Globalization and Income Inequality:
A Case Study of Selected Developing Countries

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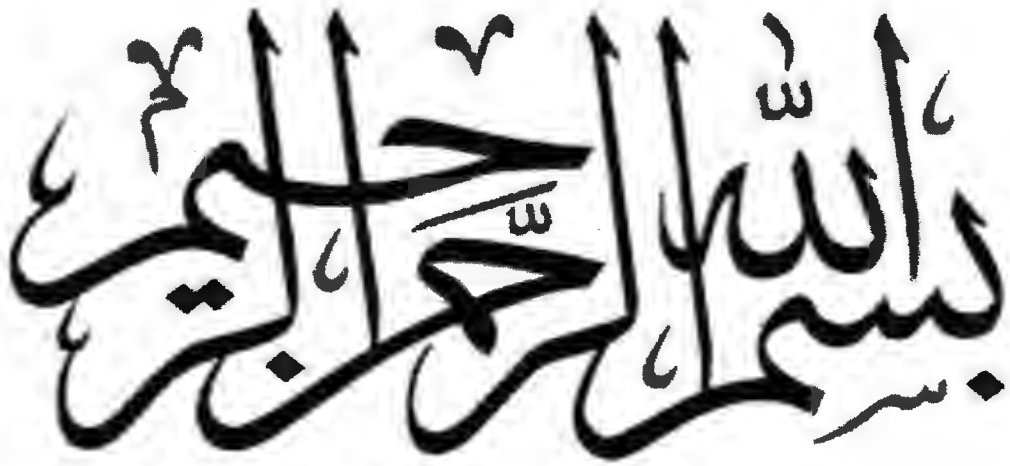
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APPROVAL SHEET

Globalization and Income Inequality: A Case Study of Selected Developing Countries

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Dedication

To

The most respected and honourable

My parents

Acknowledgement

I begin with the blessed name of Allah (AJ) who gave me the ability and strength to complete my MS. I praise Him and glorify Him as He ought to be praised and glorified. I pray for peace and blessings on all His noble messengers, especially on the last Prophet Muhammad (PBUH) who is created as a blessing for mankind as well as all the universes. I am not fit to speak of his exalted glory with narrow perceptions and low imagination.

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List of Abbreviation

ATR	Average Tariff Rate
ETR	Effective Tariff Rate
FDI	Foreign Direct Investment
GATT	General Agreement on Tariffs and Trade
GDP	Gross Domestic Product
IMF	International Monetary Fund
LDC's	Less Developed Countries
LSDVC	Least Squares Dummy Variable Corrected
OECD	Organization for Economic Cooperation and Development
OLS	Ordinary Least Square
PCGDP	Per Capita Real GDP
SSEG	Secondary School Gross Enrollment
SWIID	Standardized World Income Inequality Database
TR	Trade Ratio to GDP
FM-OLS	Fully Modified Ordinary Least Square
GMM	Generalized Method of Moments
UK	United Kingdom
UNHDP	United Nations Human development report
UNU-WIDER	United Nations University, World Institute for Development

	Economics Research
WDI	World Development Indicator
WTO	World Trade Organization

Abstract

As economies of the world are getting more and more interdependent, hence, a large segment of economic literature investigated the impact of globalization on income inequality. However, the empirical investigations on the impacts of globalization on income distribution are still inconclusive. Keeping in view the inconclusiveness, in this study we examined the relationship between globalization and income inequality using five different proxies of globalization. The empirical analysis estimates five empirical models by using a panel data approach for a set of 44 developing countries spanning from 1980-2014. Considering the nature of data set, the empirical estimation has been carried out through GMM estimation technique. The findings of the study reveal that overall globalization cannot explain income inequality; however, we found insights for the positive relationship between economic globalization and income inequality in the sample countries. In addition, the findings of the study also indicate that average, and effective tariff rates explain negatively income inequality in the sample countries. Based on study findings, it is safely concluded that economic globalization and income inequality move parallel in the sample countries.

Chapter 1
Introduction

This chapter discusses background of the study, gap in the existing literature, research objectives, research questions and testable hypotheses.

1.1 Background of the Study

1980s was the favourable era for trade liberalization, as most of the developing countries replaced its restrictive and import substitution policies with export promotion and import liberalization policies. The primary objective of the developing countries was to integrate with developed countries in order to enhance the pace of economic growth through technological diffusion. As a result, in the last decade of the 20th century (1990s) trade flows is significantly increased, and the diffusion of technology is rapidly spread across the globe. However, with the advent of World Trade Organization (WTO), globalization and its impacts on income distribution got space as a heated issue among economists and policy makers. Despite the fact that, the distributional impacts of globalization is one of the appealing research subjects, though empirical literature is still away from consensus.

For instance, some studies have an optimistic view that globalization always-reducing income inequality in both developed and developing countries. These studies (Deadroff and Stern, 1994; Sylwester, 2005; Claessens and Perotti, 2007) among other argued that the integration of developing economies with developed enhance exports of developing countries, which increases economic growth, and therefore improve distribution of income in the developing countries. These studies also came with the conclusion that, in the presence of sound financial institutions in developing countries, liberalization of capital account provides accessibility of the poor people to financial resources.

Accessibility to finance enhancing their capacity to invest in human capital accumulation, hence income gap between skill and unskilled labour is reducing.

Some empirical studies came with pessimistic view, that globalization always widening income gap. These studies also justified their claim in trade inflow, and argued that globalization integrates developing countries with developed countries as result in developing countries flow of capital goods, machinery, and technology increases. However, as, most of the developing countries have relatively scarcity of skilled labours, as a result demand for skilled labours increase that intern widen the wage gap increases between skilled and unskilled workers (Basu and Guariglia, 2007; Celik and Basdas, 2010). Considering the negative impact of globalization on distribution of income in developing countries, Lundberg and Squire (2003) emphasized on those trade liberalization policies, which creates an employment opportunity for the low-income class to mitigate the wage gap between skilled and unskilled labours in the developing countries.

In past a number of studies have been carried out on the distributional impact of globalization. However, most of the existing studies analyzed the impact of overall globalization, or economic globalization. However, we believe that the distributional impact of globalization deserves further investigation. Hence, unlike previous studies in this study we investigated the distributional impact of globalization more rigorously using five different proxies of globalization.[1] In this association an empirically analysis have been carried out in case of 44 developing countries with time span from 1980-2014. Moreover, there are very rare studies in the existing literature of examining the relationship between globalization and income inequality through five different variables. Whereas, these studies have been carried out to explore the relationship in

[1] Five proxies of globalization have been used; Overall Globalization, Economic Globalization, Trade to GDP ratio, Average Tariff Rate, and Effective Tariff Rate.

case of a single country only.[2] Therefore, this study examines the impact of trade openness on income inequality and the relationship between globalization and income inequality in developing countries.

The outcome of this study indicates that overall globalization will not affect income inequality in the developing countries significantly. This may be due to the reason that overall globalization is the composite index of three sub-indices economic, social and political globalizations. Among these, social and political globalizations have less response to income inequality. Furthermore, the index of economic globalization comprises different components (flow variables and tariff rates), which significantly increases income inequality in the developing countries.

Moreover, trade openness has a positive robust impact on income inequality. Whereas, the magnitude of this impact is relatively lower than the impact of average and effective tariff rates on income distribution in the selected developing countries. Because, an increase in average and effective tariff rates declines trade liberalization process, which positively contributes income distribution.[3] In addition, as the benefits of economic growth are not equally distributed among the recipients of the population. So, an increase in the economic growth stimulates income gap by same proportion among rich and poor segment. In addition, as the number of dependents in a household increases, this will increase the income gap between employed and unemployed workers in the developing countries. However, the monetary instability has an adverse effect on income distribution, as higher inflation reduces real wages that creates an employment opportunity.

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[2] Jalil (2012) conduct a country specific study of an emerging economy of China by using five different proxies of globalization, to explore its statistical relationship with income inequality.

[3] The empirical findings of Bergh and Nilsson (2010) justify that, flow variables (FDI and trade openness) not completely explain income inequality, hence, tariff rates is a good measure of openness and explain income inequality in the developing countries.

Whereas, the investment in human capital is playing a crucial role in reducing income inequality in the developing countries. As more people are getting higher education, the wage premium will be enjoyed by a large number of population. While, in developing countries large portion of public expenditure goes to physical infrastructure, and telecom sector, which enhances the overall pace of economic growth, however worsens income distribution in developing countries.

1.2 Gap in the Literature

A number of studies have empirically investigated the relationship between globalization and income inequality.[4] These studies have used different proxies of globalization, for instance trade openness and foreign direct investment, average and effective tariff rates. However, no empirical study on panel data set have been carried out that have used all five proxies of globalization, while investigating the relationship between globalization and income inequality. Hence, to check the robustness in this study instead of single proxy, we used all five different proxies (i.e. overall globalization, economic globalization, trade ratio to GDP, average tariff rate and effective tariff rate) of globalization hearing investigating its impact on income inequality.

1.3 Objectives of the Study

The study aims to extend literature on the following objectives.

- To examine the impact of overall globalization on income inequality in selected developing countries.
- To assess the impact of economic globalization on income inequality in selected developing countries.

[4] For instance, several studies (Dollar, 2005; Dreher and Gaston, 2008; Bergh and Nilsson, 2010; Asteriou et al., 2014) explains a statistical relationship between globalization and income inequality. In addition, some studies explored the relationship between tariff rates and income inequality (Dobson and Ramlogan, 2009; Ma and Dei, 2009; Jaumotte et al., 2013).

- To investigate the impact of trade openness on income inequality.
- To explore the impact of average tariff rate on income inequality.
- To examine the impact of effective tariff rate on income inequality.

1.4 Research questions of the study

The study will address the following research questions;

- Does overall globalizations and economic globalization explain income inequality in selected developing countries?
- Either TR_{it} or the ATR_{it} explain income inequality in the selected developing countries?
- Can the effects of two tariff rates on income inequality may vary across the cross sectional units of developing countries?

1.5 Hypotheses of the study

This study will test the following four hypotheses.

- Overall globalization does not affect income inequality in the selected developing countries.
- Economic globalization is more profound as from the overall globalization to explain income inequality in the selected developing countries.
- Trade openness not fully explain income inequality in the developing countries.
- Average and effective tariff rates and income inequality move positively in developing countries.

1.6 Significance of the Study

The three leading institutions (IMF, World Bank and GATT) of the World are working to spread the trade volume and to maintaining global financial stability across the globe. In this association, most of the developing countries liberalize their economies to promote economic growth and maintain financial stability. The one key objective is to decline income gap between rich and poor in the developing countries. However, some of the emerging economies, for instance, China and India have achieved higher economic growth from the last three decades, but, income inequality has increased with same proportion. Hence, this study is devoted to examine that, whether trade and financial globalization explain positively or negatively income inequality in selected developing countries.

1.7 Organization of the Study

The remaining sections of the study discuss as follows, chapter two review the literature and chapter three gives theoretical framework and methodology of the study. Chapter four discusses results and empirical findings and chapter five presents conclusion and policy recommendations.

Chapter 2
Literature Review

This chapter of the study is devoted to review the existing literature that have linked trade openness, financial liberalization and technological spill over with income inequality.

2.2 Globalization and Income Inequality

As this study is exploring the relationship between globalization and income inequality, hence this section of the study is devoted to review the existing literatures that have linked globalization with income inequality. Studies on the link between globalization and income inequality broadly fall into three groups. First, studies that argued for the negative effect of globalization on income distribution. For instance, in their standard trade model Stolper and Samuelson (1941) showed that wage gap might reduce due to trade openness between skilled and unskilled workers in the developing countries. The predication of this standard trade model is empirically verified by some recent studies, for instance, Reuveny and Li, (2003); Grossman and Rossi-Hansberg, (2008) among others.

The earlier work of Stolper and Samuelson (1941); Rybczinsky, (1955); and Mundell (1957), hold the claim that trade openness prove beneficial for income distribution in developing countries; as developing countries have relatively abundant unskilled labour, therefore its exports mostly embodied with labour intensive commodities that in turn increase wages of unskilled labour. The empirical finding of Ruffin (2009) is in accordance of Stolper-Samuelson theorem, poor countries gain more benefits as from the rich countries. As a result, globalization is likely to decline global income inequality across the countries. In a similar lines, Mill (1848) used trade paradigm argued that,

smaller countries achieve more benefits due to the expansion of free trade as from the larger countries.

With trade liberalization policies, country can harvest the potential gain of resource endowments. Such strategies may enhance pace of economic growth that in turn decline the dispersion of unequal income distribution in the developing countries. According to the findings of Dollar and Kraay (2001a) in 1990sthe average per capita income of the liberalized developing countries increased by 5.0%, developed countries by 2.2%, and developing countries that have not liberalized is just increased by 1.4%. Similarly, in country specific study Wei and Wu (2001) found that, most of the Chinese cities participated in the liberalization process in 1970s, therefore economy become more integrated with the rest of world, as a result, income inequality gap reduced significantly between rural-urban regions.

The export level of the host country is enhancing due to installation of foreign technological plants and this will increase the level of productivity. It can also improve the labor skills and may create an employment opportunity in the host country. The effects of trade openness on income inequality also depends on the endowment factor (land, natural resources). Bourguignon and Morrisson (1990) examines that, distribution of income is highly correlated with the endowment of labor, land and natural resources in the less developed countries (LDC's). They showed that as, labor is abundant in the LDC's, the exports of labor intensive goods is become increased due to trade openness, that intern real wages increase, hence, reduce inequality. Similarly, Reuveny and Li (2003) argued that, the resources are equally distributed due to trade openness, which decline within countries income inequality. The developing countries GDP is growing faster than the developed ones in the era of globalization. As the economies become more open, will lead to take advantage of resource endowment. This may improve the

economic growth and decline the dispersion of unequal income distribution in the developing countries.

In contrast, Lim and McNelis (2014) urged that, as almost production is labor intensive in the low-income countries. Hence, the level of income inequality can be reduced by adopting those policies which expand the volume of trade and production process to be capital-intensive. Trade and financial openness is negatively correlated with income inequality in those economies, which have crossed a certain threshold level of capital intensive method of production. Then, it will leads to increase the marginal productivity of labor and growth in income. Through the redistributive effects which developed income equality. In this connection, India substantially made trade reforms in 1991, which is reduce tariff rate and follow an export-led strategy. Kumar and Mishra (2008) argued that, wage inequality is decline due to trade liberalization between skilled and unskilled workers in case of India.

Wood (1997) argued that the relationship between trade liberalization and wage inequality should be negative is the proponent of Heckscher-Ohiln model. So, a country must be exported agriculture products, whereas, the manufacturing products and services to be imported. Then wages of unskilled workers increases and skilled workers wage is decline. Whereas, Marjit et al. (2004) explore that, income gap between skilled and unskilled labors is strongly declined due to expansion of trade volume in a small developing economies.

Moreover, some studies found a significant positive relationship between trade openness and income distribution in low-income or in the poorest countries. Therefore, Seshanna and Decornez (2003) explored that, income inequality is declined in the LDCs, and in those, which are member of the WTO since 1980s. In addition, the empirical finding of Bigsten and Durevall (2006) found that, wage inequality is declined due to trade

openness in case of Kenya. However, Kenya reduce average tariff rate from 49% to 17% in a period of 1997-98 (O'Brien and Ryan, 2001). Whereas, Manda and Sen (2004) argued that, openness worsen income gap between skilled and unskilled worker in case of Kenya.

When an economy restrain on international trade and intending to protect its domestic productions and level of employment through import tariffs and subsidies. Savvides (1998) used the trade protection index developed by Lee and Swagel (1997) estimated that, there is a negative relationship between trade protection and income distribution in the LDC's. But have no significant impact on income inequality in the case of developed countries. Ma and Dei (2009) used two types of tariff reduction on imports in a China's trade model. The tariff reduction on final goods and intermediate goods and its impact on wage inequality. According to their findings, when tariff on final high-quality goods is reduced, its price is low in the domestic economy, this will decrease wages of skilled workers while wages of unskilled workers increases. When tariff on intermediate low-quality goods is reduced. In addition, the wage gap between skilled and unskilled workers is widened. Whereas, Gourdon et al. (2008) taken a broad panel of both developed and developing countries by using openness proxy as tariff rate. They argued that, openness not significantly affect income inequality in case of developed countries and found a significant negative relationship in the case of developing countries.

Whereas, number of studies found a significant and positive relationship between openness and income inequality in the developing countries such as Sachs and Shatz (1996); Barro (2000); Lundberg and Squire (2003). These studies explained their results in the growth and employment impact of globalization, and argued that trade liberalization in developing countries enhanced pace of economic growth and hence created employment opportunities. However, they hypothesized that, as the benefits of

economic growth are not equally distributed, hence poor segment of population cannot get the potential benefit of globalization, as a result income gap between skilled and unskilled labours has increased. The empirical findings of Christiaensen et al. (2002) and World Bank (2006) concluded that, economic growth is further skewed due to openness, whereas, its benefits has not been equally distributed within Sub-Saharan African countries.

Meschi and Vivarelli (2007) explored a significant positive impacts of globalization on income inequality. They argued that as developing economies are integrating with developed countries since 1980s, which positively affects income inequality in the developing countries. Demery and Squire (1996) conducted a national household survey for the six African countries to explore the relationship between trade liberalization and income distribution. They found that, trade liberalization and currency depreciation have a positive and significant impact on economic growth. The increase in growth also improves income inequality with the same proportion, and the poor people not take advantage from the structural reforms in those countries. In similar lines, Kratou and Goaied (2016) argued that, globalization phase mainly facilitate the upper class instead of lower class in their panel data set of 66 developing countries.

Similarly, Cain et al. (2010) used a panel data set of 21 Asian developing countries, they came up with the conclusion that, globalization has positively affect unequal distribution of income in the Asian economies, as an illustrative example is China. As the economies have adopted export-oriented strategy to liberalize the economies with rest of the world. Zhu and Trefler (2005) argued that, wage inequality and export level is move parallel in case of Latin American countries. Yeaple (2005) found that, trade openness enhancing export opportunities of domestic firms will led to increase the skill premium.

However, Galiani and Sanguinetti (2003) show a significant and positive relationship between trade liberalization and wage inequality, as the developing country like, Argentina made a major reforms in decade of nineties. In addition, Bustos (2005) furtherly empirical work on sophisticated model of Yeaple and Melitz (2005,2003) argued that, export cost become lower due to trade liberalization, will increase the interest of domestic producers to join the export market. As the firms imported new technological plants due to lower cost of tariffs. She concluded that, this innovated technology significantly stimulate wage inequality in case of Argentina. In similar lines, Fajnzylber and Fernandes (2004) arguing that, the domestic firms export the product is in accordance of international standards as demanding by the foreign clients. It has significantly increased the demand for skilled workers in case of Brazil. In addition, Naughton (2007) show that, China has adopted a restrictive foreign trade policy in the Mao period to decline income inequality. Whereas, in the recent decade, income inequality is widen due to more gradual trade policy[5].

Rising regional inequality within a nation is a serious concern to quantify living standards among different regions in the world. Some empirical studies showed a significant positive relationship between trade openness and regional income inequality. For instance, in country specific study Daumal (2013) found that, trade openness have a positive impact on regional income inequality among the Indian states, whereas, reduces regional inequality in case of Brazil. In addition, he found that FDI inflows reduced regional income inequalities in both Indian and Brazilian economies. Explaining the findings, he argued that as India started trade liberalization policies in mid 1980s, hence in the post-liberalization period (1991-2005), regional inequality increased with

[5] For instance, Attanasio et al. (2004) argue that, Colombia has substantially reduced tariff rate, which has significantly increase wage premium between skilled and unskilled workers due to imported skill-based technology in the period of 1980s to 1990s.

the correlation coefficient is equal to 0.96. On the other hand, Brazilian economy, trade openness reduced regional inequality in the same period, which correlation coefficient is equal to -0.75. Almost similar results have been obtained by Kanbur and Zhang (1999) of rising regional income inequality in China from 0.19 to 0.26 in the post liberalization period of 1985 to 1998. Supplement Kanbur and Zhang (1999) findings Cheng and Zhang (2002) argued that, income inequality is worsens in the cross-sectional units of an Asian economies in case of China.

In similar line, Zhang and Zhang (2003) found that, trade liberalization improves regional income inequality in China. Barrios and Strobl (2009) show that, regional inequality is disperse in European countries, as their economies become integrated due to trade liberalization. In addition, Petrakos et al. (2005) conducted the impact of economic integration on regional inequality among eight European countries and came with the conclusion that, due to integration among member countries have improved regional inequality.

Furthermore, Atif et al. (2012) used data set of 68 developing countries, by using the index of globalization, which is developed by (Dreher et al., 2008), and found that globalization improve income inequality. Whereas, a number studies examined that, trade openness positively chnage regional income inequality in Mexico (Sainchez-Reaza and Rodriguez-Pose, 2002; Aguayo- Tellez, 2006). In contrast, Kremer and Maskin (2006) found that, the proponent of Heckscher-Ohlin model may not applicable to decline income inequality in low income countries.

However, Rivas (2007) examined a statistical relationship between openness and regional inequality in Mexico with the time span of 1940-2005. He found that openness

is the main contributing factors to rise regional inequality in the Mexican economy[6]. Similar results obtained by Wahiba (2013), and explore a positive relationship between openness and unequal distribution of wages in Tunisian economy with time period of 1984-2011. She concluded that, the Tunisian economy is integrated with global economy by adopting the export strategy. This will lead to favor the skilled labors relative to unskilled workers, and decline an employment opportunity for the unskilled labors. As a result of this, income inequality is worsens due to the diffusion of skilled biased technology.

When a country expands its volume of trade, rich segment of the population take more advantage due to the expansion of trade. Keeping in view this hypothesis, Lundberg and Squire (1999) examined the relationship between globalization and income distribution for both developed and developing countries. They argued that, trade openness is positively associated with the income shares of both middle and upper quintiles, whereas, have a negative effects on the lowest two quintiles. Spilimbergo et al. (1999) examined that, when an economy has more liberal trade policy, it has less focused on the re-distributional policies.

Furthermore, several studies found that, with globalization wage premium of skilled labour is growing faster than the premium of unskilled workers in developing countries. For example, Robbins (1996) estimated the effects of globalization on worker wages premium in Colombia with the time span from 1976-1994, and came with the conclusion that wage dispersion has increased in liberalized eras as compared to closed one. In addition, Robbins and Gindling (1999) found same results in case of Costa Rica. Green

[6] In addition, the empirical findings of several studies (Feliciano, 1993; Sainchez-Reaza and Rodriguez-Pose, 2002; Aguayo-Tellez, 2006) concluded that, trade openness positively affect regional income inequality in case of Mexico. Whereas, Deardorff and Stern (1994) found that, globalization increases the wages of unskilled labor in the developing countries due to the comparative advantage in the unskilled labor-intensive goods.

et al. (2001) examined that, on average, openness has increased the return of high-skilled qualified workers. Whereas, the opposite results obtained for the unskilled and non-educated workers in case of Brazil. Similarly, Beyer et al. (1999) found a significant positive relationship between trade liberalization and wage premium of educated workers in Chile within the time span of 1960-1996.

A reasonable number of empirical studies have investigated the relationship between globalization and income distribution in case of developed economies. For instance, Spilimbergo et al. (1999) argued for a positive relationship between trade openness and income inequality in skill-abundant developed countries. In addition, several other studies assert a significant positive relationship between trade liberalization and inequality in the developed countries (Borjas et al. 1992; Levy and Murnane 1992; Karoly and Klerman 1994; Pritchett 1997; Bernard and Jensen 2000; Silva and Leichenko 2004). Atkinson (2003) in his empirical analysis found that due to globalization income inequalities has increased in the OECD countries. Similarly, Dreher and Gaston (2008) explored the relationship between globalization and income inequality using industrial wage inequality and household income inequality. Using three measures of openness of the time span 1970-2000, they concluded that income inequality increased in the OECD countries.

As income is equally distributed in the societies, will improve the living standards of the peoples within countries. In case of unequal distribution a countries can't utilize productive capacity. Alesina and Perotti (1996) examined that, the political instability mostly suffer those societies, which has not a better concern towards the equal distribution of income. Similarly, Alesina and Rodrik (1994), and Clarke (1995) found that, in countries which have equal distribution of resources grow faster than their counterparts which have relatively less equal distribution of income. Whereas, Lin and

Fu (2016) conducted a panel study of developing countries with time span from 1985-2012. They argued that, trade openness has positively affect income inequality in high profile democratic countries.

The empirical literature on the subject depicts a non-linear relationship between globalization and income distribution, for instance, in country specific study Jalil (2012) find that in case of China, at the start income inequality increases with the expense of openness, however, it falls after a certain level of openness. Similarly, using data set of 18 Latin American countries, Dodson and Ramlogan (2009) argued for the inverted U-Shaped relationship between trade openness and income inequality. Based on the study findings, they concluded that along with liberalization policies governments also have to prompt the re-distribution policies, hence to mitigate the negative effects of trade liberalization on income distribution.

Some of the empirical evidence predicts a differential impact of trade openness on wage inequality. For instance, Wood (1997) examined that wage inequality is reduced from 1970s to 1980s in the East Asian economies, as a result of trade liberalization, which reduces the wage gap between skilled and unskilled workers. Whereas, in case of Latin American economies wage inequality is increased in 1990s. In addition, some studies found an inconclusive relationship between globalization and income inequality. For example, Hennighausen (2014) examined the relationship between trade openness and capital movements with income inequality in OECD countries. The study found no evidences of the correlation between openness and capital mobility. Similarly, Dollar and Kraay (2001 b) came with the conclusion that globalization have no impact on the income shares of the poorest quintiles in a cross-sectional studies. Similarly, Higgins and Williamson (1999), Bowles (2001), and Edwards (1997) used more sophisticated

estimation techniques and came with the conclusion that trade openness cannot explain income inequality.

Furthermore, Vivarelli (2004) examined that, trade openness and FDI inflows is not significantly affected the distribution of income. However, Jaumotte et al. (2006) examined that, trade and financial openness may not have any statistically robust impacts on income inequality, because both have an offsetting effects. Whereas, Dollar and Kraay (2002) find that, trade openness facilitate the rich and poor people with same proportion, and have no adverse effect on income inequality in the developing countries. Several existing studies, Ravallion (2001), Li and Zou (1998) and Zhou et al. (2011) used exports as a share of GDP to proxy the openness and to examine its statistical relationship with income inequality, not found any robust impact in both developed and developing countries.

2.3 FDI and Income Inequality: (A Positive Relationship)

Stolper and Samuelson (1941) assume that, labor and capital are not mobile across the borders, rather mobile within a country. However, when the assumption is relaxed that allows capital mobility across the borders, then the FDI channel is obviously evident for its impact on income inequality. Because, FDI inflow is usually invested in high-skill sectors, this will increase the demand for skilled labor and may worsen wage gap between skilled and unskilled labor in the developing country (Cragg and Epelbaum, 1996; Gopinath and Chen, 2003).

As economies become integrated through liberalization policies, hence technology is diffused in the developing countries. However, when high-skill technology is transferred from developed to developing countries, it will increase the demand for high-skilled labor and therefore deteriorate distribution of income in the developing countries (Meschi and Vivarelli, 2008). Some of the studies augmented that, new technology is

the main contributing factor to exacerbated income inequality in developing countries. For instance, Aghion and Howitt (2005) concluded that, technology diffusion may destruct the employment opportunity for the less-skilled workers.

Furthermore, several studies found that FDI inflows worsen income inequality due to paying higher wages as compared with the traditional sectors (Girling, 1973; Rubinson, 1976; Bornscheir and Chase-Dunn, 1985; Tsai, 1995), because there is less perfect competition in the labor market in developing countries. Horrisson and Rodriguez-Clare (2010) found that, foreign firms are more productive as compared with the domestic firms due to less competitive environment, hence foreign firms pay higher wages as compared to the traditional sectors. This may further skew the unequal distribution of income. In similar lines, Martins and Esteves (2007) found 50% wage inequality gap among the foreign firms and domestic firms in case of Brazil. Similarly, Earle and Telegdy (2007) found 40% gap in case of Hungary. In this association, Bircan's (2007) estimated that, foreign firms through FDI inflows pay higher wages as compared to the host country in case of Turkey.

Taylor and Driffield (2005) estimated a positive relationship between FDI inflows and wage inequality for UK. They concluded that, FDI inflows deteriorate wage inequality in the manufacturing sectors of UK with time span of 1983 to 1992. Zhang and Zhang (2003) argued that, FDI inflows and foreign trade are the main determinants to exacerbate regional inequality in China. Similarly, Lee (2006) explored that, FDI is one of the potential factor that worsens inequality in the EU countries, because FDI increases rewards of the skilled labors. Whereas, Herzer and Nunnenkamp (2013) argued that, FDI inflow and outflow have a significant and potential effect on income inequality in case of UK.

When the developed countries reallocate the domestic firms in the developing countries, as a result, less-skilled labors lose their jobs, which in turn deteriorate income distribution of the host country. In this association, Gopinath and Chen (2003) used a panel data set of 11 developing countries with time span 1970-1992. They explored that, capital inflow into developing countries worsens wage gap between skilled and unskilled labors. The capital outflow has relatively more destructive effect on income than capital inflow. Choi (2006) augmented and explored a significant positive relationship between FDI and income inequality for a panel of 119 countries. He concluded that, FDI outflow has more destructive effect on the distribution of income rather than inward FDI flow. Because, the resources are not equally distributed in the Latin American Countries as compared to the rich countries. Whereas, Celik and Basdas (2010) explored a negative relationship between FDI outflow and income inequality in a large panel of both developed and developing countries.

Some studies have made regional classification, while examined the impact of financial globalization on income inequality. In this association, Tsai (1995) estimated that, FDI has a significant adverse effect on income inequality in different regions of the less developed countries. He found that, this relationship is positive and robust in East and South Asian regions. Basu and Guariglia (2007) showed the impact of FDI on human capital inequality in a large panel of 119 developing countries. According to their findings, FDI is positively correlated with inequality, as FDI diffuses skill-based technology, whereas the poor people have less opportunity to get employment in that particular modern environment due to lower human capital. In addition, the credit market behave imperfectly in developing countries and hence, does not finance education expenses of the poor people. Therefore, the political lobby and economic elite is the main beneficiaries of FDI in the developing countries, hence income inequality

increases. In this association, Herzer et al. (2014) estimated that, FDI worsens income inequality in case of five Latin American countries.

The empirical work of Jaumotte et al. (2013) estimated a positive income inequality trend for the panel of 51 developed and developing countries. They argued that, globalization declines income inequality in all regions and countries, whereas, financial liberalization have an adverse effect and exacerbated income inequality in both developed and developing countries. They came with the conclusion that financial openness facilitates only the richest segment of the population. Similarly, International Monetary Fund (2007) found that, financial openness (mainly FDI) is rising income inequality, either it can be measured through income shares of the quintile or gini coefficient. In addition, Celik and Basdas (2010) used an unbalanced panel data technique within time period 1995-2007. They concluded that, capital inflow improves the equal distribution of income by using FM-OLS technique in both developed and developing countries. Whereas, capital inflow worsens income inequality in the miracle countries. In addition, the inward FDI is skill-based and may increase the demand for skilled workers. Whereas, focusing on the skill premium, the demand for skilled labors become higher due to an increase in the capital inflow in both developed and developing countries (Aitken et.al., 1996). Rama (2003) also estimated a significant and positive impact of trade openness and FDI inflow on worker wages. In a similar lines, Choi (2004) used a broad panel of 119 countries and obtained a significant positive relationship between FDI and income inequality.

The FDI inflow is also increasing income inequality through distorting the occupational structure. For example, Alderson and Nielson (1999) found that, the diffusion of capital by multinational corporations and FDI has a significant positive impact on income inequality, as the demand for skilled labor increases and therefore it will raise the wages

of skilled labors. Zhang and Zhang (2003) argued that because of globalization both domestic and foreign capital has been invested in more developed coastal regions, whereas, the inland regions are not developed due to liberalization policies. He claimed that, globalization is one of the key reason of rising regional inequality in China. In similar lines, Tang and Selvanathan (2005) argued that, FDI inflow is the stimulating factor to improve regional income inequality in China with time span 1978-2002.

In a broader context, FDI have some other important components like portfolio investment, bank lending across the countries and equity flows. Some studies have examined that, an increase in the capital account liberalization may higher the access of poor to get the financial resources. For instance, Feenstra and Hanson (1997) examined the capital inflows through multinationals in Mexico for the period 1975-88. Their empirical results confirmed that FDI inflow stagnated income inequalities in Mexico due to higher demand for skilled labor. In contrast, FDI raises income inequality in EU region since 1995, because outflow of FDI from the developed country to less developed country is considered as high-skill intensive inward FDI. This will increase the demand for skilled labor in both developed and developing countries due to skill-based FDI, as a result, income inequality is rising in both countries (Asteriou et al., 2014).

Since the decade of 1980s, technological diffusion across the countries widespread in the era of globalization. As, the assumption of identical technologies across the countries has been relaxed, and hypothesized that, the level of technology is differ among the developed and developing countries. For instance, several studies argued that, technological diffusion from North to South is high skill-intensive. This will lead to increase the demand for skilled workers in the developing countries, as a result of trade liberalization.

The technology is innovated in the developing countries due to the inflow of capital goods from developed countries. This may increase average skill productivity and demand for skilled labor in developing countries. Robbins (1996), Feenstra and Hanson (1996) and Zhu and Trefler (2005) examined that, import of new technology through globalization increases the demand for skilled labor rather than unskilled ones and will lead to widen wage gap between skilled and unskilled labors. In addition, IMF (2007a,b) found that 0.45% of annual increase in income inequality is mainly from technological innovation since the early 1980s. Similar results have been found by Brown and Cambell (2002), investment in Information and Communication Technologies (ICT) will increase demand for qualified labor force rather than for low skilled workers. Similarly, Verhoogen (2007) examined that, technology upgrading improves the average product quality. This may generate the demand of skilled work force in Mexico. Furthermore, Fajnzylber and Fernandes (2004) found same results for Brazil, and pointed out that, the exporters produce high quality product to fulfil the demand of international markets. Obviously, that may increase the wage premium between skilled and unskilled labors.

Technology is enhancing the level of productivity in the developing countries. However, the diffusion of skill-based technology from the developed countries is the main determinant which increases the demand for skilled labors in developing countries. In this connection, Berman and Machin (2000) showed that, in 1980s, the infusion of skill-based technology significantly increases the demand for high qualified skilled labors in middle income countries. Meschi and Vivarelli (2009) asserted that, skill-based technology is transferred from the developed to the developing countries because of the rapid pace of globalization. As, the level of technology in the domestic economy is lower than the skill-based technology, which increases demand for skilled labors in the developing countries.

In a similar line, Robbins (1996 and 2003) show that, as the developing country imports skill-based technology, the libcralization of trade stimulates wage dispersion and increases the demand for skilled workers. Conte and Vivarelli (2007) explore the impact of technological diffusion on income distribution in a panel of lower and middle-income countries. They argued that, skill-based technology is the main contributing factor to stimulate income inequality in the developing countries. Similarly, UNHDP (1999) found that, the diffusion of modern technology stimulates income inequality in most of the developing countries.

In contrast, Blomstrom and Kokko (2003) argued that, modern innovated technology is demanded by those countries, which have a better level of human capital. This will further stimulate economic development, as a result, will lead to improve the equal distribution of income. Whereas, Aitken and Harrison, (1999) and Monge-Naranjo (2002) argued that, countries which have a lower level of human capital import less skill-based technology, which does not significantly change income inequality.

2.4 FDI and Income Inequality: (A negative Relationship)

The globalization primarily measures the trade ratio, however the role of Foreign Direct Investment (FDI) inflow on income inequality in the developing countries must be considered as well. Mundell (1957) hypothesized that, when the capital moves from a developed to developing country, than the developing country will certainly possess more capital than before. The inflow of capital through trade and FDI will increase the marginal productivity of labor in the developing country. Several studies augmented the conflicting views regarding the relationship between FDI and income inequality. FDI enhances the domestic investment, this will lead to increase the exports. The technology is upgraded through FDI, this will increase the production of less developed firms in host

countries. As a result, investment and growth will skew further and this will increase the distribution of income (Sylwester, 2005; Borensztein et al. 1998; De Mello, 1999).

The FDI outflow from the developed countries creates employment opportunities for the unskilled labor in the developing countries. Therefore, Choi (2006) examines negative relationship between FDI inflow and outflow with income inequality in a large panel of countries. Furthermore, several studies argue that, the role of FDI is crucial in declining income inequality, when the policies are designed to provide employment opportunities for the unskilled labors (Deadroff and Stern, 1994; Meyer, 1999; Obstfeld, 1998).

The human capital is playing a significant role to decline income inequality in the developing countries. The human capital is to be assigned as level of education, job and fitness expression of workers, which will cause to improve the productivity level (Salvatore 2004, p.141). Wages to be paid according to the level of education. As the level of education become equal for each participant of the society. Then, obviously wage gap between high income and low income groups will decline. Several studies use the inequality measures as human capital or wage rate. Therefore, Gregorio and Lee (2002) examine the positive relationship between education expenditure and income distribution in a large panel of both developed and developing countries. They concluded that, substantial expenditure on higher education is a one policy tool to decline income inequality.

The FDI inflow stimulates income inequality in the low-income countries, because, the poor segment of the population is not in a position to get access through skill-based technology, because of their low level of human capital. This problem could be raised due to credit market imperfection, which does not finance the education expenses of the poor people. Whereas, Fischer (2003) argued that, the countries well-endowed of human capital, trade openness significantly stimulates income inequality.

In addition, Wood (1994) explored that, trade openness only facilitates those economies which are getting higher education and consequently worsens income inequality, and does not assist otherwise. Because, trade openness may increase the demand for skilled labors which have more skills and experience. In addition, Bensidoun et al. (2005) show that, openness worsens unequal distribution of income in such a country, which has a ratio of education less than 30%. The same ratio also obtained by Gourdon (2007), who concluded that, trade liberalization declines inequality in those country, in which the lobor force have a primary education of at least 20%.

Gourdon et al. (2008) explored a statistical relationship between trade liberalization and income inequality by using data set of 61 developing countries. According to their findings, the relationship is negative in those countries which are abundant in primary educated labor force. In contrast, Fischer (2003) asserts that trade liberalization disperse income inequality in those countries which are well-endowed in human capital.

The non-linear relationship between FDI inflow and income inequality are conditioned with different stages. The capital inflow of multinational in the first stage improves the skills of white-collar workers, therefore, marginal productivity of workers and wage increases. Whereas, the blue-collar workers remain unskilled. In the second stage, unskilled blue-collar workers become more productive due to the new technologies. Initially, the wage gap between skilled white-collar and unskilled blue-collar workers deteriorates. According to findings, the relationship between FDI inflow and income inequality is an inverted U-shape. It is based on the manufacturing sectors of Irish economy over the period 1979-95 (Feenstra and Hanson, 1996; Figini and Gorg, 1999).

There are some studies which argue that, the FDI inflow is promoting economic growth and does not have any robust correlation with income inequality. Sylwester (2005) explored that, there is no statistically significant relationship between FDI and income

inequality in the cross-sectional units of less developed countries. He further concluded that, FDI promotes economic growth and does not have any robust impact on income inequality.

The capital inflow through multinational corporations has a significant positive relationship with income inequality, because this increases the demand for skilled labors. Some studies argued that capital inflow through these corporations does not significantly increases the skill premium in the manufacturing sector of US economy (Blonigen and Slaughter, 2001). Milanovic (2005) in his study used the household survey database to explore the impact of FDI on income inequality. His empirical results do not find any robust relationship in case of developed countries.

Mahler (2004) examined that, there is no significant impact of FDI on income inequality. But, his analysis deal with developed countries only. Mah (2003) did not find any significant relationship between trade liberalization and FDI inflow with inequality in Korea. Similarly, Lee (2006) using income inequality as the dependent variable instead of wage inequality. He concluded that, there is no robust impact of openness on income inequality in 14 European countries within time period 1951-1992.

Chapter 3
Theoretical Framework and Methodology

3.1 Theoretical Framework

The relationship between globalization and income inequality is a long debatable issue among economists and policy makers in both developed and developing countries. Stolper-Samuelson (1941) was the first one who argued the negative relationship between trade openness and income inequality in the framework of Heckscher-Ohlin model. According to Stolper-Samuelson low-skilled labor is abundant in developing country, hence, international trade increases wages of unskilled workers, whereas, it decreases the wages of skilled workers in developed country, therefore will reduce income inequality.

Keeping in view the standard trade models of Stolper and Samuelson (1941) and Rybczinsky (1955) who argued that, tariff reduction through an increase in trade openness declines the high-skilled intensive import commodity prices, this will reduce the compensation of high-skilled workers in the developed country. Whereas, the developing country has relatively export of low-skilled intensive commodity. So, the compensation of low-skilled workers and prices of exportable low-skilled intensive commodity will increased due to tariff reduction. This will lead to decline income inequality in the developing country and the reverse would hold in the developed ones, because developed country has relatively high-skilled abundant factors.

The technology has become adaptive through international trade in developing countries with different channels. The import channel also has a positive robust impact on unequal income distribution in the developing countries. When developing countries import new technologies, equipment and machinery, this may relatively increase the demand for

skilled labor. Because, the imported technology has a positive impact on domestic firms productivity and on the domestic producers to have a better chance to get the knowledge and practice of new technology. This technological innovation increase the demand for skilled labor, and disperse unequal income distribution in the developing countries. In a similar lines, product cycle model of Vernon's (1979) argued that, technological innovation become highly integrated the world economies, this may expand the substitutability between capital and unskilled labor. Because of this, wage gap between skilled and unskilled labor has spread due to an increase in the demand of skilled labor.

Furthermore, when developing countries liberalize their economies to export with rest of world economies, this will provide an access to the domestic firms of developing countries through international markets. This may give domestic firms an opportunity to gain the knowledge of international quality standards, which are demanded by the foreign clients. As the firms adopt international quality standard in the manufacturing process, this will lead to an increase in the demand of skilled labor and hence, their wages. In a similar lines, when developing countries import intermediate goods from the developed countries, these intermediate goods are produced by less-skilled labor of the developed countries, and are transmitted to final goods by the high-skilled labor of the developing countries. In this way of globalization, the demand of skilled labor and their wages both will certainly increase.

The role of FDI is significant to decline the income gap between skilled and unskilled labor in the developing country. Mundell (1957) concluded that, when capital moves from a developed to developing country, than the developing country will certainly possess more capital than before. This will increase the real wage performance and attract FDI inflow. So, the marginal productivity of labor will increase in the developing country. This will reduce the wage gap in the developing country. When a country

imports new technological plant and some equipment through the process of globalization. This will improve the labor skill and will create employment opportunities for unskilled labor in the host country. In a similar lines, technology is upgrading due to FDI and this technological innovation is expanding the domestic firm's productivity. As a result, the investment and growth skews further. This will lead to an increase in the distribution of income in the developing countries.

The FDI inflow is a leading significant factor to disperse income inequality in the developing countries. Because, the developed country has a concern to invest in high skilled sectors in a developing country. Obviously, this will increase the demand for skilled labors. In a similar lines, FDI inflow distorts the occupational structure and widens income inequalities due to high-skill sectors targeted in the developing country. The FDI inflow through multinational corporations has a positive effect on income inequality. Because, FDI inflow through multinational increases the demand of skilled workers and offer higher wages as compared with the traditional sectors. This will lead to worsen income gap between skilled and unskilled workers in the developing countries.

In addition, the infusion of technology through FDI is skill-based and this will create employment opportunities for the skilled workers. As, the developing country has abundant unskilled workers so it is not an easy task for the low-skilled workers to get employment in that particular modern environment. Meschi and Vivarelli (2009) claimed that, the diffusion of technology from the developed country is skill-based and this will increase the demand for skilled workers in the developing country. Skill-based technology is the main determinant to stimulate income inequality in the developing country due to an increase in the demand for skilled workers. Whereas, Figini and Gorg (2011) used endogenous growth model of (Aghion and Howitt, 1998) and argued that, initially, technological innovation positively contributes to stimulate wage inequality,

because the firms demand skilled labor for installation of new technology. Then the firms gradually demand low-skilled labor after the technical procedure of technology installation, hence, the wage gap between skilled and unskilled workers decline.

3.2 Empirical Model

Our objective is to analyse the income distributional effect of globalization. We start our estimation with the following base-line model.

$$INCI_{it} = \beta_0 + \beta_1 GB_{it} + \beta_2 X_{it} + \mu_i + v_t + \varepsilon_{it} \qquad (1)$$

Income inequality $INCI_{it}$ is our dependent variable; Globalization (GB_{it}) is our variable of interest that further classified in five different variables namely, overall globalization, economic globalization, trade openness, average tariff rate and effective tariff rate. X_{it} is the vector of control variables namely, per capita real GDP, dependency ratio, human capital, inflation rate and government size. Whereas μ_i *and* v_t denotes unobserved cross-sectional and time specific effects respectively, ε_{it} is the error term.

3.3 Definition and Construction of Variables under Consideration

This section discuss in detail definition and construction of variables under consideration.

3.3.1 Dependent Variables

The dependent variable is income inequality, a number of methods have been developed to measure income inequality. The one well standard measure of income inequality is GINI Coefficient developed by Corrado Gini (1912). The value of GINI coefficient lies between zero and one, value closer to zero indicates equal distribution, whereas, value closer to one indicates an unequal distribution of income. Most of the empirical literature captured income inequality with GINI coefficient and used the Luxembourg Income Study (LIS) data base of GINI coefficient. However, this data set has two major

limitations. First, the dataset is just developed for thirty richest economies of the world; second, the data set have a short time span that just start from 1990.

In this study, we used a SWIID income inequality data set, which has created by Solt (2008).This data set have some advantage over LIS data set. First, the data set is developed for a large number of countries. Second, the data set have a long time span, last but not the least, the data set is the comparison of different components of inequality, hence it is very easy to check the robustness of three different inequality approaches (consumption, income and gross income).

3.3.2 Independent Variables

As the variable of interest is globalization, hence, we used five variables as a proxy of globalization (overall globalization, economic globalization, trade openness, average tariff rate and effective tariff rate). Along with globalization, this study also use other control variables like real GDP per capita, dependency ratio, inflation, human capital and government size, which discuss in detail in the upcoming section.

3.3.3 Overall Globalization (OG_{it})

Among explanatory variables, the variable of interest is globalization which defines as, "the integration of regional and national economies across the boarders through economic, political, social and cultural changes, and with the exchange of goods, services and capital with rest of the world economies". The index of overall globalization is the sub-index of economic, social and political globalization.[7] Bergh and Nilsson (2010) analysed that, the political and social globalizations both have none theoretically robust impact on the distribution of income. We collect the data from the secondary

[7] The detailed list of all variable in Dreher et al. (2008)

sources of KOF index of globalization[1], whereas detailed variable list is from Dreher et al. (2008).

3.3.4 Economic Globalization (EG_{it})

The index of economic globalization exhibits "the economic integration of the national economy with rest of the world through the way of capital movements, technological spill over and exchange of goods and services". The economic globalization includes the information of flow variables, that trade, FDI and portfolio investment, income payments to foreign nationals capital employed (in percentage of GDP) are included to proxy for the extent of a country employs foreign people and capital in its production processes. The policy variables like hidden import barriers, average tariff rates, capital account restriction and taxes on international trade (as a share of current revenue). The data of economic globalization index is taken from the KOF index of globalization, as the value of index provide more significant and valuable information.[8]

3.3.5 Trade Openness ($TOPEN_{it}$)

Empirical studies have proxied trade openness with exports plus imports to GDP (Bergh and Nilsson, 2010; Jalil, 2012; Asteriou et al. 2014). In this study, we used exports plus imports to GDP as a proxy of trade openness, as it is constructed by using secondary data source of World Bank, WDI database.

3.3.6 Average Tariff Rate (ATR_{it})

Average tariff rate (ATR_{it}) is the most prominent policy variables to measure the degree of openness. The (ATR_{it}) rate is usually using to represent the inflow of imported goods. The received literature, for instance Dobson and Ramlogan (2009) shows that, ATR_{it} is

[8] Several studies by Ang and McKibbin, (2007) and Jalil (2012) found that, as all variables simultaneously incorporated in one specification will lead to creates many econometric problems like, loss of degree of freedom, multicollinearity and over-parameterization.

relatively better measure of openness then $TOPEN_{it}$, because, the trade ratio is highly correlated with exchange rate, technological innovation and macroeconomic fluctuations, data of average tariff rate is taken from World Development Indicators (World Bank).[9]

3.3.7 Effective Tariff Rate (ETR_{it})

Effective Tariff Rate (ETR_{it}) is the ratio of tariff revenue to total imports (Kanbur and Zhang, 2005), which measures complete pattern of productivity in each industry. In addition, it measures the overall effect of tariffs on value added per unit of output in each industry, when both intermediate and final goods are imported. The data is taken from World Development Indicator (WDI), of the World Bank.

3.3.8 Economic Growth ($PCGDP_{it}$)

Along with globalization, we choose a set of control variables, keeping in view its importance, as an income distribution determinant, and its potential in the affecting of income distribution response of globalization. In control variables, we have economic growth that varies both overtime and across countries.

Economic growth is defined as, "the percentage change in a country's GDP over the period". A number of studies have investigated a significant and positive relationship between economic growth and income inequality. They argued that, the benefits of an increase in economic growth cannot receive by larger segments of the population. In most of the developing economies, economic growth stimulates income gap between rich and poor peoples (Bourguignon, 1981; Li and Zou, 1998; Forbes, 2000). Furthermore, several studies explored a negative relationship between per capita GDP

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9 http://econ.worldbank.org/WBSITE/EXTERNAL/EXTDEC/EXTRESEARCH/0,,contentMDK:21051044-pagePK:64214825-piPK:64214943-theSitePK:469382,00.html

and income inequality (Persson and Tabellini, 1994; Glomm and Kaganovich, 2008). In this study, we use growth per capita real GDP instead of level of per capita real GDP, as it is highly correlated with inflation and financial development (Ang, 2010). The data is taken from World Development Indicator (WDI), of the World Bank.

3.3.9 Dependency Ratio (ADR_{it})

Our next explanatory variable is dependency ratio, which includes the number of population age is younger than 15 years and its age is above 65 years. Population younger than 15 and above 65 is taken as a percentage of working age population. Dependency ratio also varies both overtime, and across countries. As, an increase in the dependency ratio positively affect income inequality (Bergh and Nilsson, 2010). Similarly, Szekely and Mendoza (2016) concluded that, a reduction in population dependency ratio is significant to decline income inequality in case of developing countries. Some of the existing studies used this proxy, for instance (Dreher et al. 2008; Bergh and Nilsson, 2010; Jaumotte et al. 2013). This study use proxy of age dependency ratio as a percentage of working age population. The data is taken from World Development Indicator (WDI), of the World Bank.

3.3.10 Inflation (INF_{it})

Inflation can be defined as the persistence and continued increase in the general price level over the period of time. A received literature Cutler and Katz (1992), and Clarke et al. (2006) signifies the positive impacts of inflation rate on income inequality, and argued that higher inflation may decline real wages as a result employment opportunity is created, which affect income inequality. We used GDP deflator as a proxy of inflation, the data is taken from (WDI), of the World Bank.

3.3.11 Human Capital ($SSEG_{it}$)

Human capital means level of education, job and fitness expression of workers (Salvatore, p.141). Broadly human capital comprises into four ingredients that embodied in human namely skill, experience, education and intelligence. Human capital positively affect distribution of income in the developing country. When population have an easily access to higher education may decline income inequality due to employment in high-skill activities. As more peoples getting higher education, the wage premium to be enjoyed by the large number of population. In addition, Gourdon et al. (2008) showed that, trade openness and inequality are positively correlated in those countries, which has well-endowed of non-educated labor force. Whereas, income inequality is significantly declined in those economies which have abundant primary educated labor force. In contrast, Krusell et al. (2000) examine that human capital and skills is the main key drivers of rising income inequality. In this study, we used secondary school gross enrolment as a proxy of human capital. The data is taken from World Development Indicator (WDI), of the World Bank.

3.3.12 Size of Government ($GSIZ_{it}$)

The variable size of government represents an actual state of an economy. The government size may affect income inequality with the allocation of public goods, interference in the market place and redistributive expenditures (Dreher et al., 2008). The renewed literature Rudra (2004), Lim and D.McNelis (2014) signifies the positive impact of government spending on income inequality. In this study, we use government final consumption expenditure as a proxy of government size. The data is taken from World Development Indicator (WDI), of the World Bank.

3.4 Data and Data Sources

To examine the impact of globalization on income inequality, we used dataset of forty four developing countries spanning from 1980-2014. The data is collected from secondary sources, that average tariff rate and effective tariff rate are taken from World Bank, World Development Indicator (WDI). The data for economic globalization and overall globalization are taken from KOF index of globalization,[10] and the Gini coefficient (income inequality) is from Standardized World Income Inequality Database (SWIID) which is developed by Solt (2014).

3.5 Estimation Technique

As our data set is panel in nature; hence in the first stage empirical model is estimated with pooled OLS. However, the results of pooled OLS is inefficient as the null hypothesis of Breusch-Pagan (1979) test $\delta_u{}^2 = 0$ cannot accepted for all specifications indicates that intercept values are not remain the same across cross section;[11] which directed us for Random Effect. Next, we applied the Hausman (1978) test to make a choice between Random and Fixed effects. The null hypothesis of Hausman test H_o: "*fixed effects are not efficient estimates*". In all cases, the null hypothesis of Hausman test is rejected, which indicate for fixed effects.[12] Next, we have used Redundant Fixed Effects test to make a choice among cross section, time effect and both cross section and time effects. In all three cases the null hypothesis H_0: "*There is no fixed effect*" is rejected for all our specifications, which indicate the existence of fixed effect.[13] The last but not the least, we applied the Serial Correlation (LM) test, as, the null hypothesis H_o: "*no serial correlation*"[14] is rejected in all specifications. Keeping in view the results, we

[10] http://globalization.kof.ethz.ch/query/
[11] The results of Bruesch-Pagan specification test are presented in Appendix "C" table 1.
[12] The results of Hausman specification test is presented in Appendix "C" table 2.
[13] The results of Redundant Fixed Effects tests are presented in appendix "C" table 3, 4 and 5, which direct us for the existence of fixed effects.
[14] In Appendix "C" table 6 has the results of LM test, which direct us the existence of serial correlation.

safely concluded that our model is dynamic in nature; hence we used the Generalized Method of Moments (GMM) developed by Arellano and Bond (1991) to estimate our dynamic model of panel data.

In dynamic panel data models, GMM have some advantages over other estimators. First, GMM allows estimation under those restrictions, which are fully supported by the theory, hence supplementary assumption are not required. Second, most of panel data set maintains serial correlation, GMM taking into account the serial correlation. Third, GMM provides efficient estimations even with additional moment conditions. Fourth, GMM estimators control the unobserved effects through differencing regression or instruments.

3.6 Sample Selection Criteria

In this study, we select 44 developing countries to examine the impact of globalization on income inequality with time span 1980-2014. The rationale to take the developing countries in our sample is quiet clear, several developing countries in our sample has liberalized their economies with rest of the world in the decade of 1980s like, China, India, Brazil, Latin American and South Asian Countries. This study should capture the actual level of income inequality. Finally, our study intends to examine in a comprehensive manner, the impact of globalization on income inequality in the selected developing countries.

Chapter 4
Results and Discussion

This chapter of the study presents results of our empirical estimation and its interpretation. As discussed in chapter 3 that our data set is panel in nature, hence the empirical findings have been carried out through GMM techniques by using five different proxies of globalization.

4.1 Results of GMM Final Robustness Test

The empirical findings have been carried out through GMM techniques by using five different proxies of globalization. The GMM estimator is providing consistent and significant results in case of dynamic model. As presented earlier that, we have five specifications which contains different proxies of globalization.

In specification 1, the variable of interest is overall globalization (OG_{it}) enters the model with negative sign which is not statistically significant. This may be due to the reason that overall globalization is the composite index of three sub-indices economic, social and political globalizations.[15] Among these, social and political globalizations have less response to income inequality. Our findings are in line with the findings of Bergh and Nilsson (2010) that came up with the conclusion that political and social globalizations cannot explain income distribution in the developing countries.

In model (2), the overall globalization is replaced with economic globalization (EG_{it}), which enters the model with positive sign that is statistically significant at one percent. The result indicates that economic globalization worsen the unequal distribution of income in the selected developing countries. There are two possible justifications. First,

[15] The detailed list of all variable in Dreher et al. (2008)

as developing countries enhance its trade ties with developed one, as a result imports of capital goods (machinery, and new technology) increases, that intern increase demand for skill labour increased. However, as developing countries have abundant of unskilled labours, hence large segment of labour force cannot harvest the benefit. This result are in line with some of the existing studies (Gopinath and Chen, 2003; Lee et al., 2006 Basu and Guariglia, 2007; Celik and Basdas, 2010).Second, FDI flow to developing countries mostly facilitated the capitalist and richest segment of population; hence a large segment of population cannot harvest the potential gain of FDI. The result is in line with the findings of IMF (2007), which lend support to the claim that FDI increase income inequality as it support richest class of the developing countries. The result is also supported by the findings of Zhang and Zhang (2003) and Jaumotte et al. (2013) argued that, capital inflow into developing countries increase wage gap between skilled and unskilled workers, as, developed countries mostly invested FDI at high-skills sectors in the developing countries.[16]

In specification 3 (column 4) trade openness $TOPEN_{it}$ hold positive sign (0.004) signifying a positive impact of trade openness on income inequality. This result is in line with previous empirical findings of Marjit et al. (2004), and Jaumoote et al. (2013). The following are some possible justification of the result. Liberalization of trade provides opportunity to domestic manufacturing in international market, hence to meet the requirements of international market demand manufacturing sector of developing

[16] For instance, several empirical studies (Kanbur and Zhang, 1999; Zhang and Kanbur, 2001) found that, economy of China is liberalized in the decade of 1980s and become the second largest recipients of FDI, whereas, income inequality is worsens since from the last three decades. In this connection, Kratou and Goaied (2016) argued that, globalization provide more potential benefits to the rich class instead of lower class in the developing countries.

countries adopt international quality standard in the manufacturing process, which increase demand for skilled labour and therefore increases wages of skilled labour.[17]

Table 4.1 Empirical Findings (Dependent Variable is Income Inequality)

Variables	Model 1	Model 2	Model 3	Model 4	Model 5
$PCGDP_{it}$	1.11	1.20	1.00	4.06	1.32
	(2.55)**	(2.59)**	(8.14)***	(3.00)***	(3.20)***
ADR_{it}	.020	.028	.021	.071	.037
	(3.12)***	(3.90)***	(1.31)	(1.55)	(2.56)**
INF_{it}	.010	.011	.011	.011	.071
	(11.79)***	(12.40)***	(8.64)***	(2.44)**	(9.96)***
$SSEG_{it}$	-.003	-.009	-.018	.011	-.036
	(-1.86)*	(-4.20)***	(-4.83)***	(1.51)	(-5.17)***
$GSIZ_{it}$	-.026	-.018	.037	.073	-.012
	(-1.21)	(-0.75)	(1.45)	(1.78)*	(-0.96)
OG_{it}	-.007	------	------	------	------
	(-1.61)				
EG_{it}	------	.012	------	------	------
		(4.06)***			
$TOPEN_{it}$	------	------	.004	------	------
			(2.94)***		
ATR_{it}	------	------	------	-.046	------
				(-2.34)**	
ETR_{it}	------	------	------	------	-.062
					(-11.18)***
Lag Dep	0.892	0.89	0.741	0.491	0.841
	(28.70)***	(25.09)***	(16.83)***	(9.52)***	(42.84)***
No of Obs	490	490	583	204	170
Number of Instruments	41	41	71	63	32
Shapiro Wilk Test	0.99	0.99	0.90	0.64	0.96
Serial Correlation	0.09	0.07	0.90	0.21	0.07
Sargan Test	29.23	24.85	25.01	17.60	24.33
P-Value	0.70	0.845	0.84	1.00	0.443

Note: ***, **, *presents level of significance at 1%, 5% 10%respectively. The values of t-statistics are in parenthesis. The dependent variable in model (1), (2), (3), (4) and (5) is income inequality which measured through Gini coefficients across the countries. Values presented for Shapiro-Wilk and Serial Correlation tests are W and P values respectively.

[17] In similar lines, Zhu andTrefler (2005) found that, most of the Latin American countries adopted export-led strategy in the decade of 1980s, hence, export level and wage inequality move in the same direction.

In specifications 4 (column 5), and 5 (column 6) the variable of interest globalization is captured with average tariff rate (ATR_{it}) and effective rate (ETR_{it}) respectively. Both variables enter the models with negative signs (-0.046) and (-0.062) respectively that are statistically significant. The results indicate that, an increase in the tariff rates decline income inequality in the developing countries. The one possible justification is that, an increase in the tariff rates decline integration of developing countries with rest of the world. Furthermore, it is better for the developing countries to keep the tariff rates as a policy variable to explain the dispersion of income gaps between rich and poor segments of the population.

Moreover, when we compare the magnitude of estimated coefficients of ($TOPEN_{it}$) and (ATR_{it}), the coefficient value of $TOPEN_{it}$ is lower than ATR_{it}. This result are in line with some of the existing studies Edwards,(1997); Higgins and Williamson,(1999); Ravallion, (2001); Zhou et al. (2011) explained that, as $TOPEN_{it}$ is highly correlated with skill premium between skilled and unskilled workers, hence not properly explain income inequality. The received literature, for instance Dobson and Ramlogan (2009) shows that, ATR_{it} is relatively better measure of openness then $TOPEN_{it}$, because, the trade ratio is highly correlated with exchange rate, technological innovation and macroeconomic fluctuations.

Almost our control variables appear in the base line specifications with expected signs. For instance, growth of GDP per capita ($PCGDP_{it}$) holds positive sign and is statistically significant, denoting it's worsen impact on income inequality. This may be due to the fact that a large segment of population cannot harvest the benefits of economic growth

in developing countries. The results are in line with previous findings of (Kaldor, 1956; Bourguignon, 1981; Li and Zou, 1998; Forbes, 2000).[18]

The sign of our subsequent variable dependency ratio (ADR_{it}) is positive, which is significant at one percent level in most of the specifications, indicates that dependency ratio explain income inequality positively. As the number of dependents in a household increases, this will increase income gap between employed and unemployed workers in the developing countries. Our findings are in line with the empirical findings of Dreher et al. (2008); Bergh and Nilsson, (2010). Similarly, inflation holds positive sign that is significant at one percent level in most of the specifications. Similar findings have been carried out by (Cutler and Katz, 1992; Clarke et al. 2006), which show that, higher inflation negatively affect the distribution of income in the developing countries. The monetary instability has an adverse effect on income distribution, as higher inflation reduces real wages that creates an employment opportunity.

Human capital ($SSEG_{it}$) on the other hand carries a negative coefficient which is significant at one percent level indicating their positive impact on income distribution in the selected developing countries. Our findings are in line with the empirical findings of Borensztein et al. (1998); Claessens and Perotti, (2007) that found a negative relationship between investment in human capital and income inequality. They argued that poor people got easy accessibility to financial resources due to capital account liberalization, that intern enhancing their capacity to invest in human capital accumulation. Jaumotte et al. (2013) came with the conclusion that, economic globalization declines income inequality in those economies, which has at least primary educated labour force. Similarly, Gregorio and Lee (2002) and Atif et al. (2012) argued that, public education

[18] In addition, Jalil, (2012) argue that emerging economy of China achieve higher economic growth in the South Asian region, whereas, income inequality is increased with same proportion as with the increase in economic growth.

expenditure is a prominent policy variable that declines income gap. The finding of Wood (1994) and Bensidoun et al. (2005) indicated that, economies which possess more educated labour force take more benefits from trade liberalization and the most important is the reduction of income inequality.

Our findings are positively signifying the impact of governments size ($GSIZ_{it}$) on income inequality in the developing countries. The following are some possible justifications of the result. First, as specified by Brakman et al. (2002); Banerjee, (2004); World Bank, (2006); Somanathan, (2007); Khandker and Koolwal, (2007), that in developing countries large portion of public expenditure goes to physical infrastructure, and telecom sector, which enhances the overall pace of economic growth, however have worsened the income distribution. Second, the result could also be justified with rent seeking environment of developing countries as indicated by Rudra (2004) and Wong (2016). It has also incorporated lagged value of our dependent variable, which is income inequality.[19] In addition, the lag values of our explanatory variables (income inequality), which is positive and highly significant at one percent level.

To test the consistency of the estimators, we apply three diagnostic tests. First is the Shapiro-Wilk (1965) test of normality, which null hypothesis is "*data are normally distributed*". Results of Shapiro-Wilk test presented in table 4.1 shows that in all specifications the W statistics is positive and is closer to one indicates that data is normally distributed. The second, test examines whether the error term of our empirical model (Equation 1) is serially correlated or not. Results presented in table 4.1 indicate that the P-value is greater than 0.05 in all specifications, hence the null hypothesis "*no serial correlation*" is not rejected, which support the dynamic nature of our model. Third, to check the validity of instrumental variables we used the Sargan test. The P-values of

[19] Lag of income inequality incorporated as explanatory variable to account the distributional pattern of the dependent variable (Arellano and Bover, 1995; Meschi and Vivarelli, 2007).

Sargan test is greater than 0.05 in all specification, hence, the null hypothesis "*over identifying restrictions are valid*" is not rejected, which indicates the validity of instrumental variables.

Chapter 5
Conclusion and Policy Recommendations

5.1 Conclusion

Rising income inequality in the developing countries through the integration of world economies is a controversial issue since 1980s. However, empirical evidence on the impact of globalization on income inequality is still inconclusive. Keeping in view the inconclusiveness, in this study we revisit the basic question that whether "globalization increase or decrease income inequality in developing countries". In this association, we used five different proxies of globalization using data set of 44 developing countries for the time period 1980-2014.

Our empirical findings reveal that overall globalization is not associated with income inequality in selected developing countries. Along with economic globalization, overall globalization also contain of political and social globalization, hence, no impact on income inequality. This study support the idea of (Dreher et al., 2008; Bergh and Nilsson, 2010) that overall globalization have no significant impact on income inequality. However, economic globalization has worsened impact on income inequality in developing countries. Though, the developing countries has relatively abundant unskilled labors, as a result, economic globalization integrate economies through capital flows and trade openness. This will lead to increase the demand for skilled labor relatively in the developing countries.

In addition, our estimates indicate that, an increase in the average and effective tariff rates improve income distribution in the sample countries. However, the estimated coefficient of model (3) is smaller in magnitude than the coefficient of model (4)

indicates that, tariff rate is good proxy of globalization to explain income inequality as from the trade ratio in the selected developing countries.

Furthermore, the result shows that economic growth and income inequality move parallel in sample developing countries. As, the benefits of economic growth can't receive by a large segments of population. Similarly, the dependency ratio (ADR_{it}) has a significant and positive impact on income inequality. For instance, as the number of dependents in a household increases, this will increase income gap between employed and unemployed workers in the developing countries. In addition, inflation also positively affect income inequality in the selected developing countries, this may be due to the fact that, a higher inflation reduces real wages, and therefore increases income inequality.

Furthermore, human capital positively affect income distribution in the developing countries. This may be due to the reason that, as more peoples getting higher education, the wage premium to be enjoyed by the large number of population. Whereas, the government expenditure positively affect income inequality in the selected developing countries. The empirical result indicates that, several developing countries have a rent seeking environment, therefore an increase in public spending will lead to improve the unequal distribution of income in the developing countries.

5.2 Policy Recommendations

Even though, the study have some limitations, however based on study findings, we shall discuss some recommendations that may direct public policies towards globalization and its impact on distribution of income. It is very crucial for the policy makers to account the potential and significant effect of FDI and on income distribution in the developing countries. Furthermore, it is also very significant for the policy makers to understand the determinants of rising inequality as devising policy. The government should pursue to

increase education expenditure to decline income gap between rich and poor segments of the population.

5.3 Future Research

Following are some potential aps for future research;

- In the similar manner, a comparative study should be carried out for both developed and developing countries.
- Time series studies should be carried out for larger emerging economies like India and Brazil etc.
- The one potential gap is to check the nature of relationship (linear or non-linear) between globalization and income inequality. The role of economic growth should also be explored.

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Appendices

This section contains four Appendix, Appendix (A) concludes of descriptive statistics and Appendix (B) comprises results pooled OLS, fixed effects and random effects, in the developing countries. Similarly, Appendix (C) contains the results of Breusch and Pagan test, Hausman test, Redundant Cross-Sectional Period and Fixed Effects test and Serial Correlation (LM) test. In Appendix (D) has the list of Sampling Countries.

Appendix A

The Appendix (A), concludes descriptive statistics of variables under consideration.

Appendix A

Table A1: Descriptive Statistics of Variables under Consideration

Variables	Obs	Mean	Std. Dev	Min	Max
$INCI_{it}$	1167	44.30	6.35	27.32	63.51
$PCGDP_{it}$	1435	7.32	1.05	4.95	9.62
ADR_{it}	1496	73.50	16.77	36.04	112.77
INF_{it}	1448	16.64	27.7	-27.05	265.20
HC_{it}	1055	54.973	25.37	5.12	109.62
$GSIZ_{it}$	1422	12.935	4.34	2.05	31.82
OG_{it}	1434	45.81	12.16	15.86	79.31
EG_{it}	1434	45.63	15.17	9.75	85.15
$TOPEN_{it}$	1403	63.41	33.95	13.18	199.36
ATR_{it}	745	15.68	12.99	1.4	106.5
ETR_{it}	550	11.39	4.99	1.39	28.98

Appendix B

Table B1: Pooled OLS Estimation Results

Variables	Model 1	Model 2	Model 3	Model 4	Model 5
$PCGDP_{it}$	1.87***	1.57***	2.06***	2.17***	2.06***
	(5.85)	(5.12)	(4.73)	(6.25)	(4.73)
ADR_{it}	.090 ***	.087***	.063**	.136***	.063**
	(5.06)	(5.06)	(2.50)	(5.66)	(2.50)
INF_{it}	.026 ***	.029***	.055**	.025***	.055**
	(3.14)	(3.51)	(2.02)	(2.67)	(2.02)
$SSEG_{it}$	-.013	-.014	-.015***	-.004	-.015
	(-1.34)	(-1.52)	(-1.17)	(-0.33)	(-1.17)
$GSIZ_{it}$	.289***	.256***	.387***	.251***	.387***
	(5.04)	(4.47)	(4.26)	(3.11)	(4.26)
OG_{it}	.062**	-------	-------	-------	-------
	(2.21)				
EG_{it}	-------	.083***	-------	-------	-------
		(4.32)			
$TOPEN_{it}$	-------	-------	-.171**	-------	-------
			(-2.61)		
ATR_{it}	-------	-------	-------	-.059**	-------
				(-2.53)	
ETR_{it}	-------	-------	-------	-------	-.171**
					(-2.61)
BP test	31.42	37.76	4.38	7.24	4.38
Prob	0.00	0.00	0.036	0.007	0.036
No of Obs	759	759	308	411	308
SE of Reg	.027	.019	.065	.023	.065

Note: ***, **, *presents level of significance at 1%, 5% 10% respectively. The values of t-statistics are in parenthesis. The dependent variable is income inequality.

Table B2: Fixed Effects Estimation Results

Variables	Model 1	Model 2	Model 3	Model 4	Model 5
$PCGDP_{it}$	8.18***	7.87***	7.181**	5.54***	-5.25**
	(11.56)	(12.34)	(2.04)	(7.22)	(-2.31)
ADR_{it}	.071***	.079***	.101	.055**	.277***
	(3.15)	(3.86)	(1.58)	(2.10)	(4.30)
INF_{it}	.021***	.029***	.025**	.011**	-.009
	(3.74)	(3.56)	(2.55)	(2.18)	(-0.47)
$SSEG_{it}$	-.015	-0.019	-0.025	-0.052**	.007
	(-1.01)	(-1.41)	(-0.39)	(-2.39)	(0.19)
$GSIZ_{it}$	.121**	.119**	.111	.204***	.439***
	(2.23)	(2.21)	(1.38)	(3.25)	(2.82)
OG_{it}	-.092***	-------	-------	-------	-------
	(-2.86)				
EG_{it}	-------	-0.089***	-------	-------	-------
		(-3.59)			
$TOPEN_{it}$	-------	-------	-.017	-------	-------
			(-0.88)		
ATR_{it}	-------	-------	-------	-0.026*	-------
				(-1.87)	
ETR_{it}	-------	-------	-------	-------	-0.187***
					(-2.63)
BP test	31.42	37.76	23.40	7.24	4.38
P-values	0.00	0.00	0.00	0.007	0.03
No of Obs	759	759	759	411	178
SE of Reg	0.032	0.022	0.019	0.014	0.071
Hausman Test	33.33	35.06	46.06	12.81	21.07
P-values	0.00	0.00	0.00	0.04	0.001

Note: ***, **, *presents level of significance at 1%, 5% 10% respectively. The values of t-statistics are in parenthesis. The dependent variable is income inequality.

Table B3: Random Effects Estimation Results

Variables	Model 1	Model 2	Model 3	Model 4	Model 5
$PCGDP_{it}$	5.92***	6.02***	5.33***	4.03***	3.64***
	(10.04)	(11.01)	(9.74)	(6.43)	(4.20)
ADR_{it}	.084***	.079***	.098***	.063**	.183***
	(3.80)	(3.98)	(5.16)	(2.51)	(4.44)
INF_{it}	.019***	.018***	.023***	.011**	.016
	(3.54)	(3.33)	(4.25)	(2.08)	(0.86)
$SSEG_{it}$	-.004	-.003	-.003	-.035*	.045***
	(-0.28)	(-0.23)	(-0.26)	(-1.80)	(3.03)
$GSIZ_{it}$	.092*	.096*	.099*	.188***	.093
	(1.71)	(1.80)	(1.88)	(3.03)	(1.04)
OG_{it}	-.042	-------	-------	-------	-------
	(-1.39)				
EG_{it}	-------	-.059***	-------	-------	-------
		(-2.75)			
$TOPEN_{it}$	-------	-------	-.007	-------	-------
			(-0.82)		
ATR_{it}	-------	-------	-------	-.035***	-------
				(-2.6)	
ETR_{it}	-------	-------	-------	-------	-.052
					(-0.90)
BP test	31.42	37.76	23.40	7.24	4.38
P-values	0.00	0.00	0.00	0.007	0.03
No of Obs	759	759	759	411	308
SE of Reg	.031	.022	.008	.013	.057
Hausman Test	33.33	35.06	46.06	12.81	21.07
P-values	0.00	0.00	0.00	0.04	0.001

Note: ***, **, *presents level of significance at 1%, 5% 10% respectively. The values of t-statistics are in parenthesis. The dependent variable is income inequality.

Appendix C: Specification Tests Results

Table C1: Breusch and Pagan Test Results

	H_o: Constant Variance				
	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Chai²	31.42	37.76	23.40	7.24	4.38
Probability	0.00	0.00	0.00	0.007	0.03

Table C2: Hausman Test Results

	Null Hypothesis: Fixed-Effects are not effective estimates				
	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Chai²	33.33	35.06	46.06	12.81	21.07
P-Values	0.00	0.00	0.00	0.04	0.001

Table C3: Redundant Cross-Sectional Fixed Effects Test

	Null Hypothesis: No Fixed Effects				
	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**
F-Values	16.07	15.87	16.09	11.53	7.47
P-Values	0.000	0.000	0.000	0.000	0.000

Table C4: Redundant Period Fixed Effects Test

	Null Hypothesis: No Fixed Effects				
	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**
F-Values	22.75	18.70	21.89	15.23	5.37
P-Values	0.000	0.000	0.000	0.000	0.000

Table C5: Redundant Cross Sectional and Period Fixed Effects Test

Null Hypothesis: No Fixed Effects					
	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**
F-Values	17.92	16.31	19.87	12.32	6.66
P-Values	0.000	0.000	0.000	0.000	0.000

Table C6: Serial Correlation (LM) Test

H0: no first order autocorrelation					
	Model 1	Model 2	Model 3	Model 4	Model 5
F	179.244	180.653	159.087	107.528	97.718
P-values	0.000	0.000	0.000	0.000	0.000

Appendix D

Table D1: List of Sampling Countries

Argentina	Bangladesh	Barbados	Bolivia
Botswana	Brazil	Cameroon	Chile
China	Colombia	Costa Rica	Ecuador
Egypt, Arab Rep	El Salvador	Fiji	Ghana
Guatemala	Guyana	Haiti	Honduras
India	Indonesia	Iran, Islamic Rep	Jamaica
Kenya	Malaysia	Mali	Mexico
Mozambique	Pakistan	Panama	Paraguay
Peru	Philippines	Senegal	Sierra Leone
Sri Lanka	Thailand	Turkey	Uganda
Uruguay	Venezuela, RB	Zambia	Zimbabwe