group variable: id			Number of groups	6	
R-sq:	within =	0.7773	Obs per group:	min =	5
	between =	1.0000		avg =	5.0
	overall =	0.8184		max =	5
corr(u_i, X)	=	0 (assumed)	Wald chi2(5)	90.13	
			Prob > chi2	0.0000	

In the model above Yi represent dependent variable which is headcount rate according to different regions. There are six divisions so the value of i is given from one to six. It is explained above which number denotes which region. The time period of this model is for 1990, 1995, 2000, 2005, 2010. β_0 represent the intercept term. And β_1, β_2, β_3 and β_4 are the coefficient of the independent variables. Then X_1, X_2, X_3 and X_4 are the respective independent variables. Here X_1 denotes population and X_2 indicates trade of goods and services. In addition, X_3 and X_4 specifies remittance inflow and foreign direct investment respectively. The indicated variable is showed by D_1, D_2, D_3, D_4 and D_5. And the indicator variables D only takes two value which is either zero or one. So for Chittagong D_1 is equal 1 if other we put zero. γ is the coefficient of the indicator variable.

Dhaka is the capital city of Bangladesh and the largest city in Bangladesh. Without any doubt it is the most affluent region in Bangladesh. So to get rid of the dummy variable trap and to make a comparison with other five chief divisions of Bangladesh the variable Dhaka is excluded. The intercept term is positive and also significant at 1 percent level of significance. The model is quite fit due to the fact that R square which is 77.73%. Accordingly, more than ¾ of the variation of the headcount rate of poverty can be explained by the all the independent and dummy variables.

In the model above all the divisions are econometrically valid except for Khulna division and has positive link with poverty. In other words incorporating any individual division would deteriorate poverty holding all other things remaining constant. Likewise, if Sylhet is include then ceteris paribus the HCR rate of poverty would escalate by 17.94576. Similarly, incorporating Rajshahi would deteriorate the headcount rate of poverty by 21.61628, ceteris paribus Lastly the Khulna division is not statistically significant since the p- value is extremely high (Appendix 1, table 10). But it has positive affiliation with poverty. Therefore from this it can be inferred that the impact of economic globalization is not spread equally in the major divisions of Bangladesh.

VII. Limitation

In this study there are quite a number a limitation. Primarily the data deficiency is the vital limitation of this study. First of all the HCR is calculated after every five year. If the calculation had done on a yearly basis then scenario would have been different. There are a lot of factors which attribute to the diminution of poverty in Bangladesh. Originally micro credit to the poor was the first among them. Nevertheless there is no data access of micro credit across divisions. Moreover the education and land possessed by an individual also influences poverty. Then again, the data were found but for a limited number of years. Thus it abstain from including such crucial variables. Additionally, the lack of data deficiency did not allow us to execute Durbin-Wu Test or Hausman Specification test to choose the particular model. The fixed effect model has autocorrelation which is the major drawback of this paper. The poor dataset did not allow us to run any statistical procedure so that the autocorrelation can be removed. An effort to run GMM estimation was tried but failed to run the test. The data specification was the central impediment. Distinctive techniques such as dynamic macro modeling or dynamic general equilibrium modeling could truly account of both supply and demand side effects. That could be a part of the further study. Similarly such studies should also utilize household survey based dataset rather than macro level data. Finally, it would have been better to get household level panel data, which is not accessible at the moment. Richer dataset can improve conclusions above, particularly relating to human capital variables and micro credit.

VIII. Conclusion

The paper has fundamental objective to empirically investigate the nexus between economic globalization and poverty across the six major divisions in Bangladesh. This study only found the remittance inflow into Bangladesh statistically significant. Furthermore the reverse association reflects contraction of poverty in the main six divisions of Bangladesh. As a result Kuznets (1955) inverted U hypothesis is justified. This is because the remittance inflow supplements the local economy with capital and eventually leads to economic growth. Kuznets (1955) inverted U hypothesis justify that economic growth in a country initially builds up income inequality but ameliorates the poverty and inequality after a certain period.

In spite of getting statistically insignificant result population and trade of goods and services has opposite nexus with poverty through the six chief regions of Bangladesh. The negative relation indicates that population and trade of goods and services upgrades poverty. So the Heckscher-Ohlin model can assist to define the reverse link of trade and poverty.

This model emphasize on the fact that each country should produce those goods in which they have abundant factor of production. Consequently LDC like Bangladesh has surplus labor through which they can produce labor intensive products. Thus they would be left with more good than before for trade. And trade expansion is a tool of economic growth (Romer and Frankel, 1999). As a result economic growth rectifies poverty (Bhagwati and Srinivasan, 2002).

The opposite link of poverty and population is vindicated by Lewis's two sector model. Here Lewis claims that movement of surplus labor from rural traditional sector to modern industrial sector can be done without any loss of output. Furthermore globalization also fetches foreign investor into the host country. This is how they would be able to get jobs in that company. Lastly both these would create employment and increase their level of income. Thus it would help to wipe out poverty.

In this paper positive bond between FDI and poverty was found. In other words inflow of FDI aggravates poverty in the six divisions of Bangladesh. Although positive relationship exists between poverty and FDI inflow, it would not make any substantial difference since they are statistically not valid.

Furthermore dummy variable analysis was executed in this paper. So to make a comparison with other five chief divisions of Bangladesh the capital city Dhaka is excluded. Without any doubt it is the most affluent region in Bangladesh. The result was not very astonishing at all. All the divisions have positive affiliation with poverty. Nevertheless all the divisions were found to be econometrically significant except for Khulna. The impact of economic globalization is not spread equally in the major divisions of Bangladesh.

To conclude from the findings above it can be asserted that provision of education by the government would be most beneficial. This is because better education can create better scope for the workers moving to foreign countries. Hence foreign remittance flow would further boost. Consequently the poverty rate would further decline.

Population can be used very effectively if it is given training. However population was found to be insignificant in this study. Then again, negative association with poverty was found in this paper. This suggests that there is prospering future. In other words if the population is properly trained then the productivity would stimulate. This stimulation would increase their income. And eventually enhance poverty.

The positive nexus of FDI and poverty is alarming for country like Bangladesh. However econometric invalid outcome in this paper relived the tension. Giving too much incentive to the foreign investor could be the reason. This is because incentive such as maximum repatriation of profit denotes they do not need to plough back the profit in the organization or

the country. So the reward was taken back in their home country. So the government of Bangladesh should provide incentive in such a way that should not discourage FDI inflow and as well as trim down poverty rate.

Lastly opposite tie of trade with poverty in this paper denotes the government should open the economy as much as possible. Nevertheless they should also take into account their local industry while opening up their economy. This is because they would be prone to severe competition. Nonetheless they should follow an export promotion strategy of the goods in which they have comparative advantage.

At the end of the day economic globalization can assist to sustain the poverty reduction process. Nonetheless it has to be complemented with decent political environment and appropriate public expenditure.

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APPENDIX : 1

Table 8 : Random-effect model p-value and interval

hcr	coefficient	Std. Err	z	P>|z|	[95% Conf. Interval]	
TRAD	-.0000885	.0011199	-0.08	0.937	-.0022833	.0021064
REM	-.0381724	.010833	-3.52	0.000	-.0594046	-.0169401
FDI	.0005818	.0442537	0.01	0.990	-.0861537	.0873174
POP	-.0000842	.0001198	-0.70	0.482	-.0003191	.0001506
_Cons	67.94756	3.907078	17.39	0.000	60.28982	75.60529
Sigma_u	2.638232					
Sigma_e	5.8698378					
rho	.16806045 (fraction of variance due to u_i)					

Table 9 : Fixed-effect model p-value and interval

hcr	coefficient	Std. Err	z	P>|z|	[95% Conf. Interval]	
TRAD	-.0010759	.0013744	-0.78	0.443	-.0039428	.001791
REM	-.038419	.010911	-3.52	0.002	-.0611789	-.0156591
FDI	.104803	.0782799	1.34	0.196	-.058486	.268092
POP	-.0001338	.000129	-1.04	0.312	-.0004028	.0001352
_Cons	66.32416	3.884355	17.07	0.000	58.22153	74.42678
Sigma_u	7.5699574					
Sigma_e	5.8698378					
rho	.62450657 (fraction of variance due to u_i)					
F test that all u_i=0: F(5, 20) = 2.12 Prob > F = 0.1050						

Table 10 : Dummy variable model p-value and interval

hcr	coefficient	Std. Err	z	P>|z|	[95% Conf. Interval]	
TRAD	-.0010759	.0013744	-0.78	0.434	-.0037696	.0016179
Khulna	11.66455	8.805559	1.32	0.185	-5.594029	28.92313
Rajshahi	21.61628	8.900585	2.43	0.015	4.171457	39.06111
Barisal	17.25562	8.968591	1.92	0.054	-.322496	34.83373
Sylhet	17.94576	10.40749	1.72	0.085	-2.452556	38.34407
Chittagong	14.97012	8.596546	1.74	0.082	-1.878801	31.81904
REM	-.038419	.010911	-3.52	0.000	-.0598041	-.0170338
FDI	.104803	.0782799	1.34	0.181	-.0486228	2582288
POP	-.0001338	.000129	-1.04	0.299	-.0003866	.0001189
_Cons	52.41544	9.321855	5.62	0.000	34.14494	70.68594
Sigma_u	0					
Sigma_e	5.8698378					
rho	0 (fraction of variance due to u_i)					

Table 11 : Correlation matrix with significance.

	HCR	TRAD	REM	FDI	POP
HCR	1.0000 30(obs)				
TRAD	-0.7117 30(obs) 0.0000*	1.0000 (obs) 0.0000*			
REM	-0.839730 (obs) 0.0000*	0.7675 30(obs) 0.0000*	1.0000 (30)		
FDI	-0.4270 30(obs) 0.0186*	0.8414 30(obs) 0.0000*	0.3931 30(obs) .03916*	1.0000 (obs)	
POP				0.4105 30(obs) 0.0242*	1.0000 (obs)

Obs: Observation

*: Minimum level of significance.