How does globalization affect income inequality among developing countries?”

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Abstract

Using a dataset over the period from 1970 to 2008, this paper examines the relationship between globalization and income distribution for 92 selected countries, none of which is high income. With the help of Roodman (2006) GMM/IV\(^1\) estimator, which is proven to have superior efficiency properties than those of traditional ones, possible endogeneity, autocorrelation and heteroskedasticity problems are dealt within the analysis and therefore, the possibility of bias is reduced to minimum in the interpretation of the results. Based on the results of GMM/IV regressions, using two-step\(^2\) estimation method with robust standard errors\(^3\), this paper reaches the conclusion that there is no significant relationship between the globalization and income distribution for the selected sample. Within the analysis, the relationship is checked for three different inequality measures and two different globalization variables. Though some of the baseline regressions suggest a positive and significant relationship between globalization and income distribution, additional control variables such as regional dummies do change the significance of the relationship, making it insignificant indeed. All in all, none of the regression results is strong enough to suggest a systematic link in between globalization and income inequality when accounted for all possible measurement errors and econometric problems together with control variables.

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\(^1\) Generalized method of moments and Instrumental variable (GMM/IV) estimator is first introduced by Holtz-Eakin et al. (1988), then improved by Arellano and Bond (1991) and further developed by Roodman (2006).

\(^2\) Two-step estimation makes sure that standard covariance matrix is robust to autocorrelation and heteroskedasticity.

\(^3\) Without Windmeijer’s (2005) finite sample correction, standard errors are severely downward biased due to two-step estimation. On the other hand, robust standard errors are finite sample corrected and unbiased.
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1. Introduction

Throughout the history, humankind has been continuously curious for development in each and every possible aspect of the life up until now. Recently, there have been rapid advancements in technology so that these improvements could have been carried out much easier than before. In one hand, based on World Bank (2011), these improvements have significantly led to a decrease in poverty, worldwide. On the other hand, it has also been argued that though the improvements in life standards have crucially taken place, there has also been a growing trend in income inequality in the last two decades, worldwide. In other words, it is put forward that the rich has been gaining from these developments more than the poor, especially in the developing countries. The income gap between the rich and the poor, which has been seriously widening in the last two decades, has alerted the researchers to take an action and search for the underlying reasons of this fact.

According to Kuznets (1955), basically, there has been an inverted U-shaped relationship between growth and inequality. In other words, at initial stages of growth, inequality has been expected to rise until a level of maximum somewhere in the middle, and later on, it should have been decreasing gradually together with increasing growth at high levels of it. However, the recent trend of income inequality has shown that not only the lowest income countries, but also lower-middle and upper-middle income countries have been experiencing significant rise in income inequality either due to national policies or macroeconomic aspects such as globalization. Therefore, recently, the driving forces behind the income inequality have been brought back to agenda and need careful analysis by researchers once again. Though the trend is expected to be driven by many different aspects of development and country characteristics, it would be wise to analyze the most related and dynamic ones which have been possibly at work across the countries through the world. One of these trends is represented by the term called ‘globalization’ referred as ‘the economic integration of a country into the world economy’. The main reason why globalization is chosen to be analyzed as one of the most important drivers of inequality within developing countries is that in 1980s and early 1990s, most of the countries which now experience increasing inequality, have also enjoyed higher economic integration together with its social and political aspects. If these two variables, which have moved together, have meant a causal relation in between, then one could expect that globalization has led to
rising inequality among developing countries. For this specific reason, the period between 1970 and 2008 is covered in this study.

An important distinction in that study is that the term globalization is not just considered to be economic but also social and political as some of the African and Asian countries\(^4\) do not engage in economic integration while they do take part in social globalization. It is crucial to note that most of the studies, as they will be discussed more in detail in the next section, focus only on economic globalization and search for the links in between exports plus imports & inequality, foreign direct investment & inequality, assets plus liabilities & inequality, and so on. However, in this paper, the term called globalization is not separated from its social and political dimensions since the study aims to define globalization on a broader perspective and reach reliable, strong and unbiased results in this context. Moreover, in order to be able to understand whether the existence of higher globalization and rising inequality at the same period has been just a coincidence or not, one should carefully define each term taking every aspect into account. For this purpose, the next two sub-sections take a deeper look into the two aspects of development, globalization and income inequality, respectively.

### 1.1 Globalization

The most commonly accepted definition of globalization in economics context is “the economic integration of a country into the world economy”. However, recently, it has been doubted that economic globalization may not cover the term “globalization” with its all aspects. According to Dreher et al. (2008), as well as economic factors, globalization also takes place with social and political ones. Therefore, the authors suggest that globalization should be defined as “the intensification of cross-national economic, political, cultural, social and technological interactions that lead to the establishment of trans-national structures and the global integration of economic, political and social processes on a global scale”. Moreover, in reality, trade

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\(^4\) The countries that do not take part in economic globalization while they do engage in social or political globalization are Comoros, Djibouti, Gambia, Lao PDR, Seychelles, Tajikistan, Turkmenistan, and Uzbekistan. On the other hand, for Zimbabwe, there is no complete globalization index that is available while economic globalization index is provided. In this way, the countries can still be kept in the analysis and taken into account as if engaging in globalization though not in economic aspects. The distinction between economic, social and political globalization is discussed in Section 3.
liberalization mostly comes together with not only economic (especially privatization and deregulation) but also social policies as denoted by Lindert and Williamson (2001). Furthermore, both Atkinson (1997) and Friedman (1999) claim that social aspects of globalization are in effect and have to be taken into account in analyzing the relationship between globalization and income inequality. In addition to these studies, Mills and Blossfeld (2005) define globalization as interrelated with four structural shifts; internationalization of markets and declining importance of borders for economic transactions, tougher tax competition between countries, rising worldwide interconnectedness through new Information and Communication Technologies (ICTs), and the growing relevance and volatility of markets. In the light of these studies and empirical evidence, one should question the definitions used by previous studies which do only account for economic aspects of globalization while they leave out the possible other variables such as social and political ones which are supposed to be in affect at the same time. In addition to this, there are even competing ideas over the effect of social part of globalization on income inequality. The mechanisms linking globalization (as it is defined in this study) and income inequality are discussed more in detail in the next section.

Turning back to the recent trend of globalization, according to Williamson (1995), Bordo et al. (1999), O’Rourke and Williamson (1999), Lindert and Williamson (2001), since 1820s, the time which also corresponds to increasing global inequality; there has been a massive economic integration in the world via commodity and factor market integrations. Since there is no reliable globalization data for the time before 1820s, it is not possible to provide useful information about or to discuss over that period. Therefore, it is much more beneficial to focus on 1820s and afterwards in order to analyze the relationship between globalization and income distribution.

Taking the reliability of data only after 1820s into account, there have been two major waves of economic, social and political integration which has affected both developed and developing countries in several ways until recently. The first wave is assumed to have taken place in between 1820 and 1914. In this first wave of globalization, tariffs continued to decline, transportation costs decreased further, European investors believed in financial integration all around the world and contributed to it through investments, and mass migration remained free.

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5 Trade liberalization is represented by the economic part of globalization in this study.
Just after the breakdown in between 1914 and 1950, the period in which two World Wars have taken place, the second wave of globalization has occurred with some different characteristics from the first one as also noted by Baldwin and Martin (1999) and Bordo et al. (1999). For instance, it is stated that trade barriers have been much lower in the second wave of globalization than in the first one. Moreover, the social and political part of globalization is thought to be as important as economic globalization in this second wave while in the first one, countries did mostly engage in economic integration rather than social and political integration into the world. For the purpose of this study, the second wave of globalization is taken into account due to lack of availability of reliable data for income distribution before 1960s.

In Figure 1, it is possible to see the trend of globalization from 1970 to 2008. In this figure, globalization is provided both separately from its social and political aspects, which is named as economic part of globalization, and together with these aspects, as an overall index. Based on the information provided in this figure, it is plausible to state that both globalization index and economic part of it (characterized by trade flows and trade policies) have increased from 1970 to 2008. This period exactly corresponds to the time period used in this study, as well.
**Figure 1:** Recent trend of world globalization index from 1970 to 2008\(^6\)

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1.2 Income Distribution

To start with, the global income distribution is the distribution of per capita income among the individuals in the world. It may be decomposed into the distribution of average income per capita between countries (the between-country distribution of income) and the distribution of income per capita within countries (the within-country distribution of income) as suggested by Cornia (2003). In this study, the main interest is on the inequality in between countries. In the economics context, inequality measures the disparity between a percentage of population and the percentage of resources (such as income) received by that population. As the disparity increases, inequality is expected to rise.

According to Lindert and Williamson (2001), the two key components of world inequality – between and within country inequalities – must be taken into account cautiously. Most of the studies in the literature reveal that more than half of the total income variation is explained by the between-country distribution of income. For instance, using Theil coefficient, Sala-i-Martin (2002) shows that between-country inequality accounted for 76% to 71% of total global inequality for the years 1970 and 1998, respectively. Besides, the author further explains that the difference comes from the fact that while within-country inequality depends much on factor prices, between-country inequality depends more on per capita incomes. Therefore, the two parts of world income inequality should be analyzed separately.

As it has also been mentioned before, over the last two decades, the world income distribution has become much more unequal. Galbraith and Kum (2005) indicate that in the recent era of globalization, there are strong findings to believe that inequality did in fact rise in most of the world (but not everywhere). Some of the developing countries experienced rising within-country inequality, while some others have been able to reverse this trend. However, between-country inequality has been rising continuously among the developing countries.

According to Sala-i-Martin (2002), considering the opposing trends in within-country inequality and the empirical evidence of rising world income inequality shown by researchers, world income inequality has been mainly driven by between-country inequality via widening income gaps between countries. In the same line with this argument, Berry et al. (1991), Maddison (1995), Pritchett (1997), Prados (2000), Bourguignon and Morrison (2000), Ward (2000),
Lindert and Williamson (2001) also argue that world income inequality has risen over the past two centuries (between 1820 - 2000) and this rise has been driven by inequality between countries. Overall movements of inequality measures for the period between 1820 and 2000 are provided in Figure 2.

In the light of this information, it has been found crucial to focus on between-country inequality while not dismissing the importance of within-county inequality. To capture the global income inequality, estimated household income inequality, which is a relatively new measure, is used as it represents the between-country inequality most accurately in the literature. Besides, industrial pay inequality as well as Gini coefficient is also used in this study to check for differences between inequality measures if there are any. In contrast to the most of the past studies, in this study, Gini coefficient is supposed to be biased and therefore, has not been relied on solely\(^7\).

In the next part, Section 2, further information on related studies are provided as well as theoretical information over the possible channels between globalization and income inequality. In Section 3, first, the methodology is explained in detail together with measurement issues and estimated model with explanation for variables and then, descriptive information over sample selection is given together with summary statistics. Next, the results of the estimated the model are presented and checked for robustness in Section 4. Section 5 includes the interpretation of the results, policy suggestions based on these results, and the conclusion to the study. Lastly, in Section 6, the limitations to the study are briefly noted down together with ideas over possible extensions.

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\(^7\) Details over the selection of inequality measures will be given in Section 3.
Figure 2: The trend of global inequality of individual incomes, 1820 – 2000

2. Literature Review & Theory

In this section, first of all, information over the related studies which analyze the relationship between globalization and income inequality is provided. Though all aspects of development are interrelated to each other and should be analyzed together to get a better understanding of general trends, for the purpose of this study, the main focus is only on the relationship between globalization and income inequality, ignoring growth and poverty. Secondly, after a brief review of literature, some of the theories on the relationship between globalization and income inequality are explained. Lastly, it is also found beneficial to provide the basic transition mechanisms in Appendix I in order to make it easier for the readers to reach possible theoretical channels in the globalization and income inequality relationship.

2.1 Related Studies

To begin with, it is vital to understand the slippery ground of the topic in hand. This point is underlined by Anand and Segal (2008) as they suggest that there is no consensus over the effects of globalization on world income inequality in the last 20-30 years. It is even possible to show the different results of the two World Bank studies\(^8\), which are supposed and accepted to be the most reliable among all others. In one hand, using an unbalanced panel and “exports plus imports as a share of GDP (PPP adjusted)” as the measure of trade flows, Dollar and Kraay (2002) find out that openness\(^9\) has no systematic impact on inequality. Birdsall and Londono (1998) also reach the same conclusion that growth in income between the poorest and other quintiles does not change with trade. Similar to these studies, Mahler (2004) reports no significant relationship between globalization and inequality in 14 developed countries from 1820 to 2000. Also, Babones and Vonada (2009), using both cross-sectional and longitudinal regression models, find that there is no significant robust relationship between globalization and inequality. On the other hand, Lundberg and Squire (2003), using Sachs-Warner (0-1) index as the measure of trade openness, arrive at another conclusion that openness affects equality negatively. Barro (2000) and Ravallion (2001) also find a positive relationship between openness and inequality in poor

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\(^8\) Two World Bank studies that provide different results are Dollar and Kraay (2002) and Lundberg and Squire (2003).

\(^9\) The term “openness” refers to “economic globalization” in this study. Therefore, the two terms are used interchangeably throughout the study.
countries. According to Brady (2009), though openness to investment and net migration do not have significant effects, trade openness contributes to higher earnings inequality. Besides the two World Bank studies and the results that are in line with those studies, Chakrabarti (2000), using a panel of 73 countries and an instrumental variable approach, reaches the conclusion that trade globalization decreases inequality via its effect on growth. Reuveny and Li (2003) support this result with a cross-section study as they have found that trade globalization reduces inequality over time.

Taking a closer look, both of the World Bank studies are questioned in terms of their methodology by several authors. More in detail, Dollar and Kraay (2002) use exports plus imports as a share of GDP (PPP adjusted) in order to measure openness of a country. However, using exports plus imports as a share of GDP (PPP adjusted) may be problematic when analyzing the relationship between globalization and inequality as stated by Birdsall and Hamoudi (2002), stating the fact that trade ratio may decline not because the country follows a more closed policy but, for instance, because of balance of payments difficulties. Therefore, the change in the trade ratio may not reflect openness of a country, accurately. On the other hand, though Sachs-Warner (0-1) index is a better measure than trade flows alone, it behaves as if the trade policies are directly leading the flows of trade, which is not necessarily true. This idea is also well supported by Rodriguez and Rodrik (2000). Considering that, it is not much helpful to rely only on the results provided by Lundberg and Squire (2003), as well. Above all, Ravallion (2004) also contributes to this discussion by showing both noisy data used by those two World Bank studies and questions the validity of the results provided in these studies.

According to Wade (2004), alternative measures of income (GDP per capita converted to US dollars using market exchange rates or purchasing power parties); alternative weightings of countries (each country as one unit or by population); alternative measures of distribution (Gini or some other average coefficient or average income of a set of developing countries to that of set of developed countries); alternative sources of data on incomes (national income accounts or household surveys); alternative samples of countries and time periods affect the results and interpretation significantly. Based on this information, the author runs 6 different regressions, using different measures and weightings in each one reaches significantly different results. Thus, it can be suggested that the results of the previous related studies depend crucially on the
arbitrary choices - the choices that are mentioned above - of the researches. To clarify, for example, while one researcher could find a positive relationship between globalization and inequality using Gini coefficient as the measure of income disparity among countries, another one could easily argue that there is no relationship in between those two variables using Industrial pay inequality as the measure of income inequality. Similarly, using population as a weight in the analysis may change the significance of the results as shown by this study.

2.2 Theory

The first theoretical argument is that the number of people living in extreme poverty has fallen largely due to increasing globalization between countries via rising efficiency of resource use worldwide as countries specialize in line with their comparative advantage. This argument, which is also called neoliberal economic theory, also suggests that regions lagging behind such as Sub-Saharan Africa must join the economic integration process in order to benefit from it and in this way, the income inequality between the countries will gradually be removed. On the other hand, according to anti-neoliberal argument, rich and powerful countries have much less interest in equality that world poverty and inequality have risen in the past two decades due to higher globalization which is led by those rich and powerful countries. Turning back to neo-liberal argument, a certain level of inequality provides incentives for effort and risk-taking, and therefore raises efficiency. Clinton (2000) puts forward that poor must be able to take advantage of globalization by investing in human capital. This argument is criticized by Thomas (2001):

“Neoliberals may normatively legitimate even rising inequalities. Within their vision, inequality can be seen as unproblematic. It may even be desirable, as it is expected to unleash entrepreneurial abilities that will contribute to maximizing global wealth creation. Ultimately, therefore, everyone will benefit. The words of Prime Minister Thatcher are recalled here: ‘It is our job to glory in inequality, and see that talents and abilities are given vent and expression for the benefit of us all’ (Thatcher, 1996). Therefore, this particular brand of liberalism not only increases global social divisions, but more dangerously it is legitimizing global inequalities of life-chance, legitimizing a situation where inequalities are greater than at any period in history.”
Nevertheless, it is still suggested that inequality is better than complete equality on the basis of the neoliberal argument which adds up another dimension to the topic which is interesting to analyze. However, in this paper, it is assumed that inequality is not desired by the nation and should be removed as commonly accepted. Furthermore, Deininger and Squire (1998) show that inequality may be harmful to the society in two ways; firstly, investments in education are generally financed through credit and taking credit rationing (Stiglitz and Weiss, 1981) into account, which means that only the ones with initial endowments can get credit by using it as collateral, the poor will mostly be credit-constrained. Therefore, they will suffer from inequality. Secondly, considering median voter theorem (Persson and Tabellini, 1994; Bertola, 1993), which relies on democratic determination of tax rates, democratic countries that have unequal distribution of income initially will have lower investment due to progressive taxation and the whole population will suffer from this initial inequality.

Another argument is that, according to Heckscher-Ohlin (1991) framework, globalization benefits the poor and therefore, reduces the inequality in poor countries. Moreover, suggests Kremer and Maskin (2003), the poorest countries and the least educated workers should have the greatest opportunity to benefit from globalization. However, according to Mazur (2000), globalization has increased inequality between and within nations while marginalizing the poor in developing countries. Considering the existence of empirical evidence against the Heckscher-Ohlin (1991) framework, researchers have found it beneficial to test once again whether the empirical evidence is biased or not. That is, in other words, to check whether the inequality would be reduced by globalization in poor countries or not. Considering the decline in import barriers such as tariff rates and license coverage together with the rise in foreign direct investment, Mexico has provided a good example for researchers to study the empirical evidence as suggested by Hanson and Harrison (1999). In one of those studies which analyze Mexico, Feenstra and Hanson (1996b) find that foreign capital inflows increase wage inequality through the increase in skilled labor demand. In another study which includes not only Mexico but also

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10 Here an example of the Heckscher-Ohlin model as it is done by Kremer and Maskin (2003) is provided. Suppose there are two countries, the North, with a high ratio of skilled to unskilled workers, and the South, with a low ratio. Under autarky, the wage of skilled workers will be relatively low in the skill-abundant North and relatively high in the skill-scarce South. Opening trade will equalize factor prices in the two countries. Hence, the wage of skilled workers will rise in the North and fall in the South, while the wage of unskilled workers will fall in the North and rise in the South. Thus inequality will rise in the rich country and fall in the poor country.
other Latin American countries together with Asian ones, Wood (1997) reaches the conclusion that while globalization leads to lower wage inequality in Asian (Tiger) countries in 1970s and 1980s, the effect is just the opposite in the 1990s in Latin American countries. Similarly, Wood (1994) conclude that wage gaps are widened between skilled and unskilled workers in developed countries while symmetrically those gaps are narrowed down in parts of the developing countries, particularly in East Asia in the 1960s and 1970s. The finding of Wood (1994) is consistent with Heckscher-Ohlin (1991) theory as the poor benefits from globalization. However, in other respects, the changes in the wages of workers have crucially diverged from the predictions of Heckscher-Ohlin (1991) theory. According to Anderson (2001), among the developed countries, the widening of the wage gap between skilled and unskilled workers has slowed down, despite continuous rapid growth of trade with the developing countries. Among the developing countries, wage inequalities rose sharply in the 1980s and 1990s, most notably across the middle-income Latin American countries (Robbins 1996; Wood 1997), but also across the low-income countries as shown by UNCTAD (1997). To summarize, in one hand, it is quite possible to suggest that there are several results which are in line with the predictions of Heckscher-Ohlin (1991) theory while on the other hand there is also enough evidence to doubt the validity of this theory.

In accordance with Mills (2009), there are four main channels which link globalization to inequality. First of all, globalization comes together with the internationalization of markets. This, in return, results in the removal of national trade barriers via changes in laws, institutions, and also, leads to a decrease in transaction costs. Fligstein (2002) suggests that the growing number of international regulatory institutions and political agreements, which alleviate trade barriers and accelerate capital flows via declining interest rates, privatization of all banks and removal of credit constraints, have resulted in increasing financial openness. In this manner, inflow of capital brings up new job opportunities and decrease inequality within developing countries. Secondly, another important aspect of globalization is that it brings about higher tax competition between integrating countries via liberalization, privatization and removal or relaxation of government regulations. According to Montanari (2001), higher tax competition increases the efficiency, productivity, and profitability of the firms while it does allow for flexibility in response to changing macroeconomic environment. Moreover, trade (the sum of imports and exports), which is the most common measure of globalization, is expected to
increase inequality within developed countries as the skilled workers will be in competition with low-wage workers and this will result in the reduction of the average wage and in the increase of the income gap between skilled and unskilled workers. Moreover, according to Gereffi (2009), higher competition and removal of trade barriers opens up new opportunities for firms. Subsequently, firms that are looking for cheap labor and lower taxes prefer to invest abroad; in other words, to replace domestic production with foreign direct investment. As a consequence of this deindustrialization process, workers lose their bargaining power which results in higher inequality in developed countries. This argument is also supported by Alderson and Nielsen (2002) as they point out to replacement of high manufacturing and industrial sector wages with the low service sector wages due to lower bargaining power of workers. However, Mills (2009) state that with the help of increasing competition, which is created by industrialization, and new employment opportunities that lead to decreasing wage gap in between skilled and unskilled workers, inequality is reduced within developing countries. Besides, it is also important to note that migration and mobility of workers are also present in the relationship. Based on Borjas (2000), in the case of U.S. where the immigrants were mostly low skilled, inequality has increased due to globalization as the cost of immigration has been reduced, vitally. Thirdly, globalization also leads to bigger knowledge networks and easier information sharing through easier communication. In other words, information and communication technologies (ICTs) such as the internet, smart phones, faster connection systems, and continuously developing computers connect countries to each other, ease transactions via the massive reduction in the transaction costs. Held et al. (1999) state the importance of ICTs by underlining the fact that recently, ICTs have changed the scope, intensity, velocity and impact of all transformations related to globalization. The number of Internet hosts and users per capita and the usage and availability of these communication technologies within a society have been used in order to measure this aspect of globalization as suggested by Raab et al. (2008). With the help of these ICTs, a new, bigger and comprehensive market emerges, as put forward by Castells (2001). Furthermore, Mills (2009) introduces that following the improvements in technology, production processes become much more automated, flexible and accelerated. As denoted by Brown and Campell (2002), this results in higher demand for skilled workers, who can take advantage of these

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11The scope, intensity, velocity, and impact account for expansion in the range of networks, regulation of connections, acceleration of transactions, and the effect of local on global, respectively.
improvements in technology and increase efficiency in production. Therefore, inequality is expected to rise as low-skilled workers are less demanded within developing countries. Lastly, globalization brings about uncertainty and instability to the markets. That is, in other words, it increases the volatility of these markets. Streeck (1987) highlights the increasing competition due to continuous innovation as the force behind increasing instability of markets. A market, which is characterized by high uncertainty, is much harder to predict as the prices continuously fluctuate. This unpredictable environment brings about higher inequality as the rich can still benefit from globalization while the poor is expected to lag behind. That is due to the fact that the rich can cope with an unpredictable economic environment with the help of initial endowments while for the poor, who is characterized with little or no initial endowments, it is much harder to deal with, relatively.

Besides the transmission mechanisms mentioned in above paragraphs, there are several other theoretical models of how globalization affects income inequality. Looking at one side of the medallion, the theoretical models suggest that globalization reduces the disparity in wages. In one of these models which is denoted by Macdonald and Majeed (2010) the central effect of trade liberalization is assumed to come from its effect on real wages of unskilled workers who are endowed with labor; but, with no human or financial capital. The authors argue that the natural hypothesis following the Stolper-Samuelson theorem is that freer trade should benefit the poor in developing countries where they can make use of their comparative advantage to export labor-intensive goods. In detail, a rise in exports based on labor intensive production techniques leads to a rise in the real wage rate of the unskilled workers and this is instrumental in reducing income inequality. This, in fact, is the central message of Anne Krueger's (1983) findings from a multi-country project on the effects of trade on wages and employment in

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12 Stolper-Samuelson (1941) theorem is one of the conclusions of Heckscher-Ohlin framework. According to this theory, when the relative price of a good increase, the factor, which is used in the production of that specific good, will have higher return. On the other hand, the factors that are not used in this production process will have lower returns. The theory is mainly based on the assumptions that there are constant returns, the market is perfectly competitive and the number of factors used in the production of a good equals to the number of goods produced. For instance, if the price of an output good increases, which is produced mostly by using labor, real wages are expected to increase as well while rents are expected to decrease. This framework is also supported by Spilimbergo et al. (1999) as they conclude that globalization increases inequality in skilled labor abundant countries, controlling for countries’ skilled labor, capital, and land endowments. Milanovic (2005) also mentions the Stolper - Samuelson theorem: “Increased openness should benefit low-skilled workers in poor countries while in rich countries; low-skilled workers would be faced with higher competition and should be affected negatively from globalization.”
developing countries. Lindert and Williamson (2001) also supply important insights over the theoretical side of the negative relationship between globalization and inequality. The authors explain that the countries which participate in globalization experienced a lowering in rising inequality and the poor ones have gained the most out of it. One of the channels they provide for transmission is that liberalizing trade should benefit the countries that are joining later to the world market more than the countries which have already been integrated. This affect is assumed to take place via terms of trade improvement. On the other side of the medallion, there are the theories which suggest that globalization increases income inequality. For instance, Feenstra and Hanson (1996a) show that higher foreign direct investment leads to an increase in the relative wages for skilled workers, and thus, increases inequality in both rich and poor countries. In the same line with this argument, “the specific factors or Ricardo-Viner model” also mentions that trade liberalization may put one specific sector in front of other ones, leading to wage inequality in-between sectors in both developed and developing countries. Aside from both sides of the medallion, Wade (2001) provides a categorization of some of the income growth theories in the literature in three main groups: neoclassical growth theory, endogenous growth theory, and the dependency theory of sociologists. Briefly, neo-classical growth theory expects income convergence across countries in the long run due to increased international mobility of capital. In contrast, endogenous growth theory predicts less convergence and, more likely, divergence, as increasing returns to technological innovation offset the diminishing returns to capital. Finally, the dependency theory suggests that developing countries reap lesser benefits from economic integration as they have relatively limited access to international markets and a narrow export base; hence, globalization does not lead to absolute convergence.

As it can be understood from above paragraphs, there is a huge theoretical literature over the relationship between globalization and income inequality. Unfortunately, there is no consensus over the theoretical base of the mentioned relationship. For that reason, one may not expect certain results that are consistent with the theory.
3. Methodology and Data

3.1 Methodology

In this section of the study, there is information provided over the measurement issues and the estimated model. Respectively, the measurement of globalization, the measurement of income inequality and the estimated model are discussed in detail. The model used in this study basically measures the effect of globalization on income inequality while controlling for several other aspects which are expected to have impact on the results. Besides, in order to control for time-invariant country characteristics, there is a fixed effect variable included. Moreover, a time trend variable, which allows researchers to check for the relationship over time, is also employed in all analysis. Details over the measurement of globalization, the income distribution and the estimated model are provided in the upcoming sub-sections.

3.1.1 Measurement of Globalization

Throughout the history, there has been intense discussion over the question of how to measure economic globalization or economic openness most accurately. Several studies in the past have used the index put forward by Sachs and Warner (1995) in order to measure globalization. However, there have been debates over the quality of this index, suggested by Wacziarg and Welch (2008), Rajan and Subramanian (2008), and mainly by Rodriguez and Rodrik (2000). The latter two authors have highlighted the distinction between trade flows (basically, imports and exports) and trade policies (tariffs, taxes and regulation, mainly). According to Rodriguez and Rodrik (2000), trade flows do not have to be driven by liberalization, in other words, by trade policies. For instance, a reduction in tariffs does not necessarily lead to higher flows of trade since there are also other factors in affect such as non-trade policies. These non-trade policies, which affect both the level of imports and exports, cannot be differentiated by using the index suggested by Sachs and Warner (1995). Therefore, this index has to be replaced with a more reliable, comprehensive and higher quality one. Furthermore, some other studies have only relied on trade to GDP ratio\(^{13}\) as the measure of globalization. This approach has also lacked several aspects of globalization. In other words, the results, which have been obtained by using trade to

\(^{13}\) The ratio of exports plus imports to GDP (PPP adjusted).
GDP ratio as the measure of globalization, should have been interpreted with an important amount of bias as the simple measure does not take several other possible dimensions of globalization into account that indeed may affect income inequality, either positively or negatively. In the same line with this argument, Lindert and Williamson (2001) state that liberalism typically comes as a package. For instance, liberalization of the domestic factor markets, liberalization of domestic commodity markets, and better property rights enforcement may often take place at the same time. Naturally, the ratio of trade to GDP is expected not to cover all of these instances. Moreover, taking the existence of non-trade policies into consideration, it is quite possible to claim that those policies which are possibly related to globalization also may have an effect on the income levels. Therefore, globalization should not only be analyzed through economic but also from a social and political perspective, as well.

In the light of this information, because none of the measures has been able to cover the term ‘globalization’ with its all aspects accurately, several authors have suggested the need for a more comprehensive index as the measure of globalization. For the purpose of this study, the selected measure of globalization is Globalization Index that is developed by Dreher (2006). The index covers all three dimensions of globalization based on 23 variables. Namely, this index includes economic, social and political aspects of globalization, separately. Index is updated on a yearly basis and available on the web, publicly. It is also improved in Dreher et al. (2008). One important advantage of using this index is that one can analyze each dimension of globalization separately. That approach enables researchers to gain the insights of the impact of globalization on income inequality for each separate aspect of globalization and it also allows for further research. In addition to this, the index allows us to check for the relationship between globalization and income distribution taking all dimensions into account. For instance, some of the countries do not engage in economic globalization while they do take part in social globalization. In such cases, the countries can still be kept in the analysis and taken into account as if engaging in globalization though not in economic aspects.

As globalization is defined to be relatively broader than in most of the studies in the literature, it is beneficial to have a closer look at the comprehensive coverage of the Globalization Index. To begin with, economic globalization is represented by flows of trade and investment (imports + exports = trade, foreign direct investment and assets + liabilities = portfolio investment) and
trade policies (such as tariffs, taxes, regulation, restrictions). In the sub-index of flows of trade and investment, trade, foreign direct investment (inflows, outflows and stock) and portfolio investment are all normalized by GDP. Besides, income payments to foreign nationals and capital are also included in order to represent employment of foreign labor and capital in the country’s national production process. In the sub-index of trade policies, restrictions on trade and capital by hidden import barriers, mean tariff rates, taxes on international trade, and an index of capital controls are included. Next, social globalization can be decomposed into information flows, personal contact, and cultural proximity. First of all, information flows captures the possible flow of ideas and images by including the number of internet hosts and users, telephone mainlines, cable television subscribers, the number of radios and sales of daily newspapers. Secondly, personal contact measures the interaction between people living in different countries by collecting data over international telecom traffic (outgoing calls in minutes per subscriber), international tourism, the stock of foreign population, international letters and international transfers. Thirdly, cultural proximity is being measured by the number of McDonald’s restaurants (per capita) and IKEA (per capita) located in a country besides the trade in books as a percent of GDP. These measures are expected to be representative of cultural proximity since IKEA sales are mainly dependent to trade flows from developing countries such as China while McDonald’s is itself accepted as a symbol of globalization. Last of all, political globalization is measured by the number of embassies in a country, the number of international organizations in which a country is a member, the number of participations in U.N. security council missions, and the number of international treaties. In Appendix II.3, one may find a summary of all of these variables and see that all three dimensions have been given almost equal weights. The index is expected to be one of the most recent, comprehensive, and reliable dataset available for globalization. For the purpose of this study, only overall globalization index and economic part of globalization index are employed.
3.1.2 Measurement of Inequality

Measuring the changes in inequality helps policy makers to determine the effectiveness of policies aimed at reducing inequality. Following this fact, it is crucial to correctly measure inequality as the policies will be determined on the basis of changes in inequality. Therefore, measurement of inequality has also been argued by several researchers throughout the history as it has been the case for measuring globalization. Several measures of inequality such as the Range, the Range Ratio, the McLoone Index, the Coefficient of Variation, the Gini Coefficient and Theil’s T Statistic have been put forward up until now. According to Atkinson and Brandolini (2010), those standard inequality measures impose too many restrictions on applying them both to differences within countries and across countries in the world. For instance, Galbraith and Kum (2005) state that the deficiencies of these measures on measuring household income inequality are well known because of their lack of coverage, problematic measurement, and diversified data. Moreover, Atkinson and Brandolini (2001) question the validity of Deininger and Squire (1996) data set even after Deininger and Squire (1996) high-quality filters have been applied, due to the mixed up data that is obtained from several incompatible sources. Actually, the dataset used in this study is a mix of income and consumption surveys for Gini coefficient, as well. However, there is not much can be done about this problem as income surveys are prevalent in some parts of the world, and consumption surveys in others; there is no way to go back and convert one into the other, suggest Galbraith and Kum (2005), who indeed also propose this problem of Deininger and Squire (1996) data set.

Taking the literature into account, it is quite beneficial to use more than one inequality measure. In this way, researchers are able to realize if there are any differences between the estimation results of these measures and get insights over the relationship between inequality and globalization. The two commonly used measures are the Gini coefficient for measuring between-country inequality and Theil’s T statistic for measuring both within-country and between-country components of inequality. In this study, dynamic panel data regressions are estimated by using

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14 Combination of diverse data types into a single data set.
15 Deininger and Squire (1996) define the quality of the dataset depending on three criteria: (i) coverage of all types of income, including in-kind income, (ii) coverage of urban and rural households, and (iii) focus on households rather than individuals.
three different measures of inequality to allow for the comparison of the different results provided by different measures (if any). The first measure used in this analysis is the *industrial pay inequality* that is publicly available from the University of Texas Inequality Project (UTIP). *Industrial pay inequality*, which accounts for manufacturing pay inequality, is represented by Theil’s T statistic and it is a set of measures of the dispersion of pay across industrial categories in the manufacturing sector. The second measure is *estimated household income inequality*\(^{16}\), which is created by Galbraith and Kum (2005), and publicly available on UTIP web-site\(^{17}\) just as *industrial pay inequality*. In accordance with Galbraith and Kum (2005), this new measure of inequality provides comparable and consistent measurement across space and through time that the most commonly used Deininger and Squire (1996) data set do not pass. One important difference between the former and latter two measures is that household income inequality includes the receipts of income from all sources such as capital ownership and government transfers while industrial pay inequality is a person-based measure of inequality including only earnings of that person.

Besides the above measures of income inequality, the data over *Gini coefficient* is taken from Povcal.net which provides the most recent dataset over inequality measures that is collected by World Bank (2011) and updated every time new data is available. For the purpose of this study, I have made use of *Gini coefficient* as another measure of income inequality taken from World Development Indicators (WDI). Though there are several arguments against the use of *Gini coefficient* as a measure of income inequality, it still remains as one of the best possible tools in hand to apply, according to World Bank (2011). The advantage of this study is that it uses both *Gini coefficient* as suggested by Deininger and Squire (1996) and *estimated household income inequality* as proposed by Galbraith and Kum (2005).

\(^{16}\) This variable is put forward by Galbraith and Kum (2005). The authors combine World Bank’s Deininger & Squire (1996) dataset and *industrial pay inequality* dataset in order to obtain this new measure. More in detail, they derive *estimated household income inequality*, which are the estimates of gross household income inequality, from a regression relationship between the former two variables while controlling for the source characteristics in the Deininger & Squire (1996) data and for the share of manufacturing in total employment. The source characteristics are the share of urban population and population growth. For detailed information over the econometric relationship, see Galbraith and Kum (2005).

\(^{17}\) http://utip.gov.utexas.edu/data.html
In the light of information, it is possible to state that in this study, the measurement of inequality has been done in one of the best possible ways with the least risk of measurement error as there are three different inequality measures which are supposed to substitute each other. Moreover, the results for the different measures are expected to reveal whether the measures are consistent or inconsistent with each other.

### 3.1.3 Estimated Model

For each inequality variable the equation to be estimated is

\[ y_{it} = \alpha + \beta y_{i,t-1} + \gamma G_i + \eta_t + \eta_i + \eta_i + \epsilon_{it} \]

where \( i \) indexes observational units, \( t \) indexes time, \( y \) represents the three different measures of inequality, \( G \) represents the two different measures of globalization, \( X \) is a vector of control variables, \( \eta_i \) is a country fixed effect, \( \eta_t \) is a period fixed effect and \( \epsilon_{it} \) is a random disturbance term as employed by Dreher and Gaston (2007).

In some of the studies, the random disturbance term is also represented by

\[ \epsilon_{it} = \eta_i + v_{it} \]

where \( \eta_i \) accounts for the fixed effects and \( v_{it} \) is used for the idiosyncratic shocks, with the following properties:

\[ E[\eta_i] = E[v_{it}] = E[\eta_i v_{it}] = 0 \]

To clarify, the dependent variable is income inequality as measured by *Gini coefficient*, *industrial pay inequality* or *estimated household income inequality* while the independent variables are *index of overall globalization* and *economic index of globalization*. The lagged dependent variable (lagged inequality measure) is also included in the model because inequality tends to change slowly over time and is expected that it depends on its past values as well. Two control variables, *index of democracy* and *financial depth*, have been added to the baseline model while the number of control variables is increased in the sensitivity analysis with the introduction
of government spending, real interest rate, and regional dummies. Besides, education level is also added among the instrumental variables as a part of sensitivity analysis. Last of all, population-weighted results are also provided in the baseline regressions.

Since the Ordinary Least Square\textsuperscript{18} (OLS) estimator is biased and inconsistent in the presence of fixed country effects, endogeneity and heteroskedasticity, the Generalized Method of Moments (GMM)\textsuperscript{19} and Instrumental Variable (IV)\textsuperscript{20} estimator, which is supposed to overcome these problems, is to be employed as suggested by Roodman (2006). Furthermore, Dreher and Gaston (2007) also uses GMM/IV estimator within Stata, together with Windmeijer's (2005) finite sample correction without which standard errors tend to be severely downward biased when two-step estimation method is applied. While two-step estimation enables researchers to deal with heteroskedasticity and autocorrelation problems as the standard covariance matrix becomes robust, it also creates downwards bias in the estimation of the standard errors, in small samples. This bias in the standard errors, which emerge due to the extra variation created by two-step estimation, is removed by finite sample correction in the analysis. Moreover, dynamic panel bias in the existence of fixed effects which is put forward by Nickell (1981) is avoided by GMM/IV estimator. As there is also the opportunity of separating instruments from each other, GMM-style instruments are included for possibly endogenous and predetermined variables while IV-style instruments are used for strictly exogenous variables.

According to Roodman (2006), generalized dynamic panel data estimators such as Arellano and Bond (1991) and Arellano and Bover (1995) / Blundell and Bond (1998) are designed for panels with; small time period and large number of observations; linear functional relationships; single dynamic dependent variable that depends on its own past values; regressors that are not strictly exogenous; arbitrarily distributed fixed individual effects; serially autocorrelated idiosyncratic and heteroskedastic disturbances. Considering the characteristics of the variables in this study and the properties mentioned above, GMM/IV estimator is found to be the most advantageous one for the purpose of this study.

\textsuperscript{18} OLS estimator is biased and inconsistent because of the biased standard errors in the existence of the econometric problems that mostly occur in dynamic panel data estimations.

\textsuperscript{19} Baum, Schaffer and Stillman (2003) give useful information about the use of GMM.

\textsuperscript{20} Roodman (2006) provides detailed information about the use of GMM/IV estimator, named as xtabond2 in Stata.
The program used in this study is Stata with an additional module, xtabond2\textsuperscript{21}, which is developed by Roodman (2006) for improved results of GMM/IV regressions. Briefly, this module enables GMM/IV estimations with robust (Huber/White) standard errors while accounting for econometric problems mentioned before. In other words, the problems of autocorrelation, endogeneity and heteroskedasticity are all being taken into account while robust estimation results are obtained.

The panel is an unbalanced one because of the lack of data for some countries. All standard errors are estimated robustly while fixed country effects are taken into account. Basic information about the descriptive statistics can be found in the sub-section 3.3 while detailed information is given in Appendix III.

In order to avoid misspecification of the model, the control variables are selected from highly cited articles as well as theories. Firstly, an index of democracy, which is developed by Marshall and Jaggers (2010), is thought to be useful in this model as a control variable. It is suggested that since democracy is in favor of redistributive policies, it is expected to promote equality. In other words, democracy is supposed to support egalitarianism. In one hand, Reuveny and Li (2003) state that through progressive taxation, minimum wage laws, price subsidies and public works provision, democratic governments are in favor of lower and middle income classes. Milanovic (2000) put forward that democratization, via median voter hypothesis, should lead to greater redistribution and a reduction in inequality, as also proposed by Dreher and Gaston (2007). Timmons (2008) provides a useful summary of the links between democracy and inequality; via median-voter mechanism of income redistribution (according to which the government intervenes as mean incomes diverge from median income), via political competition as a mechanism to induce public support (which results in an increase in public services), and via labor market regulation as the mechanism for inequality reduction in democratic governments. On the other hand, Hsu (2008) finds out that democracy is indeed not egalitarian and suggests that the above arguments are based on the data scales commonly used. More in detail, the author concludes that conservative and one-party democracies tend to be more unequal than one expects while certain dictatorships are more equal than anticipated. It is also found out that social

\textsuperscript{21} This Stata module, which is developed by Roodman (2006) increases efficiency of xtabond dynamic panel data estimator. xtabond (GMM/IV estimator) is first introduced by Arellano and Bond (1991).
democracies are intrinsically egalitarian; however, once accounted for socioeconomic conditions, they are no more in favor of equality. Secondly, as another control variable, financial depth (the ratio of M2 to GDP) is used as suggested by Milanovic (2005) and based on the assumption that greater financial depth is expected to ease the financial constraint on talented but poor people to invest on human capital as illustrated by Li et al. (1998). However, on the other hand, Maurer and Haber (2003) argues that at early stages of financial deepening, access to financial services is limited to incumbents and therefore, they are the ones who raise their income instead of the newcomers that are typically the poor. Based on this finding, it is also possible to state that financial depth may lead to higher inequality. Both index of democracy and financial depth variables are thought to be strictly exogenous as they are not directly linked to globalization. A counter-opinion against the exogeneity of these two variables can possibly be put forward as globalization may promote democracy and financial depth. However, since both of the variables are primarily used as control variables, they are expected to account for the effect, which is not related to globalization, on income inequality. Milanovic (2005) states the fact that the introduction of control variables is mainly to prevent the misspecification of the model. Moreover, the variables are already instrumented with their own lags in the analysis in which way the reverse causality problem is eliminated, strictly. Passing onto sensitivity section, three additional variables are introduced; government spending, real interest rate and regional dummies. Firstly, government spending is the share of government’s expenditure to GDP of that country. It is expected that governments that spend higher are in support of poor more than the ones that spend less relatively as suggested by Milanovic (2005). Moreover, government spending is treated as endogenous throughout the study considering the fact that it may be directly linked to globalization though after the instrumenting process. Secondly, real interest rate, which is obtained by deflating the nominal rate by the 12-month consumer price index, is used as another control variable and expected to be pro-rich considering the fact that rich owns most of the capital assets. It is also suggested by Milanovic (2005) that higher interest rates disallow the poor to take credit for the purpose of investing in human capital. Real interest rate is also treated as being strictly exogenous. Lastly, regional dummies are added based on the evidence that Latin American and African countries tend, ceteris paribus, to have more unequal income distribution while Asian ones are more equal as suggested by Higgins and Williamson (1999), Fields (2001) and Milanovic (1994). Regional dummies are also expected to be strictly
exogenous and treated so in all model specifications. Besides, *education level*, which is included to the model as another instrument, is represented by the ratio of total enrollment in secondary school to the population of the age group that officially corresponds to secondary school. It is broadly accepted that higher education on average decreases the gap between the income level of the poor and the rich as it creates more alternatives to be able to invest further in human capital. Mostly, the poor are expected to benefit from an increase in overall education level by taking the opportunity of a skill-required job. According to World Bank (2011), education is one of the most powerful instruments for reducing poverty and inequality and lays a foundation for sustained economic growth. More in detail, according to Macdonald and Majeed (2010), there is a reverse causal relationship between inequality and education; in one hand, an unequal educational opportunity leads to greater inequality in income distribution by widening the skill and productivity gaps in the working population, while on the other hand, unequal income distribution tends to prevent the poor investing in education and acquiring skills. Though it is possible to suggest that *education level* is not strictly exogenous, in this study it is behaved as an exogenous one. On the next page, in Table 1, the expected effects of these variables on income inequality are summarized.

Aside from the control variables mentioned in the previous paragraph, *GDP per capita* and *squared GDP per capita*, which are the most commonly used control variables in analyzing the relationship between globalization and income inequality, are not included in this study as Milanovic (2005) suggests that once controlled for *financial depth* and *index of democracy*, there is no need for an additional income control since the two control variables are already structural correlates of income. In other words, the author believes that income represents the structural changes which influence GDP per capita such as the movement of labor, educational change or demographic change and the former two control variables, *financial depth* and *index of democracy*, do already account for these changes. This approach is appreciated and followed in this study as well.

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22 Since education level is also instrumented, reverse causality is already taken into account in this study.
### Table 1: Expected signs of control variables in their regression relationship with inequality

<table>
<thead>
<tr>
<th>Variable</th>
<th>Expected effect</th>
<th>Channel</th>
<th>Author(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Index of Democracy</td>
<td>(-)</td>
<td>Through progressive taxation, minimum wage laws, price subsidies, and public works provision</td>
<td>Reuveny and Li (2003)</td>
</tr>
<tr>
<td>Financial Depth</td>
<td>(-, +)</td>
<td>Through easing financial constraint on talented but poor people to invest on education, Through no access to financial services which are limited to incumbents</td>
<td>Li et al. (1998), Maurer and Haber (2003)</td>
</tr>
<tr>
<td>Government Spending</td>
<td>(-)</td>
<td>Through redistribution, higher subsidies for the poor, and transfers to the poor</td>
<td>Boyd (1988), Milanovic (2005)</td>
</tr>
<tr>
<td>Education Level</td>
<td>(-)</td>
<td>Through narrowing the skill and productivity gaps in the working population</td>
<td>Macdonald and Majeed (2010)</td>
</tr>
<tr>
<td>Real rate of interest</td>
<td>(+)</td>
<td>Through higher financial constrained on poor people to invest on human capital</td>
<td>Milanovic (2005)</td>
</tr>
<tr>
<td>Regional Dummies</td>
<td>(+, -)</td>
<td>Through empirical evidence that Latin American and African countries have higher inequality while Asian countries have lower inequality</td>
<td>Higgins and Williamson (1999), Fields (2001), Milanovic (1994)</td>
</tr>
</tbody>
</table>

Source: Author’s own compilation of channels that are mainly provided by Milanovic (2005) and Dreher et al. (2008).
Considering the existence of endogeneity problem in dynamic panel data estimations as in this study, several approaches have been taken to deal with it. One way is to take into account this problem by instrumenting possibly endogenous and exogenous variables with their lags. As it has been mentioned earlier in this section, GMM/IV estimator gives us the advantage of choosing strictly exogenous and pre-determined/endogenous variables and to instrument them with their own lags without any limitation to lag numbers. Dreher and Gaston (2007) suggest that the lagged dependent variable and the globalization variable should be treated as being endogenous and the other covariates as exogenous during the analysis. Furthermore, Milanovic (2005) put forward that government spending and globalization should be treated as endogenous. The rest of the control variables, including regional dummies, are taken as being strictly exogenous. Another way to deal with the endogeneity problem is averaging the dataset. Generally, researchers have preferred to use 5-year averaged data. However, in order to minimize the loss of data (as averaging process reduces the number of observations), 3-year averaged data is used instead of 5 years while still reducing the possibility of endogeneity problem. One last caution, as it has been mentioned earlier, was to lag the dependent variable and include it to the analysis to remove the possibility of endogeneity problem which could occur in the existence of omitted lagged variable.

Within the estimated model, the possible econometric problems related to the analysis are almost totally overcome. The superiority of this methodology over endogeneity problem is also supported by Milanovic (2005). Moreover, Roodman (2006) state that a possible endogeneity problem may be further dealt with in two ways: by using ‒Difference GMM‖, that is transforming the data to remove the fixed effects or by using ‒Instrumental Variables‖ with ‒System GMM‖ method. The main difference between ‒Difference GMM‖ and ‒System GMM‖ is that the latter one uses two equations (one in levels and one differenced) for estimation and therefore, uses more instruments than the former one. Furthermore, since System GMM estimates the model simultaneously in differences and in levels, it also accounts for Difference GMM. More in detail, ‒System GMM‖ estimator uses the baseline equation in order to produce a system of two equations. In addition, the second equation enables researcher to use additional instruments and increase efficiency of the estimation. In this study, considering the availability
of data and efficiency properties, the “System GMM” method is employed in order to overcome endogeneity problem while increasing the number of instruments. Though the methodology is estimated to remove any possible endogeneity problem through “the use of 3-year averaging of all variables”, “the use of lagged dependent variable” and “the use of GMM/IV estimators”, the Sargan (1958) test and Hansen (1982) test are also carried out and reported to guarantee that the instruments are exogenous. The results for these tests are provided and discussed in the upcoming analysis section.

Since the quality of instruments have crucial importance in the robustness of the results in dynamic panel data estimations with GMM/IV estimators, it is vital to provide information about the Sargan and Hansen J tests. The Sargan test has the null hypothesis of “the instruments as a group are exogenous” which is exactly the same for Hansen J test as well. Thus, the higher p-value of the test statistic is, the better the instruments are identified. The only difference between Sargan and Hansen J test is the robustness of the standard errors. Since the standard errors are estimated to be robust in this study, Hansen J test statistic has to be checked for rather than Sargan test. This point is underlined by Milanovic (2005) “Hansen’s J statistic is consistent in the presence of heteroskedasticity, whereas its alternative, Sargan’s statistic, is not.” Nevertheless, it is found more beneficial to provide both Sargan and Hansen J test statistic results as the differences in between may signal possible errors in the estimation process.

Besides endogeneity problem, serial autocorrelation might possibly occur in the study as lagged dependent variable is included on the right hand side of the equation (that is as an independent variable). The Arellano – Bond test for autocorrelation is checked in order to control for this possible problem. The test has the null hypothesis of “no autocorrelation” and it is applied to the differenced residuals. In the existence of first lagged variables, as in this study, only AR(2) test results are necessary to be checked for since only the second lags of the variables are used as instruments. As in Sargan and Hansen J tests, the higher p-value of Arellano – Bond test indicates a higher chance of no autocorrelation within the estimated model. The test results can be found at the bottom part of each regression result.

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23 That is the number of groups is mostly bigger than the number of instruments in this study. When the number of instruments is significantly higher than the number of groups, then Sargan and Hansen J test results are supposedly biased.
Lastly, according to Roodman (2009), instrument proliferation is another problem which is quite often faced with during GMM estimator analysis. This problem has also been empirically proven by Andersen and Sørensen (1996), Ziliak (1997), and Bowsher (2002). The problem is expected to occur when the number of instruments is higher than the number of groups in the study sample, the case in which the Sargan and Hansen J test results become useless. Therefore, the exogeneity of instruments cannot be guaranteed if there is instrument proliferation. In this study, in order to deal with this problem, instead of using deeper lags, only the second lags of endogenous and exogenous variables are used as instruments. As a result, the number of instruments is kept low enough in number in order not to face the problem of instrument proliferation, and at the same time, it is kept high enough in number in order to instrument possibly endogenous and exogenous variables as accurate as possible.

3.2 Sample Selection

Measure of globalization is Globalization index, for which data is taken from Dreher (2006)\textsuperscript{24}. The index is updated in Dreher et al. (2008)\textsuperscript{25}. This data consists of 208 countries and cover the period from 1970 to 2008. As it has been mentioned before, the \textit{economic globalization index} is also employed separately in order to measure globalization instead of the composite index which includes economic, social and political globalization, all together.

For the first two measures of income distribution, namely for \textit{industrial pay inequality} and \textit{estimated household income inequality}, data is taken from the University of Texas Inequality Project (UTIP). For \textit{industrial pay inequality}, data covers 156 countries over the period between 1963 and 2002. On the other hand, for \textit{estimated household income inequality}, which is computed from a regression relationship between Gini coefficient and Theil measure, data includes the time period between 1963 and 2002, with coverage of 154 countries.

For the third measure of income inequality, which is \textit{Gini coefficient}, data is obtained both from Milanovic (2005)\textsuperscript{26} and Povcal.Net (World Bank, 2011). This data includes 133 countries for

\textsuperscript{26} http://econ.worldbank.org/projects/inequality
different years for each country. *Gini coefficients* are calculated for the countries for which income share data is available.

Passing onto control variables, the first one used in the baseline model is the *index of democracy* for which data is taken from Center for Systemic Peace (2010)\(^\text{27}\). This data consists of 155 countries over the period between 1951 and 2010. The variable ranges from 0 (not democratic) to +10 (strongly democratic), representing the type of the each country and allowing for comparisons. The next control variable is *financial depth* –the ratio of M2 to GDP– for which data is collected from World Bank (2011). This data includes 217 countries over the period between 1961 and 2010.

In the sensitivity analysis, the first one of the variables to be used is *government spending* for which data is also subtracted from World Bank’s dataset, World Development Indicators (WDI) (2011). This data consists of 184 countries over the period 1960-2010. The second variable that is controlled for in sensitivity section is the *real rate of interest*. The data for this variable is also obtained from World Bank’s dataset, World Development Indicators (WDI) (2011). This data includes 177 countries over the period between 1960 and 2010. Thirdly, *regional dummies* are created in order to check for the statement that some of the regions have characteristically higher inequality than others, as in Latin America. Besides, *population*\(^\text{28}\) is also used as the weight in the regressions, for which data is taken from World Bank (2011). This data covers 216 countries over the period between 1960 and 2010. Lastly, *education level*, which represents the ratio of total enrollment in secondary school to the population of the age group that officially corresponds to the same school, is included to the model as an exogenous instrument. The data for this variable is collected from World Bank (2011) and covers 216 countries over the period from 1970 to 2010.

In order to be able to produce a sample as balanced as possible, some of the countries have to be dropped from the analysis together with high income countries. Corresponding dataset includes 92 countries, none of which is high income, over the period between 1970 and 2008 except when industrial pay inequality and estimated household income inequality are used as inequality

\(^{27}\) This is the updated version of the data collected by Marshall and Jaggers (2010), provided on the website under the name Polity IV Project. http://www.cidcm.umd.edu/inscr/polity

\(^{28}\) Both un-weighted and population-weighted results are provided in the study.
measures since for those two variables, data is available only until 2002. Since the data is 3-year averaged, there are 13 time periods. The list of countries and the definitions of variables can be found in Appendix II while detailed information over the distribution of observations and more about descriptive statistics are provided in Appendix III.

3.3 Descriptive Statistics

In this section, the most important summary statistics are noted down for all of the variables used in the analysis together with regional and income patterns. The summary statistics are provided in the second part of the Appendix III\textsuperscript{29}. Based on these statistics, the following evidence is provided.

As it has been mentioned before, the study includes 92 countries\textsuperscript{30} over the period between 1970 and 2008 while all the variables are averaged over 3-year periods. There are 13 time periods starting from 1970-72 till 2006-08. However, for industrial pay inequality and estimated household income inequality, the dataset covers only the period from 1970 to 2002. In the study sample, Gini information is available for 90 countries\textsuperscript{31} while pay inequality is provided for 74 countries and estimated household income inequality is given for 71 countries. Besides, globalization index covers 91 countries whereas economic globalization index consists of 84 countries\textsuperscript{32}. Overall, there are 1196 observations included in the study.

Looking at the income patterns, it is possible to say that low income, lower middle income and upper middle income countries account for 25%, 37% and 38% of the countries in the dataset, respectively. The distribution of income patterns, which is quite normal, increases the sample's representativeness of the real picture. It is also important to note down that the dataset do not

\textsuperscript{29} In the first part of the Appendix III, the panel structure, according to which each observation is uniquely identified in the regression, is provided. The next part of the Appendix III documents the summary statistics and the graphs based on these statistics are provided in the last part of the Appendix III.

\textsuperscript{30} Countries included in the dataset account for more than 80% of the world population which means a sufficient representation of the world income distribution.

\textsuperscript{31} For two countries in the sample, Seychelles and Zimbabwe, there is no Gini information available. However, both industrial wage inequality and estimated household income inequality data are given for the same countries.

\textsuperscript{32} For Zimbabwe, there is no information provided for the overall globalization index while for the same country, there is information over economic globalization index.
consist of any high income countries (OECD or non-OECD). Turning to regional patterns, it is commonly accepted that they play an important role in the relationship between the income inequality and globalization. Therefore, a brief look at regional patterns is also necessary as regional dummies are used in the upcoming estimation analysis to check for possible transmission mechanisms through regional unobservable effects. Among the regions, East Asia & Pacific, Europe & Central Asia, Latin America & Caribbean, Middle East & North Africa, South Asia, and Sub-Saharan Africa account for 10%, 20%, 22%, 10%, 5% and 33% of the countries in the study sample, respectively. However, there are no countries from North America.

As it has been mentioned in the introduction section, income distribution follows a worsening trend over the period between 1970 and 2008, indicated by the movement of the fitted values of Gini coefficient from about 30 to 40 for the countries included in the sample as shown in Appendix III.3, Figure 1. Moreover, as can be seen from the next two figures, Figure 2 and 3, respectively, estimated household income inequality and industrial pay inequality follow a systematic pattern over the time period used in this study for the countries selected as the fitted values of these two variables reveal. Aside from inequality, it is obvious that increasing globalization (economic, social or political) took place from 1970 to 2008, denoted by the rise in the index number from about 20% to more than 55%, as shown in Appendix III.3, Figure 4. The increase in globalization has been partially driven by its economic part, which has risen from about 20% to almost 45% as can be seen in Appendix III.3, Figure 5. The changing pattern of the overall world globalization index together with its regional aspects is provided in Figures from 6 to 11. In all figures from 6 to 11, it is clear that the world has become much more globalized empirically in all regions.

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33 Preferably, no high income countries are included in the study. The reason why is that the study focuses on the developing countries. Income categorization of the countries is based on the information available at World Bank, WDI (2011).

34 The reason why there are no countries included from North America is the high income level of the countries in that region.

35 Economic globalization is weighted by 36% in the calculation of overall globalization index whereas social and politic globalization account for 38% and 26%, respectively. Detailed information about the weights is provided in the Appendix II.3.

36 These graphs are produced by using raw data which is taken from Dreher et al. (2008) and used to indicate the overall pattern, together with regional differences.
4. Model Estimation and Sensitivity Analysis

In the first part of this section, the baseline estimation results are provided for three different measures of inequality; estimated household income inequality, industrial pay inequality and Gini coefficient, respectively. Besides, globalization is measured by globalization index and globalization index (economic), separately. This choice has taken place in order to check whether the regressions run by using the economic part of globalization present different results than the ones obtained when overall globalization index is employed. Furthermore, the population weighted estimation results for the baseline regressions are also included. In the next part of the section, by including additional control variables such as government spending, real rate of interest, and regional dummies, sensitivity checks are performed. In addition to this, as another sensitivity check, education level is included as an exogenous instrument to the instrument matrix, and the results are reported once again. It is also important to note once again that the lagged inequality measure is included in each regression, in both sections. The inclusion of lagged inequality measure among the right hand side variables prevents the use of first lags of the variables in the instrument matrix as it results in autocorrelation. Therefore, the second lags of the variables are used as proper instruments for lagged inequality measures. Also, heteroskedasticity problem is supposedly dealt within the analysis by the use of two-step estimation process within GMM/IV estimation process.

4.1 Estimation Results

In this part of the section, the baseline model regression results for each measure of inequality are provided without any additional control variables, except index of democracy and financial depth. In Tables from 2 to 4, the information over the significance levels of the variables, the number of observations, instruments and groups, the F-values, the Sargan and Hansen test results, the Difference-in Hansen tests for GMM-style and IV-style instruments, and Arellano-Bond test results for autocorrelation are provided. Besides, while the second columns of Tables from 2 to 4 give information about the regressions run by using overall globalization variable as the measure of globalization, the third ones replace this variable and document the results with a lagged inequality measure by its second lag.

37 When the lagged dependent variable is included among the independent variables, the use of first lags in the instrument matrix becomes useless. This is due to the correlation between the error terms, which is also called autocorrelation. The problem is overcome by instrumenting the lagged inequality measure by its second lag.
more specific and widely used globalization measure, which is the economic part of globalization. On the fourth columns, the regressions in the second columns are rerun after the inclusion of population to the models as a weight. Similarly, the fifth columns repeat the third ones with only difference being the addition of the same weight, population.

### 4.1.1 Estimated Household Income Inequality

The first measure of inequality that has been used in this study is *estimated household income inequality*. As it has been explained before, this variable is obtained through an econometric relationship between Gini coefficient and Theil coefficient. Therefore, it is supposedly more reliable than both of these coefficients as this regression relationship allows the data pass over the points that are not covered by Gini and Theil measures, alone. Turning back to main discussion, the first baseline regression results are provided in Table 2.

In Table 2, the second column indicates the results of the first regression. The coefficients of the constant term and the lagged inequality variable occur to come out significant at 1% level. However, the coefficient of overall globalization index is not even significant at 10% level together with the index of democracy with p-values 0,261 and 0,265, respectively. Financial depth, on the other hand, is significant at 10% level with a negative sign which is in line with the expected sign. The most important test results, which are Hansen and Arellano-Bond AR(2) tests, show no significance at even 10% level as can be read by p-values of 0,465 and 0,276, respectively.

On the third column of Table 2, the same regression is run by using economic globalization as the globalization variable. Briefly, all of the coefficients show the same significance levels as in the second column. Most importantly, economic part of globalization index is again found to be insignificant. The Hansen and AR(2) tests show no significance at even 10% level with p-values of 0,274 and 0,282, respectively. Furthermore, the number of instruments which is 48 is less than the number of groups that is 67.

The fourth and fifth columns in Table 2 present the population-weighted results. Both of the globalization variables show no significance at 10% significance level with p-values of 0,226 and 0,320, respectively for overall and economic globalization. The only difference from the first two regressions turns out to be the significance of the index of democracy. As it can be read from
the fourth and fifth columns, when the population is used as a weight in the regression, democracy becomes significant with a positive coefficient which is against the general argument that democracy is pro-egalitarian. The Hansen and AR(2) tests do not show any significance similar to the case in the regressions reported on the second and third columns of Table 2. Besides, the number of observations is higher than the number of instruments with the values of 67 and 49, respectively.

To sum up, based on the results of the regressions when the first inequality measure, which is estimated household income inequality, is employed, neither globalization nor its economic part comes out significant. In one hand, this result is consistent with the finding of Dollar and Kraay (2002) while on the other hand, it is against the Heckscher-Ohlin theory, which states that the poor in developing countries should benefit from globalization. The result may possibly be driven by the fact that globalization is measured by a comprehensive index rather than simple exports plus imports to GDP ratio. Supposedly, as the index takes several aspects of globalization into account, the relationship may turn out to be insignificant. Nevertheless, this does not eradicate the validity of the results as the test statistics are all insignificant, in all regressions in Table 2. Furthermore, globalization is preferably measured by an index rather than a simple ratio since the index is thought to measure it more accurately. Besides, when the economic globalization index is used instead of the composite index as it has been done by mot of the previous studies, the results do not change. In contrast to the expected sign, democracy is found to be either insignificantly or positively related to inequality. This finding signals cautious approach to democracies and quite probably calls for the distinction between the types of democracies. Lastly, financial depth, which is measured by the ratio of broad money to GDP, is found to decrease inequality significantly as suggested by Li et al. (1998). This may be an indication of the eased financial constraint on talented but poor people to invest on education. However, as the baseline model does not include other control variables, the results may well possibly be led by the misspecification of the model. To check for this, in section 4.2, additional control variables are included to the model and the relationship is analyzed once again.
### Table 2: Estimation results for Estimated Household Income Inequality

<table>
<thead>
<tr>
<th></th>
<th>Estimated Household Income Inequality</th>
<th>Estimated Household Income Inequality (population weighted)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>0.22522***</td>
<td>0.0963***</td>
</tr>
<tr>
<td></td>
<td>(0.001)</td>
<td>(0.008)</td>
</tr>
<tr>
<td>Estimated household income inequality (lagged)</td>
<td>0.55812***</td>
<td>0.80257***</td>
</tr>
<tr>
<td></td>
<td>(0.000)</td>
<td>(0.000)</td>
</tr>
</tbody>
</table>

**Independent variable**

<table>
<thead>
<tr>
<th></th>
<th>Estimated Household Income Inequality</th>
<th>Estimated Household Income Inequality (population weighted)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Globalization index</td>
<td>0.00394</td>
<td>0.04414</td>
</tr>
<tr>
<td></td>
<td>(0.261)</td>
<td>(0.226)</td>
</tr>
<tr>
<td>Globalization index (economic)</td>
<td>-</td>
<td>0.02964</td>
</tr>
<tr>
<td></td>
<td>-</td>
<td>(0.320)</td>
</tr>
</tbody>
</table>

**Control Variables**

<table>
<thead>
<tr>
<th></th>
<th>Estimated Household Income Inequality</th>
<th>Estimated Household Income Inequality (population weighted)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Democracy index</td>
<td>0.00055</td>
<td>0.00127**</td>
</tr>
<tr>
<td></td>
<td>(0.265)</td>
<td>(0.023)</td>
</tr>
<tr>
<td>Financial depth</td>
<td>-0.03150*</td>
<td>-0.02623*</td>
</tr>
<tr>
<td></td>
<td>(0.081)</td>
<td>(0.086)</td>
</tr>
<tr>
<td>Number of observations</td>
<td>413</td>
<td>410</td>
</tr>
<tr>
<td>Number of instruments</td>
<td>48</td>
<td>49</td>
</tr>
<tr>
<td>Number of groups</td>
<td>67</td>
<td>67</td>
</tr>
<tr>
<td>F - Value</td>
<td>15.43</td>
<td>285.61</td>
</tr>
<tr>
<td>Sargan test of overid. restrictions:</td>
<td>(0.298)</td>
<td>(0.000)</td>
</tr>
<tr>
<td>Hansen test of overid. restrictions:</td>
<td>(0.465)</td>
<td>(0.234)</td>
</tr>
<tr>
<td>Difference-in-Hansen tests of exogeneity of instrument subsets: GMM-style</td>
<td>(0.368)</td>
<td>(0.372)</td>
</tr>
<tr>
<td>Difference-in-Hansen tests of exogeneity of instrument subsets: IV-style</td>
<td>(0.804)</td>
<td>(0.199)</td>
</tr>
<tr>
<td>Arellano-Bond test for AR(2) in first differences:</td>
<td>(0.276)</td>
<td>(0.505)</td>
</tr>
</tbody>
</table>

Note: Values in parentheses are p-values. *, **, *** indicate 10%, 5% and 1% significance level, respectively.
All standard errors are estimated to be robust. Two-step estimation process is also always followed in all analysis.
Note: Time dummies are not reported.
In addition to these, the three most important econometric problems with dynamic panel data estimations are well managed as the Hansen J test statistic and AR(2) test result are insignificant while the number of instruments are always lower than the number of groups in Table 2. While the two test statistics guarantee the validity of instruments and the absence of autocorrelation, the number of groups, which is always higher than the number of instruments, ensures that there is no problem related to using too many instruments.

### 4.1.2 Industrial Pay Inequality

The second measure of inequality that has been used in this study is *industrial pay inequality*. On the next page, the baseline regression results for this variable are provided in Table 3.

To start with, reading from the second and third columns of Table 3, the coefficients of the constant term appear to be insignificant while the lagged inequality variable is significant at 1% level. Besides, the coefficient of overall globalization index is not even significant at 10% level together with the economic part of it as the p-values of 0.379 and 0.257 indicate, respectively. Though the level of democracy is found to have a positive relationship with inequality, it does not have significance at even 10% level. Apart from democracy index, financial depth is found to be significant in the reduction of industrial pay inequality. Hansen test of over-identified restrictions and Arellano-Bond test results are not indicative of a problem related to the validity of instruments and autocorrelation in any of the two columns.

On the fourth and fifth columns, population-weighted regression results are provided for industrial pay inequality. In both of the columns, the constant terms and lagged inequality measures show significance at 1% level. Similar to un-weighted result in the second column, overall globalization index does not have a significant relationship with industrial pay inequality as denoted in the fourth column of Table 3. However, as can be seen from the fifth column, economic part of globalization shows some significance at 10% level with a negative sign. While the level of democracy still insignificant just as in the un-weighted regressions, financial depth carries over its negative significance. The Hansen and AR(2) tests show no significance at even 10% level in any of the regressions reported in the fourth and fifth columns of Table 3. The number of instruments is also always lower than the number of groups as the numbers of 49 and 69 point, respectively.
<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Industrial Pay Inequality</th>
<th>Industrial Pay Inequality</th>
<th>Industrial Pay Inequality (population weighted)</th>
<th>Industrial Pay Inequality (population weighted)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>0.02144 (0.246)</td>
<td>0.01715 (0.175)</td>
<td>-0.02392** (0.016)</td>
<td>0.02514*** (0.009)</td>
</tr>
<tr>
<td>Industrial pay inequality (lagged)</td>
<td>0.79036*** (0.000)</td>
<td>0.76552*** (0.000)</td>
<td>0.86507*** (0.000)</td>
<td>0.85126*** (0.000)</td>
</tr>
<tr>
<td>Globalization index</td>
<td>0.01145 (0.379)</td>
<td>-</td>
<td>-0.01643 (0.210)</td>
<td>-</td>
</tr>
<tr>
<td>Globalization index (economic)</td>
<td>-</td>
<td>0.02554 (0.257)</td>
<td>-</td>
<td>-0.02036* (0.099)</td>
</tr>
<tr>
<td>Financial depth</td>
<td>-0.01294** (0.048)</td>
<td>-0.01761* (0.066)</td>
<td>-0.01220* (0.088)</td>
<td>-0.01076* (0.092)</td>
</tr>
<tr>
<td>Number of observations</td>
<td>410</td>
<td>412</td>
<td>405</td>
<td>407</td>
</tr>
<tr>
<td>Number of instruments</td>
<td>48</td>
<td>48</td>
<td>49</td>
<td>49</td>
</tr>
<tr>
<td>Number of groups</td>
<td>69</td>
<td>69</td>
<td>69</td>
<td>69</td>
</tr>
<tr>
<td>F - Value</td>
<td>24.01</td>
<td>15.67</td>
<td>263.56</td>
<td>(249.58)</td>
</tr>
<tr>
<td>Sargan test of overid. restrictions</td>
<td>(0.003)</td>
<td>(0.001)</td>
<td>(0.001)</td>
<td>(0.000)</td>
</tr>
<tr>
<td>Hansen test of overid. restrictions</td>
<td>(0.593)</td>
<td>(0.440)</td>
<td>(0.536)</td>
<td>(0.498)</td>
</tr>
<tr>
<td>Difference-in-Hansen tests of exogeneity of instrument subsets: GMM-style</td>
<td>(0.365)</td>
<td>(0.237)</td>
<td>(0.429)</td>
<td>(0.523)</td>
</tr>
<tr>
<td>Difference-in-Hansen tests of exogeneity of instrument subsets: IV-style</td>
<td>(0.457)</td>
<td>(0.558)</td>
<td>(0.523)</td>
<td>(0.452)</td>
</tr>
<tr>
<td>Arellano-Bond test for AR(2) in first differences</td>
<td>(0.131)</td>
<td>(0.145)</td>
<td>(0.170)</td>
<td>(0.171)</td>
</tr>
</tbody>
</table>

Note: Values in parentheses are p-values. *,**,*** indicate 10%, 5% and 1% significance level, respectively. All standard errors are estimated to be robust. Two-step estimation process is also always followed in all analysis. Note: Time dummies are not reported.
Consequently, similar to the results provided for the estimated household income inequality, overall globalization also does not have a significant connection with the industrial pay inequality. Using population as a weight does not change the significance of overall globalization; however, it does produce a different result for the economic part of globalization, which carries a negative relationship with industrial pay inequality. This result is consistent with both Lundberg and Squire (2003) and Hecksher-Ohlin framework as economic globalization is found to reduce inequality within developing countries. Nevertheless, the quality of industrial pay inequality as a measure of income inequality casts doubts over the interpretation of the results. As the industrial pay inequality does only account for the earnings inequality in manufacturing sector, it may not be a proper representative of overall inequality within a country. Besides, the Hansen J test statistic and AR(2) tests yield insignificant results that does not signal any problem related to the exogeneity of the instruments and autocorrelation, respectively. Moreover, instrument proliferation is out of question as the number of instruments is less than the number of groups and observations. In such a case, the sensitivity analysis is expected to be determinative whether the significance of economic globalization can safely be ignored or not.
4.1.3 Gini Coefficient

The third measure of inequality that has been used in this study is *Gini coefficient*. On Table 4, the third baseline regression results are given.

Recently, there have been several arguments over the use of Gini coefficient as a measure of income inequality. The arguments are mainly based on the fact that income data that is being used to calculate Gini coefficients are mixed up from both income and consumption surveys. The process of mixing data from different sources, unfortunately, puts great concerns over the analysis as the lack of comparability of different sources bring about several measurement problems. The dataset that has been used in this study is a mixture of different sources of income from different surveys as well. However, there is not much can be done by researchers about that problem since the data collection is solely managed by national governments. As it has been mentioned earlier, the use of Gini coefficient as an inequality measure is mainly for the purpose of comparison with other results in this study as well as the results of the previous studies that have been carried out by using Gini coefficient as the measure of inequality. Therefore, there is no sole reliance on the results in this part of the section. On the second and third columns of Table 4, the coefficients of the constant term appears to be insignificant at 10% level while the lagged inequality variables are significant at 1% level. Though overall globalization index has a positive coefficient as shown in the second column, the relationship is insignificant with a p-value of 0.149. In the same column, together with overall globalization variable, democracy index and financial depth are also analyzed to be insignificant at 10% level, with p-values of 0.307 and 0.260, respectively. On the next column, the third one, the only difference from the second column is that instead of overall globalization variable, the economic part of globalization is used as the measure of globalization. However, as can be seen from the third column, the insignificance of the all variables except the lagged inequality measure and financial depth is still evident with some minor changes in p-values. Based on the insignificance of the results both in the second and third columns, the methodology applied in this study and/or the quality of the Gini coefficient as a measure of inequality comes to the question. However, as the Hansen J tests and AR(2) tests reported in the second and third columns do not signal a warning related to methodology, either the model specification or the inequality measure itself seem to problematic. Since the quality of Gini coefficient as a measure of inequality is already argued
throughout the study, additional variables are expected to uncover whether the insignificance is related to the model specification or not. For this reason, population-weighted regression results are reported on the fourth and fifth columns of Table 4.

As can be seen from the fourth and fifth columns of Table 4, even though none of the control variables (except financial depth in the third column) is significant as well as globalization variables in the second and third columns, the population-weighted regressions do provide results with significant variables. Similar to the results provided in the second and third columns, the coefficients of the constant terms appears to be insignificant at 10% level while the lagged inequality variables are significant at 1% level as evident from the fourth and fifth columns of Table 4. More importantly, the coefficient of overall globalization index is significant at 5% level while the economic part of it is significant at 10% level with the p-values 0.023 and 0.091 as denoted in the fourth and fifth columns, respectively. Both overall globalization and economic globalization are found to have a positive relationship with income inequality as the sign of the coefficients indicate. Most of the literature, which uses the Gini coefficient as the measure of inequality, reaches the opposite conclusion that globalization reduces inequality. Besides, at the same time, the finding of this part is in line with the results provided by Barro (2000) and Ravallion (2001) which point out to the fact that openness leads to higher inequality in developing countries. Among the control variables, only in the fifth column, financial depth appears to have a significantly negative relationship with inequality at 5% significance level with a p-value of 0.026. Interestingly, the level of democracy is insignificant throughout all the regressions in Table 4, either in un-weighted or population-weighted regressions. The Hansen and Arellano-Bond tests also do not show any significance at even 10% level in any of the regressions run on the fourth and fifth columns of Table 4, similar to the case in the second and third columns. Because the number of instruments is also always lower than the number of groups and observations in this part of the section, there is no need to concern over the problem of instrument proliferation.
Table 4: Estimation results for Gini Coefficient

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Gini Coefficient</th>
<th>Gini Coefficient</th>
<th>Gini Coefficient</th>
<th>Gini Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(population weighted)</td>
<td>(population weighted)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>0.01301 (0.832)</td>
<td>-0.00602 (0.879)</td>
<td>-0.04146 (0.225)</td>
<td>-0.04387 (0.842)</td>
</tr>
<tr>
<td>Gini coefficient (lagged)</td>
<td>0.87755*** (0.000)</td>
<td>0.89184*** (0.000)</td>
<td>0.77716*** (0.000)</td>
<td>0.87647*** (0.000)</td>
</tr>
</tbody>
</table>

**Independent variable**

| Globalization index | 0.05802 (0.149) | - | 0.22847** (0.023) | - |
| Globalization index (economic) | - | 0.09135 (0.151) | - | 0.07749* (0.091) |

**Control Variables**

| Democracy index | 0.00098 (0.307) | 0.00085 (0.377) | 0.00021 (0.469) | 0.00050 (0.413) |
| Financial depth | -0.00117 (0.260) | -0.00094* (0.061) | -0.00385 (0.828) | -0.02435** (0.026) |

| Number of observations | 293 | 290 | 287 | 284 |
| Number of instruments | 58 | 58 | 59 | 59 |
| Number of groups | 73 | 70 | 72 | 69 |
| F - Value | 33.02 | 29.54 | 327.10 | 752.08 |
| Sargan test of overid. restrictions: | (0.934) | (0.270) | (0.000) | (0.000) |
| Hansen test of overid. restrictions: | (0.934) | (0.835) | (0.845) | (0.938) |
| Difference-in-Hansen tests of exogeneity of instrument subsets: GMM-style | (0.903) | (0.499) | (0.813) | (0.784) |
| Difference-in-Hansen tests of exogeneity of instrument subsets: IV-style | (0.957) | (0.907) | (0.775) | (0.829) |
| Arellano-Bond test for AR(2) in first differences: | (0.149) | (0.093)* | (0.892) | (0.970) |

Note: Values in parentheses are p-values. *, **, *** indicate 10%, 5% and 1% significance level, respectively. All standard errors are estimated to be robust. Two-step estimation process is also always followed in all analysis. Note: Time dummies are not reported.
As a consequence, apart from the results obtained by using estimated household income inequality and industrial pay inequality as the measure of income inequality, globalization is found to be positively related to income inequality in this part of the study. However, as it has been mentioned earlier, one should be careful with the interpretation of the results when the Gini coefficient is employed to measure income inequality. This is because the mixture of data sources may quite possibly lead to misleading results. Therefore, the availability of higher quality inequality measures such as estimated household income inequality allows the ignorance of this finding, cautiously. Similar to the results of the previous analysis in this study, the level of democracy is found not to have a significant relationship with income inequality. Once again, the commonly accepted hypothesis that the democracies tend to have more equal income distribution relative to autocracies is questioned. The consistent insignificance of the democracy index in all three different sub-sections may well indicate the recent approach of the so-called democratic governments to the income inequality. Besides, financial depth seems to play an important role in the alleviation of income inequality within developing countries when the Gini coefficient is employed. This affect is expected to take place via the credit channel and it is most probably evident in the real picture. Among the statistical issues, there is no indication of problems related to methodology, exogeneity of instruments and autocorrelation of error terms based on the insignificant values of Hansen J and AR(2) tests. The problem of endogeneity is also dealt with in this part of the study as in the previous ones.

All in all, estimated household income inequality is a kind of mix of industrial pay inequality and Gini coefficient and therefore, it is supposed to be more reliable and informative than both of the latter measures of inequality. Nevertheless, before concluding the study based on the baseline results of estimated household income inequality, it is necessary to carry out sensitivity analysis as the inclusion of other control variables may change the significance of the variables.
4.2 Sensitivity Analysis

In the sensitivity analysis section, the same regressions in the previous sub-section are rerun including control variables such as government spending, real rate of interest, and regional patterns. These control variables are selected from the highly cited articles such as Milanovic (2005) and Dreher et al. (2008). It is assumed that once controlled for democracy, financial depth, government spending, real rate of interest and regional patterns, the effect of globalization on income inequality can safely be differentiated. The expected signs of these control variables on income inequality are provided in Table 1, Section 3. There are two main goals to carry out sensitivity analysis. The first one is to check whether the results in the baseline regressions are robust to additional control variables or not while the second one, which has been underlined throughout the baseline regressions, is to avoid the misspecification of the model. Besides, it is crucial to note that gross domestic product per capita, one of most commonly used control variables in this context, is not included in this study. It is because the two baseline control variables, index of democracy and financial depth, are expected to account for the effect of the gross domestic product per capita, as suggested by Milanovic (2005). First of all, only the government spending is included to the baseline model and the regression results are provided in the second and third columns of the tables. Later on, government spending and real rate of interest are added together to the baseline model for which the results are presented in the fourth and fifth columns. Besides, education level is also included into the matrix of instrument variables as an exogenous instrument and the regressions are run once again for which the results are noted down in the last two columns, sixth and seventh ones. The same procedure above is applied to the regressions with regional dummies with the only difference being the inclusion of these dummies. In all regression that are run in this part, the second, fourth and sixth columns represent the results when the overall globalization index is employed in order to measure globalization while the third, fifth and seventh columns report the results when instead of overall globalization index, economic globalization variable measures globalization.
4.2.1 Estimated Household Income Inequality

In this part of the study, the validity of estimated household income inequality as a measure of income inequality is considered once again by the inclusion of other control variables. The regression results with additional control variables which are not taken into account in the baseline model are provided in Table 5 while in Table 6, in addition to these control variables, the regional dummies are also added to the model specification and the same regressions are rerun.

According to the regression results that are provided in the second and third columns of Table 5, the constant term and the lagged inequality measure are both significant at 1% significance level. As can be noticed from the second column, overall globalization is significantly related to inequality with a positive sign at 5% significance level. In the same column, the only difference from the baseline model is the inclusion of government spending to the model. Therefore, it is safe to state that, in the absence of government spending in the model, overall globalization accounts for the negative effect of this new variable on income inequality as well. Once accounted for the expenditures of government, the effect of globalization on income inequality can be differentiated. This differentiation can be realized from the fact that overall globalization, which is found to have an insignificant relationship with income inequality in the baseline regressions, turns out to have a positive and significant relationship with income inequality. In the same line with the population-weighted baseline regression results, in contrast to what is believed generally, the level of democracy is found to be harmful to the society in terms of inequality reduction. Similar to the overall globalization variable, though with slightly less significance, economic globalization is also found to be positively related to income inequality as can be seen from the third column of Table 5. As it is obvious in the third column of Table 5, the same argument above is valid for the economic globalization as government spending again has a negative effect on income inequality while the level of democracy is effective in the acceleration of income inequality within the developing countries similar to the results of the baseline regressions. Interestingly, financial depth loses out its significance, which has existed in the baseline regressions, once accounted for government spending both in the second and third columns.
Table 5: Estimation results for Estimated Household Income Inequality excluding regional patterns

<table>
<thead>
<tr>
<th>Dependent Variables</th>
<th>Estimated Household Income Inequality</th>
<th>Estimated Household Income Inequality</th>
<th>Estimated Household Income Inequality</th>
<th>Estimated Household Income Inequality</th>
<th>Estimated Household Income Inequality</th>
<th>Estimated Household Income Inequality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>0.14222*** (0.001)</td>
<td>0.14538*** (0.001)</td>
<td>0.13574** (0.011)</td>
<td>0.13304** (0.017)</td>
<td>0.14334*** (0.005)</td>
<td>0.15247*** (0.001)</td>
</tr>
<tr>
<td>Estimated Household Income Inequality (lagged)</td>
<td>0.71645*** (0.000)</td>
<td>0.76381*** (0.000)</td>
<td>0.74827*** (0.000)</td>
<td>0.79795*** (0.000)</td>
<td>0.76155*** (0.000)</td>
<td>0.79754*** (0.000)</td>
</tr>
<tr>
<td>Globalization index</td>
<td>0.08731** (0.019)</td>
<td>-</td>
<td>0.08689** (0.028)</td>
<td>-</td>
<td>0.06989** (0.045)</td>
<td>-</td>
</tr>
<tr>
<td>Globalization index (economic)</td>
<td>- 0.04148* (0.085)</td>
<td>-</td>
<td>0.02763 (0.137)</td>
<td>-</td>
<td>0.00935 (0.208)</td>
<td></td>
</tr>
<tr>
<td>Democracy Index</td>
<td>0.00125** (0.048)</td>
<td>0.00125* (0.082)</td>
<td>0.00075 (0.241)</td>
<td>0.00069 (0.328)</td>
<td>0.00064 (0.356)</td>
<td>0.00033 (0.306)</td>
</tr>
<tr>
<td>Financial depth</td>
<td>-0.01428 (0.171)</td>
<td>-0.00857 (0.207)</td>
<td>-0.02245* (0.079)</td>
<td>-0.01171* (0.068)</td>
<td>-0.02658* (0.089)</td>
<td>-0.02037* (0.074)</td>
</tr>
<tr>
<td>Government spending</td>
<td>-0.33837* (0.070)</td>
<td>-0.35021** (0.035)</td>
<td>-0.32268* (0.082)</td>
<td>-0.25180* (0.061)</td>
<td>-0.32542* (0.053)</td>
<td>-0.31154* (0.076)</td>
</tr>
<tr>
<td>Real rate of interest</td>
<td>-</td>
<td>-</td>
<td>-0.01957 (0.285)</td>
<td>-0.01176 (0.215)</td>
<td>-0.01648* (0.082)</td>
<td>-0.01615 (0.224)</td>
</tr>
<tr>
<td>Number of observations</td>
<td>399</td>
<td>401</td>
<td>289</td>
<td>291</td>
<td>262</td>
<td>264</td>
</tr>
<tr>
<td>Number of instruments</td>
<td>67</td>
<td>67</td>
<td>59</td>
<td>59</td>
<td>59</td>
<td>59</td>
</tr>
<tr>
<td>Number of groups</td>
<td>66</td>
<td>66</td>
<td>68</td>
<td>68</td>
<td>68</td>
<td>68</td>
</tr>
<tr>
<td>F - Value</td>
<td>407.25 (0.000)</td>
<td>945.65 (0.000)</td>
<td>1794.11 (0.000)</td>
<td>2457.95 (0.000)</td>
<td>3858.89 (0.000)</td>
<td>5033.74 (0.000)</td>
</tr>
<tr>
<td>Sargan test of overid. restrictions:</td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.000)</td>
</tr>
<tr>
<td>Hansen test of overid. restrictions:</td>
<td>(0.529)</td>
<td>(0.452)</td>
<td>(0.704)</td>
<td>(0.909)</td>
<td>(0.714)</td>
<td>(0.942)</td>
</tr>
<tr>
<td>Difference-in-Hansen tests of exogeneity of instrument subsets: GMM-style</td>
<td>(0.826)</td>
<td>(0.523)</td>
<td>(0.771)</td>
<td>(0.992)</td>
<td>(0.730)</td>
<td>(0.995)</td>
</tr>
<tr>
<td>Difference-in-Hansen tests of exogeneity of instrument subsets: IV-style</td>
<td>(0.559)</td>
<td>(0.470)</td>
<td>(0.879)</td>
<td>(0.985)</td>
<td>(0.975)</td>
<td>(0.927)</td>
</tr>
<tr>
<td>Arellano-Bond test for AR(2) in first differences:</td>
<td>(0.473)</td>
<td>(0.444)</td>
<td>(0.461)</td>
<td>(0.479)</td>
<td>(0.648)</td>
<td>(0.668)</td>
</tr>
</tbody>
</table>

Note: Values in parentheses are p-values. ***,*** indicate 10%, 5% and 1% significance level, respectively. All standard errors are estimated to be robust. Two-step estimation process is also always followed in all analysis.
Note: Time dummies are not reported.
**: Education level is included to the matrix of instrumental variables in these regressions.
After the inclusion of government spending to the baseline model alone, real interest rate and government spending are added together for further analysis and the results of these regressions are reported on the fourth and fifth columns of Table 5. In one hand, the inclusion of real interest rate after government spending does not change the significance of overall globalization variable as it is denoted in the fourth column. On the other hand, economic part of globalization is no more significant in the regression as evident from the fifth column. The change in the significance of economic globalization can be attributed to the misspecification of the model in the previous regressions. In other words, once accounted for all variables that are effective in the determination of income inequality, economic globalization loses out its significance. In the light of this information, it is also possible to state that the significance of the economic globalization in the previous regressions is due to the fact that it, indeed, accounts for the effect of the omitted variables in the regression, as well. Therefore, the correct interpretation should be that the economic part of globalization is not significantly related to income inequality based on these results. In addition, financial depth, as expected by the theory, turns out to be useful in the alleviation of income inequality possibly through the credit channel while the level of democracy is not significant in the analysis, anymore.

As it has been argued that education level is also an important factor in the determination of income inequality, on the sixth and seventh columns of Table 6, it is added to the instrument matrix together with the government spending and real interest rate, which are included to the control variables. The reason why education level is used as an instrument variable instead of a new control variable is that its effect on inequality reduction is supposed to be indirect. Besides, it is also expected to uncover if the model is not specified correctly and improve the quality of the analysis through the use of better instruments. However, the model already seems to be well specified as the inclusion of education level among the instrument variables does not change the significance of either globalization or control variables. Moreover, in all regressions in this part of the study, Hansen J and AR(2) tests are not suggestive of a problem related to the specification of the model. Therefore, the interpretation of the results is assumed to be valid in the light of the regression results up until this point of the study.
In Table 6, the same regressions, for which the results are presented in Table 5, are shown with the only difference being the inclusion of regional dummies. Based on the results without regional dummies, it has been suggested that overall globalization is positively related to income inequality while the economic part of it does not have a significant relation with income inequality.

In accordance with the regression results that are provided in the second and third columns of Table 6, the constant term and the lagged inequality measure are again both significant at 1% significance level similar to the results in the next columns. As it is evident from the same two columns, the globalization variables, either overall or economic, still have significantly positive influence on the income inequality after the regional dummies are included to the model only with government spending. In this model specification, government spending is again negatively effective on the income inequality. While in the model with overall globalization variable the level of democracy is found to be positively related to income inequality as can be seen from the second column, financial depth is only beneficial for the alleviation of income inequality when the economic part of globalization is employed, which is shown in the third column. Interesting enough, the regional dummies for East Asia & Pacific and Latin America & Caribbean turn out to be helpful in the reduction of income inequality. Though the two regional variables are expected to be significant in this relationship, the negative sign for Latin American dummy is surprising. As suggested by the previous studies, Latin America is expected to have a positive effect on income inequality while East Asia is known for its characteristics that are helpful in the reduction of inequality. This finding is crucial to note down; but, needs careful analysis and therefore, is just mentioned in this study without too much reliance on.

Once accounted for all control variables and the regional dummies, the overall globalization index loses out its significance similar to results in the baseline regressions, as can be noticed from the fourth column. Nevertheless, economic part of globalization keeps its significance even after the complete model is employed, as presented in the fifth column. Inclusion of the real interest rate to the model turns the level of democracy and financial depth insignificant. More importantly, the regional dummies for East Asia & Pacific and Latin America & Caribbean are still significant with a negative effect on income inequality. The insignificance of overall globalization variable and the significance of economic globalization may again be attributed to
the misspecification of the model. Besides, it is also possible to suggest that regional characteristics are structural correlates of social and political part of overall globalization index and therefore, once accounted for regional variables, the overall globalization variable loses out its significance while economic part of it keeps on to be significant. One could plausibly claim that this argument may well apply to the model for which the results are presented in the second column. However, with the help of one by one introduction of the control variables, which is mainly done for the purpose of differentiating the effects of the right hand side variables on income inequality, this argument can be avoided. In other words, the reason why overall globalization variable is significantly related to the income inequality is due to the misspecification of the model for which the results are shown in the second column.

In the last two columns of Table 6, the sixth and seventh ones, education level is added to the instrument matrix together with the government spending, real interest rate and regional dummies, which are included to the control variables. This part of the study needs attention as the conclusion is based on these results. In the previous paragraph, it has been mentioned that while overall globalization variable is not related to the picture, there is a positive relationship between the economic globalization and income inequality. Once all of the control variables are accounted and the education level is used as another instrument variable, the economic part of globalization also loses out its significance. The insignificance of the democracy level and financial depth are also carried out in this model specification as well as the negative relationship of government spending with income inequality. Among the regional dummies, similar to the previous results, East Asian and Latin American dummies are found to be negatively related to income inequality. Similar to the results provided in Table 5, Hansen J test and AR (2) tests do not present any problem related to the methodology.
Table 6: Estimation results for Estimated Household Income Inequality including regional patterns

<table>
<thead>
<tr>
<th>Dependent Variables</th>
<th>Estimated Household Income Inequality</th>
<th>Estimated Household Income Inequality</th>
<th>Estimated Household Income Inequality</th>
<th>Estimated Household Income Inequality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>0.20241***</td>
<td>0.18789***</td>
<td>0.19247***</td>
<td>0.19730***</td>
</tr>
<tr>
<td></td>
<td>(0.000)</td>
<td>(0.001)</td>
<td>(0.002)</td>
<td>(0.000)</td>
</tr>
<tr>
<td>Estimated Household Income Inequality (lagged)</td>
<td>0.60640***</td>
<td>0.64374***</td>
<td>0.65378***</td>
<td>0.66077***</td>
</tr>
<tr>
<td></td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.000)</td>
</tr>
<tr>
<td><strong>Independent variable</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Globalization index</td>
<td>0.13830*</td>
<td>-</td>
<td>0.10555</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>(0.065)</td>
<td>(0.344)</td>
<td>(0.050)</td>
<td>(0.324)</td>
</tr>
<tr>
<td>Globalization index</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(economic)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.13111***</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.005)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Control Variables</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Democracy Index</td>
<td>0.00140*</td>
<td>0.00101</td>
<td>0.00074</td>
<td>0.00072</td>
</tr>
<tr>
<td></td>
<td>(0.066)</td>
<td>(0.279)</td>
<td>(0.528)</td>
<td>(0.447)</td>
</tr>
<tr>
<td>Financial depth</td>
<td>-0.02870</td>
<td>-0.03569*</td>
<td>-0.01661</td>
<td>-0.01806</td>
</tr>
<tr>
<td></td>
<td>(0.213)</td>
<td>(0.097)</td>
<td>(0.606)</td>
<td>(0.445)</td>
</tr>
<tr>
<td>Government spending</td>
<td>-0.41624***</td>
<td>-0.36523**</td>
<td>-0.38991**</td>
<td>-0.3915**</td>
</tr>
<tr>
<td></td>
<td>(0.019)</td>
<td>(0.027)</td>
<td>(0.025)</td>
<td>(0.004)</td>
</tr>
<tr>
<td>Real rate of interest</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>-0.01153</td>
<td>-0.0029</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(0.433)</td>
<td>(0.615)</td>
</tr>
<tr>
<td>East Asia &amp; Pacific</td>
<td>-0.03355***</td>
<td>-0.03148**</td>
<td>-0.03577**</td>
<td>-0.0352**</td>
</tr>
<tr>
<td></td>
<td>(0.008)</td>
<td>(0.026)</td>
<td>(0.022)</td>
<td>(0.003)</td>
</tr>
<tr>
<td>Latin America &amp; Caribbean</td>
<td>-0.03555**</td>
<td>-0.02830**</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.015)</td>
<td>(0.032)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Europe and Central Asia</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Middle East and North Africa</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>South Asia</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sub Saharan Africa</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of observations</td>
<td>399</td>
<td>401</td>
<td>289</td>
<td>291</td>
</tr>
<tr>
<td>Number of instruments</td>
<td>72</td>
<td>72</td>
<td>73</td>
<td>73</td>
</tr>
<tr>
<td>Number of groups</td>
<td>66</td>
<td>66</td>
<td>59</td>
<td>59</td>
</tr>
<tr>
<td>F - Value</td>
<td>710.87</td>
<td>593.52</td>
<td>2764.83</td>
<td>2164.49</td>
</tr>
<tr>
<td>Sargan test of overid. restrictions:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hansen test of overid. restrictions:</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>(Continued)</td>
<td></td>
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</tbody>
</table>
### Table 6: Estimation results for Estimated Household Income Inequality including regional patterns

<p>| | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Difference-in-Hansen tests of exogeneity of instrument subsets: GMM-style</td>
<td>(0.994)</td>
<td>(0.838)</td>
<td>(0.873)</td>
<td>(0.902)</td>
<td>(0.822)</td>
<td>(0.922)</td>
</tr>
<tr>
<td>Difference-in-Hansen tests of exogeneity of instrument subsets: IV-style</td>
<td>(0.971)</td>
<td>(0.952)</td>
<td>(0.912)</td>
<td>(0.948)</td>
<td>(0.982)</td>
<td>(0.977)</td>
</tr>
<tr>
<td>Arellano-Bond test for AR(2) in first differences:</td>
<td>(0.511)</td>
<td>(0.458)</td>
<td>(0.440)</td>
<td>(0.472)</td>
<td>(0.652)</td>
<td>(0.673)</td>
</tr>
</tbody>
</table>

Note: Values in parentheses are p-values. **,**,***,**** indicate 10%, 5% and 1% significance level, respectively. All standard errors are estimated to be robust. Two-step estimation process is also always followed in all analysis.

Note: Time dummies and insignificant regional dummies are not reported.

*: Education level is included to the matrix of instrumental variables in these regressions.

In the light of these information, it is possible to state that most of the results of the previous studies, which state a significant relationship between income inequality and globalization (overall or economic), are either driven by the misspecification of the model or by the lack of quality variables for the measurement of income inequality. Though the use of Gini coefficient as the measure of income inequality is not suggested in this study, the findings of the study corresponds to the results arrived by Dollar and Kraay (2002), who indeed use Gini coefficient. In order to see whether the results change by the use of different inequality measures, *industrial pay inequality* and *Gini coefficient* are employed as the measure of inequality in the next two sub-sections, respectively.
4.2.2 Industrial Pay Inequality

In this part of the study, instead of estimated household income inequality, industrial pay inequality is used as the measure of income inequality. The regression results with additional control variables, which are not taken into account in the baseline model, are provided in Table 7 while in Table 8, in addition to these control variables, the regional dummies are also considered in the model specification and the same regressions are rerun. As it has mentioned throughout the study, the main goal of this part is to check whether there are any differences from the results with estimated household income inequality or not. If any, then the possible reasons for the difference are discussed. As only the measure of inequality is changed in this part, the main focus is put on the relationship between globalization and income inequality while the significance of control variables is just denoted, briefly.

According to the regression results that are provided in the second and third columns of Table 7, the constant term and the lagged inequality measure are both significant at 1% significance level. As can be noticed from the second column, overall globalization is not significantly related to inequality. However, the insignificance of all control variables in the same column casts doubts over the quality of industrial pay inequality as a measure of inequality or again to the misspecification of the model. This point is important to note down as some of the studies in the literature have been carried out by using only the industrial pay inequality to measure income inequality. Also, it is possible to state that there is no significant relationship between any of the right hand side variables (either independent or control variables excluding the lagged inequality measure) and income inequality as it is measured by the dispersion of the earnings in the manufacturing sector. Moreover, one may suggest that the inequality measured in the manufacturing sector cannot be representative of overall income inequality within a country. Therefore, overall globalization index, which includes economic, social and political dimensions of globalization at the same time, can be argued to be defined too broad to be significantly related to manufacturing pay inequality. In order to understand the underlying reasons behind the insignificant results provided in the second column of Table 7, the use of economic globalization instead of overall globalization index may be quite beneficial. Surprisingly, yet informative as well, the economic globalization is found to be negatively related to income inequality as can be seen from the third column of Table 7. Though this finding cannot be given much of credit as the
measure seems to be problematic, the significance of the control variables is indicative of a better specification of the model than the one presented in the second column. In other words, instead of overall globalization variable, the use of economic part of it is more suitable when the industrial pay inequality is employed as the measure of inequality. This point is understandable since the industrial pay inequality is only representative of the income inequality in the manufacturing sector while Gini coefficient and estimated household income inequality do cover all of the sectors. Similar to the results with estimated household income inequality, financial depth and government spending are found to be helpful in the reduction of income inequality in the manufacturing sector. Just as in the previous sub-section, the level of democracy is not effective in the reduction of industrial pay inequality.

After the inclusion of government spending to the baseline model alone, real interest rate and government spending are added together for further analysis and the results of these regressions are reported on the fourth and fifth columns of Table 7. In one hand, the inclusion of real interest rate after government spending does not change the significance of overall globalization variable as it is denoted in the fourth column. On the other hand, economic part of globalization is no more significant in the regression as evident from the fifth column while the two control variables, financial depth and government spending do have a negative relationship with industrial pay inequality just as in the regressions when the estimated household income inequality is used. The change in the significance of economic globalization can be attributed to the misspecification of the model in the previous regressions, once again. In other words, once accounted for all variables that are effective in the determination of income inequality, economic globalization also loses out its significance. In the light of this information, it is also possible to state that the significance of the economic globalization in the third column of Table 7 is due to the fact that, indeed, it accounts for the effect of the omitted variables in the regression. The same argument has been used for the results with estimated household income inequality. Since the results with industrial pay inequality and estimated household income inequality move almost in the same direction, there is no need to put concerns over the interpretation of the results in this part. Nevertheless, it is also important not to forget that estimated household income inequality is a better quality measure than industrial pay inequality because of its better coverage of the dispersion in the earnings.
Table 7: Estimation results for Industrial Pay Inequality excluding regional patterns

<table>
<thead>
<tr>
<th>Dependent Variables</th>
<th>Industrial Pay Inequality (lagged)</th>
<th>Industrial Pay Inequality</th>
<th>Industrial Pay Inequality</th>
<th>Industrial Pay Inequality**</th>
<th>Industrial Pay Inequality***</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>0.02731* (0.070)</td>
<td>0.02670** (0.041)</td>
<td>0.02221* (0.095)</td>
<td>0.02222* (0.088)</td>
<td>0.01343 (0.476)</td>
</tr>
<tr>
<td>Globalization index</td>
<td>-0.01562 (0.191)</td>
<td>-0.00470 (0.889)</td>
<td>-0.00782 (0.649)</td>
<td>-0.00514** (0.043)</td>
<td>-0.00996* (0.081)</td>
</tr>
<tr>
<td>Globalization index (economic)</td>
<td>-0.02126* (0.076)</td>
<td>-0.02035 (0.181)</td>
<td>0.00004 (0.532)</td>
<td>0.00025 (0.557)</td>
<td>0.00008 (0.614)</td>
</tr>
<tr>
<td>Financial depth</td>
<td>-0.01041 (0.190)</td>
<td>-0.00895* (0.057)</td>
<td>-0.003966 (0.547)</td>
<td>-0.01027* (0.077)</td>
<td>-0.04728* (0.090)</td>
</tr>
<tr>
<td>Real rate of interest</td>
<td>-  (0.229)</td>
<td>-0.00270 (0.245)</td>
<td>-0.00334 (0.217)</td>
<td>-0.00066 (0.261)</td>
<td>-0.000062 (0.261)</td>
</tr>
<tr>
<td>Number of observations</td>
<td>396</td>
<td>398</td>
<td>283</td>
<td>285</td>
<td>258</td>
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<tr>
<td>Number of instruments</td>
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<td>67</td>
<td>67</td>
<td>67</td>
<td>67</td>
</tr>
<tr>
<td>Number of groups</td>
<td>68</td>
<td>68</td>
<td>61</td>
<td>61</td>
<td>61</td>
</tr>
<tr>
<td>Number of groups</td>
<td>68</td>
<td>68</td>
<td>61</td>
<td>61</td>
<td>61</td>
</tr>
<tr>
<td>F - Value</td>
<td>432.48</td>
<td>536.58</td>
<td>167.14</td>
<td>252.67</td>
<td>149.49</td>
</tr>
<tr>
<td>Sargan test of overid. restrictions:</td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.007)</td>
<td>(0.002)</td>
<td>(0.000)</td>
</tr>
<tr>
<td>Hansen test of overid. restrictions:</td>
<td>(0.387)</td>
<td>(0.555)</td>
<td>(0.696)</td>
<td>(0.662)</td>
<td>(0.727)</td>
</tr>
<tr>
<td>Difference-in-Hansen tests of exogeneity of instrument subsets: GMM-style</td>
<td>(0.295)</td>
<td>(0.588)</td>
<td>(0.706)</td>
<td>(0.676)</td>
<td>(0.675)</td>
</tr>
<tr>
<td>Difference-in-Hansen tests of exogeneity of instrument subsets: IV-style</td>
<td>(0.485)</td>
<td>(0.773)</td>
<td>(0.825)</td>
<td>(0.673)</td>
<td>(0.948)</td>
</tr>
<tr>
<td>Arellano-Bond test for AR(2) in first differences:</td>
<td>(0.201)</td>
<td>(0.204)</td>
<td>(0.201)</td>
<td>(0.180)</td>
<td>(0.405)</td>
</tr>
</tbody>
</table>

Note: Values in parentheses are p-values. *,**,*** indicate 10%, 5% and 1% significance level, respectively. All standard errors are estimated to be robust. Two-step estimation process is also always followed in all analysis.

Note: Time dummies are not reported.

***: Education level is included to the matrix of instrumental variables in these regressions.
On the sixth and seventh columns of Table 7, *education level* is added to the instrument matrix together with the government spending and real interest rate, which are included to the control variables. The inclusion of *education level* does not change any of the results as can be realized from the comparison of fifth and seventh columns, and fourth and sixth columns. Therefore, the results in this part of the section are thought to be robust, at least to some extent. Besides, in all regressions in this part of the study, Hansen J and AR(2) tests are not suggestive of a problem related to the methodology of the models. Up until this point, the model seems to be well specified and the interpretations are assumed to be valid to the least extent. Nevertheless, just as in the previous sub-section, regional dummies are needed to be added to the model to check whether the results change or not.

In Table 8, the regional dummies are also taken into consideration and the same regressions on Table 7 are rerun. The inclusion of regional variables does not change the results with overall globalization significantly as can be noticed from the second, fourth and sixth columns. In other words, excluding regional dummies, it has been found that composite index of globalization is not related to income inequality significantly and this result is replicated when the regional dummies are included to the model. Moreover, in the same three columns, the significance of government spending and financial depth also do not change, at all. Therefore, it is plausible to give credit to the findings of that part as the results are robust to the inclusion of additional dummies. However, on the other hand, economic globalization which has been found to have a positive relationship with income inequality, as shown in the third column of Table 7, is no more significant, the fact that is obvious in the third, fifth and seventh columns of Table 8. It has been argued that overall globalization may be too broadly defined to be significantly affected by the dispersion in the earnings in the manufacturing sector while economic globalization is a better measure to look for a causal relationship in between. Nevertheless, this argument cannot be given much of support as the results of this section indicate no relationship of industrial pay inequality with economic globalization as well as overall globalization. Less importantly but crucial enough to mention, government spending and financial depth are again found to be quite useful in the reduction of income inequality even in the manufacturing sector. Though the Hansen J and AR(2) tests do not report a problem related to methodology, they are yet not useful in controlling for the specification of the model. Thus, this finding is again crucial to note down as it may elaborate the lack of quality in industrial pay inequality as a measure of income
inequality. Even though industrial pay inequality is used in the literature as a safe measure of earnings inequality in some of the studies, when GMM/IV estimator with two-step estimation process, robust standard errors and small sample corrections is employed, the model itself turns out to be provide insignificant results regardless of the way that the control variables added to the model (either one by one or altogether).

All in all, though there is not much of reliance on the results that are presented in this section by using industrial pay inequality as a measure of income inequality, the consistency of the findings with the ones of estimated household income inequality provide support for the latter measure to be correctly representing the actual relationship of income inequality and globalization (either overall or economic). As the main goal of this part has been the comparison of the results obtained by using different inequality measures, the section is found useful to be kept in analysis. Even though the consistency of the results does not indicate that they are definitely unbiased, it shall be seen as a factor contributing to the validity of the overall results.
Table 8: Estimation results for Industrial Pay Inequality including regional patterns

<table>
<thead>
<tr>
<th>Dependent Variables</th>
<th>Industrial Pay Inequality</th>
<th>Industrial Pay Inequality</th>
<th>Industrial Pay Inequality</th>
<th>Industrial Pay Inequality&quot;</th>
<th>Industrial Pay Inequality&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>0.01929 (0.357)</td>
<td>0.02079 (0.256)</td>
<td>0.03698 (0.157)</td>
<td>0.03418 (0.101)</td>
<td>0.0067 (0.236)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Industrial Pay</td>
<td>0.78301*** (0.000)</td>
<td>0.80644*** (0.000)</td>
<td>0.78025*** (0.000)</td>
<td>0.81136*** (0.000)</td>
<td>0.74820*** (0.000)</td>
</tr>
<tr>
<td>Inequality (lagged)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control Variables</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Globalization index</td>
<td>0.01752 (0.204)</td>
<td>-</td>
<td>0.01651 (0.322)</td>
<td>-</td>
<td>0.04679 (0.191)</td>
</tr>
<tr>
<td>(economic)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Financial depth</td>
<td>-0.01751 (0.200)</td>
<td>-0.01121 (0.134)</td>
<td>-0.0021* (0.094)</td>
<td>0.00637* (0.081)</td>
<td>-0.01351* (0.091)</td>
</tr>
<tr>
<td>Government spending</td>
<td>-0.02432* (0.051)</td>
<td>-0.01766* (0.078)</td>
<td>-0.0955* (0.062)</td>
<td>-0.0754* (0.077)</td>
<td>-0.0265* (0.059)</td>
</tr>
<tr>
<td>Real rate of interest</td>
<td>-</td>
<td>0.00189 (0.905)</td>
<td>0.00205 (0.873)</td>
<td>0.00059 (0.941)</td>
<td>0.00356 (0.733)</td>
</tr>
<tr>
<td>East Asia &amp; Pacific</td>
<td>-</td>
<td>-</td>
<td>-0.00866* (0.080)</td>
<td>-</td>
<td>-0.00820* (0.082)</td>
</tr>
<tr>
<td>Latin America &amp;</td>
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<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Caribbean Asia</td>
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<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Europe and Central</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Asia</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Middle East and</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>North Africa</td>
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<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>South Asia</td>
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<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Sub Saharan Africa</td>
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<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Number of</td>
<td>396</td>
<td>398</td>
<td>283</td>
<td>285</td>
<td>258</td>
</tr>
<tr>
<td>observations</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of</td>
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<td>72</td>
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<td>instruments</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of groups</td>
<td>68</td>
<td>68</td>
<td>61</td>
<td>61</td>
<td>61</td>
</tr>
<tr>
<td>F - Value</td>
<td>1077.24</td>
<td>949.45</td>
<td>800.10</td>
<td>809.34</td>
<td>886.14</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>525.70</td>
</tr>
<tr>
<td>Sargan test of</td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.023)</td>
<td>(0.025)</td>
<td>(0.008)</td>
</tr>
<tr>
<td>overid. restrictions:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hansen test of</td>
<td>(0.606)</td>
<td>(0.652)</td>
<td>(0.811)</td>
<td>(0.692)</td>
<td>(0.908)</td>
</tr>
<tr>
<td>overid. restrictions:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(0.683)</td>
</tr>
</tbody>
</table>

(Continued)
Table 8: Estimation results for Industrial Pay Inequality including regional patterns

| Difference-in-Hansen tests of exogeneity of instrument subsets: GMM-style | (0.514) | (0.720) | (0.813) | (0.665) | (0.768) | (0.630) |
| Difference-in-Hansen tests of exogeneity of instrument subsets: IV-style | (0.861) | (0.926) | (0.875) | (0.911) | (0.818) | (0.737) |
| Arellano-Bond test for AR(2) in first differences: | (0.182) | (0.193) | (0.183) | (0.175) | (0.397) | (0.381) |

Note: Values in parentheses are p-values. ***,*** indicate 10%, 5% and 1% significance level, respectively. All standard errors are estimated to be robust. Two-step estimation process is also always followed in all analysis. Note: Time dummies and insignificant regional dummies are not reported. ”: Education level is included to the matrix of instrumental variables in these regressions.

4.2.3 Gini Coefficient

The inequality is also measured by Gini coefficient as it has been done by several researchers in the literature. However, there is also a growing literature against the use of this variable as it may misguide the researchers due to the lack of quality data that allows for successful comparison of countries. This argument is put forward in many parts of the study. Nevertheless, the credibility of that variable is still checked by adding control variables to the models that has been used in the baseline regressions. The regression results with additional control variables, which are not taken into account in the baseline model, are provided in Table 9 while in Table 10, in addition to these control variables, the regional dummies are also considered in the model specification and the same regressions are rerun. As in the previous sub-section in which the results with industrial pay inequality are provided, the main purpose of this part is to check whether there are any differences from the results with estimated household income inequality or not. If any, then the possible reasons for the difference are discussed. As only the measure of inequality is changed in this part, the main focus is again put on the relationship between globalization and income inequality while the significance of control variables is denoted, briefly. Besides, it is always kept in mind that the results with Gini coefficient may be misleading.

In accordance with the regression results provided in the second column of Table 9, overall globalization is not significantly related to inequality. However, the insignificance of all control
variables in the same column questions the quality of Gini coefficient as a measure of inequality or the misspecification of the model. Nevertheless, as evident from the third column, economic part of globalization has a positive effect on income inequality. Thus, it is most probably the use of composite globalization index instead of economic globalization that led to the insignificance of the results in the second column. Besides, the studies in the literature especially focus on the relationship between economic part of globalization and income inequality. Based on this relationship, the authors generally reach the conclusion that there is a significant relationship between globalization and income inequality as in this study. While the government spending is found to be ineffective in this relationship as clear from the second and third columns, financial depth again has an important role in the alleviation of income inequality when the economic part of globalization is employed as the measure of globalization.

Interesting enough, the overall globalization index is found to be positively related to income inequality as can be seen from the fourth column of Table 9 once the real interest rate added to the model. However, none of the control variables, including the lately introduced real interest rate, is significant in this model specification. This point is quite awkward as there is no explanation possible for the insignificance of all other control variables which are supposed to be directly related to income inequality. Again, the quality of Gini coefficient as a measure of inequality in income is questionable in such a case. One could plausibly argue that there is a huge literature written by using Gini coefficient as a measure of income inequality; but, it is also possible to show several studies which question the quality of that variable. Besides, the inclusion of real interest rate do not change the significance of economic part of globalization index as evident from the comparison of third and fifth columns of Table 9. However, that is not useful in the explanation of the insignificance of all other control variables.
Table 9: Estimation results for Gini Coefficient excluding regional patterns

<table>
<thead>
<tr>
<th></th>
<th>Dependent Variables</th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Gini Coefficient</td>
<td>Gini Coefficient</td>
<td>Gini Coefficient</td>
<td>Gini Coefficient</td>
<td>Gini Coefficient***</td>
<td>Gini Coefficient***</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>0.0461</td>
<td>0.01524</td>
<td>0.01035</td>
<td>0.07465</td>
<td>0.0029</td>
<td>0.01632</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.748)</td>
<td>(0.563)</td>
<td>(0.717)</td>
<td>(0.109)</td>
<td>(0.282)</td>
<td>(0.465)</td>
<td></td>
</tr>
<tr>
<td>Gini Coefficient</td>
<td>0.79847***</td>
<td>0.85242***</td>
<td>0.73716***</td>
<td>0.74378***</td>
<td>0.73380***</td>
<td>0.76802***</td>
<td></td>
</tr>
<tr>
<td>(lagged)</td>
<td>(0.004)</td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.000)</td>
<td></td>
</tr>
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<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Independent variable</td>
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<td></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Globalization index</td>
<td>0.22997</td>
<td>-</td>
<td>0.19302*</td>
<td>-</td>
<td>0.22532*</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.528)</td>
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<td>(0.058)</td>
<td></td>
<td>(0.059)</td>
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<td></td>
</tr>
<tr>
<td>Globalization index</td>
<td>-</td>
<td>0.1128***</td>
<td>-</td>
<td>0.08814**</td>
<td>-</td>
<td>0.09732**</td>
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<tr>
<td>(economic)</td>
<td></td>
<td>(0.005)</td>
<td></td>
<td>(0.046)</td>
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<td>(0.047)</td>
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<td>Control Variables</td>
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<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Democracy Index</td>
<td>0.00005</td>
<td>0.00096</td>
<td>0.00062</td>
<td>0.00082</td>
<td>0.00047</td>
<td>0.00117</td>
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</tr>
<tr>
<td></td>
<td>(0.193)</td>
<td>(0.121)</td>
<td>(0.340)</td>
<td>(0.388)</td>
<td>(0.405)</td>
<td>(0.149)</td>
<td></td>
</tr>
<tr>
<td>Financial depth</td>
<td>-0.0111</td>
<td>-0.02324**</td>
<td>-0.01950</td>
<td>-0.03381***</td>
<td>-0.01193</td>
<td>-0.02538**</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.235)</td>
<td>(0.037)</td>
<td>(0.205)</td>
<td>(0.016)</td>
<td>(0.278)</td>
<td>(0.021)</td>
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</tr>
<tr>
<td>Government spending</td>
<td>-0.08009</td>
<td>-0.02561</td>
<td>-0.04606</td>
<td>-0.31412</td>
<td>-0.00877</td>
<td>-0.06330</td>
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</tr>
<tr>
<td></td>
<td>(0.392)</td>
<td>(0.386)</td>
<td>(0.236)</td>
<td>(0.154)</td>
<td>(0.346)</td>
<td>(0.136)</td>
<td></td>
</tr>
<tr>
<td>Real rate of interest</td>
<td>-</td>
<td>-</td>
<td>0.03679</td>
<td>0.04918</td>
<td>0.01916</td>
<td>0.02750</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(0.267)</td>
<td>(0.354)</td>
<td>(0.529)</td>
<td>(0.403)</td>
<td></td>
</tr>
<tr>
<td></td>
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</tr>
<tr>
<td>Number of observations</td>
<td>284</td>
<td>281</td>
<td>241</td>
<td>239</td>
<td>218</td>
<td>216</td>
<td></td>
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<tr>
<td>Number of instruments</td>
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<td>78</td>
<td>65</td>
<td>51</td>
<td>66</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>Number of groups</td>
<td>70</td>
<td>67</td>
<td>62</td>
<td>60</td>
<td>62</td>
<td>66</td>
<td></td>
</tr>
<tr>
<td>F - Value</td>
<td>531.29</td>
<td>437.29</td>
<td>826.42</td>
<td>1752.70</td>
<td>1068.84</td>
<td>847.34</td>
<td></td>
</tr>
<tr>
<td>Sargan test of overid.</td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.002)</td>
<td>(0.000)</td>
<td>(0.000)</td>
<td></td>
</tr>
<tr>
<td>restrictions:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hansen test of overid.</td>
<td>(0.644)</td>
<td>(0.930)</td>
<td>(0.807)</td>
<td>(0.374)</td>
<td>(0.806)</td>
<td>(0.736)</td>
<td></td>
</tr>
<tr>
<td>restrictions:</td>
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<td></td>
</tr>
<tr>
<td>Difference-in-Hansen</td>
<td>(0.423)</td>
<td>(0.447)</td>
<td>(0.667)</td>
<td>(0.563)</td>
<td>(0.805)</td>
<td>(0.761)</td>
<td></td>
</tr>
<tr>
<td>tests of exogeneity of</td>
<td>instrument subsets:</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GMM-style</td>
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<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Difference-in-Hansen</td>
<td>(0.652)</td>
<td>(0.902)</td>
<td>(0.927)</td>
<td>(0.473)</td>
<td>(0.742)</td>
<td>(0.513)</td>
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<tr>
<td>tests of exogeneity of</td>
<td>instrument subsets:</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>IV-style</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arellano-Bond test for</td>
<td>(0.751)</td>
<td>(0.834)</td>
<td>(0.642)</td>
<td>(0.747)</td>
<td>(0.981)</td>
<td>(0.822)</td>
<td></td>
</tr>
<tr>
<td>AR(2) in first</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<td>differences:</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Note: Values in parentheses are p-values. *,**,*** indicate 10%, 5% and 1% significance level, respectively. All standard errors are estimated to be robust. Two-step estimation process is also always followed in all analysis.

Note: Time dummies are not reported.

*: Education level is included to the matrix of instrumental variables in these regressions.
On the sixth and seventh columns of Table 9, *education level* is added to the instrument matrix together with the government spending and real interest rate, which are included to the control variables. The inclusion of *education level* does not change any of the results as can be realized from the comparison of the fourth & sixth, and the fifth & seventh columns. Similar to the previous regressions, Hansen J and AR(2) tests are not suggestive of a problem related to the methodology of the model. For the last part of the sensitivity analysis, the regional dummies should be added to the model, as well. The inclusion of regional dummies is expected to give further information over whether the misspecification of the model or the lack of quality of Gini coefficient as a measure of income inequality leads to the insignificance of the control variables in Table 9.

In Table 10, the regional dummies are also taken into consideration and the same regressions on Table 9 are rerun. The inclusion of regional variables brings about significant changes in the results. As it is obvious from the second, fourth and sixth columns of Table 10, once accounted for regional variables, overall globalization index becomes significant in all regressions. However, only in the regression when the education level is included to the instrument matrix, the control variables together with East Asian dummy show some significance. As surprising as it is, this finding calls for serious check of Gini coefficient as a measure of income inequality. It is also possible to claim that the insignificance of the control variables is due to the fact that the previous regressions on Table 10 are not well specified. As the regression for which the results are supplied in the sixth column already accounts for the variables in the second and fourth columns, the latter two columns may be ignored. Focusing on the results provided in the sixth column, overall globalization occurs to have a positive relationship with income inequality. Nevertheless, once can still plausibly argue that the insignificance of all control variables in the second and fourth columns indicate serious problems related to the quality of Gini coefficient as the measure of inequality. This point is already taken into account in this study as three different inequality measures are employed. As suggested by some of the authors in the literature such as Wade (2004) and Rodriguez and Rodrik (2000), the use of Gini coefficient in the analysis is quite problematic at least when the overall globalization index is employed for measuring the globalization.
Before commenting on the significant relationship between income inequality and overall globalization, it is vital to take a look at the trend of economic globalization itself. The third, fifth and seventh columns of Table 10 carry information over this relationship. Surprisingly, economic part of globalization, which has been related to income inequality positively in the models excluding regional dummies, turns out insignificant as well as the control variables once accounted for all control variables as evident from the seventh column. Though the same globalization variable is significant before the inclusion of real interest rate and education level in the third column of Table 10, later on it loses out its significance. However, interestingly, opposite to the model with overall globalization index for which the results are provided in the sixth column of Table 10, none of control variables, except financial depth, is significant as evident from the last column of the same table. This point is quite supportive of the idea that the lack of quality of Gini measure leads to the insignificant results. That is because of the important difference in the two regression results that are presented on the sixth and seventh columns of Table 7. Unfortunately, there is not a possible explanation for the awkwardness of the results in this part of the study. However, they are yet informative of the problems that are attached to the Gini measure. For this specific reason, the analysis is kept inside the analysis though no interpretation is put forward either for the positive relationship of overall globalization with income inequality or for the insignificance of the relationship between economic globalization and income inequality when the Gini coefficient is employed as the measure of income inequality.
Table 10: Estimation results for Gini Coefficient including regional patterns

<table>
<thead>
<tr>
<th>Dependent Variables</th>
<th>Gini Coefficient</th>
<th>Gini Coefficient</th>
<th>Gini Coefficient</th>
<th>Gini Coefficient</th>
<th>Gini Coefficient''</th>
<th>Gini Coefficient''</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>0.09242</td>
<td>0.14081**</td>
<td>0.15473*</td>
<td>0.13556**</td>
<td>0.12913***</td>
<td>0.18958**</td>
</tr>
<tr>
<td></td>
<td>(0.307)</td>
<td>(0.017)</td>
<td>(0.060)</td>
<td>(0.026)</td>
<td>(0.004)</td>
<td>(0.065)</td>
</tr>
<tr>
<td>Gini Coefficient (lagged)</td>
<td>0.5554**</td>
<td>0.65793***</td>
<td>0.53721***</td>
<td>0.54700***</td>
<td>0.48349***</td>
<td>0.54466**</td>
</tr>
<tr>
<td></td>
<td>(0.011)</td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.000)</td>
</tr>
<tr>
<td>Independent variable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Globalization index</td>
<td>0.23791*</td>
<td>-</td>
<td>0.15711**</td>
<td>-</td>
<td>0.22813**</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>(0.096)</td>
<td></td>
<td>(0.026)</td>
<td></td>
<td>(0.042)</td>
<td></td>
</tr>
<tr>
<td>Globalization index (economic)</td>
<td>-</td>
<td>0.00943***</td>
<td>-</td>
<td>0.11092</td>
<td>-</td>
<td>0.0157</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.622)</td>
<td>(0.169)</td>
<td></td>
<td></td>
<td>(0.201)</td>
</tr>
<tr>
<td>Control Variables</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Democracy Index</td>
<td>0.00152</td>
<td>0.00242**</td>
<td>0.00018</td>
<td>-0.00026</td>
<td>-0.00223**</td>
<td>0.00296</td>
</tr>
<tr>
<td></td>
<td>(0.500)</td>
<td>(0.042)</td>
<td>(0.298)</td>
<td>(0.437)</td>
<td>(0.015)</td>
<td>(0.193)</td>
</tr>
<tr>
<td>Financial depth</td>
<td>-0.02945</td>
<td>-0.05906***</td>
<td>-0.00326</td>
<td>-0.00772</td>
<td>-0.04294**</td>
<td>-0.07085*</td>
</tr>
<tr>
<td></td>
<td>(0.405)</td>
<td>(0.003)</td>
<td>(0.407)</td>
<td>(0.193)</td>
<td>(0.012)</td>
<td>(0.058)</td>
</tr>
<tr>
<td>Government spending</td>
<td>-0.23939</td>
<td>-0.30866**</td>
<td>-0.05367</td>
<td>0.09419</td>
<td>-0.23173**</td>
<td>-0.30087</td>
</tr>
<tr>
<td></td>
<td>(0.625)</td>
<td>(0.046)</td>
<td>(0.174)</td>
<td>(0.303)</td>
<td>(0.049)</td>
<td>(0.332)</td>
</tr>
<tr>
<td>Real rate of interest</td>
<td>-</td>
<td>-</td>
<td>0.0621</td>
<td>0.00734</td>
<td>0.05330</td>
<td>0.05881</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(0.283)</td>
<td>(0.514)</td>
<td>(0.118)</td>
<td>(0.447)</td>
</tr>
<tr>
<td>East Asia &amp; Pacific</td>
<td>-</td>
<td>-0.03260**</td>
<td>-</td>
<td>-</td>
<td>-0.0742***</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.013)</td>
<td></td>
<td></td>
<td>(0.001)</td>
<td></td>
</tr>
<tr>
<td>Latin America &amp; Caribbean</td>
<td>-</td>
<td>0.03973**</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.036)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Europe and Central Asia</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Middle East and North Africa</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>South Asia</td>
<td>-</td>
<td>-0.05336**</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.024)</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Sub Saharan Africa</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<td>281</td>
<td>246</td>
<td>244</td>
<td>218</td>
<td>216</td>
</tr>
<tr>
<td>Number of instruments</td>
<td>83</td>
<td>78</td>
<td>72</td>
<td>72</td>
<td>71</td>
<td>71</td>
</tr>
<tr>
<td>Number of groups</td>
<td>70</td>
<td>67</td>
<td>63</td>
<td>61</td>
<td>62</td>
<td>60</td>
</tr>
<tr>
<td>F - Value</td>
<td>396.35</td>
<td>437.29</td>
<td>781.56</td>
<td>980.13</td>
<td>755.17</td>
<td>3442.69</td>
</tr>
<tr>
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<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.000)</td>
</tr>
<tr>
<td>Hansen test of overid. restrictions:</td>
<td>(0.879)</td>
<td>(0.839)</td>
<td>(0.789)</td>
<td>(0.646)</td>
<td>(0.735)</td>
<td>(0.540)</td>
</tr>
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</table>

(Continued)
### Table 10: Estimation results for Gini Coefficient including regional patterns

<table>
<thead>
<tr>
<th>Test Description</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Difference-in-Hansen tests of exogeneity of instrument subsets: GMM-style</td>
<td>(0.829)</td>
</tr>
<tr>
<td></td>
<td>(0.668)</td>
</tr>
<tr>
<td></td>
<td>(0.495)</td>
</tr>
<tr>
<td></td>
<td>(0.567)</td>
</tr>
<tr>
<td></td>
<td>(0.651)</td>
</tr>
<tr>
<td></td>
<td>(0.543)</td>
</tr>
<tr>
<td>Difference-in-Hansen tests of exogeneity of instrument subsets: IV-style</td>
<td>(0.589)</td>
</tr>
<tr>
<td></td>
<td>(0.855)</td>
</tr>
<tr>
<td></td>
<td>(0.773)</td>
</tr>
<tr>
<td></td>
<td>(0.843)</td>
</tr>
<tr>
<td></td>
<td>(0.703)</td>
</tr>
<tr>
<td></td>
<td>(0.584)</td>
</tr>
<tr>
<td>Arellano-Bond test for AR(2) in first differences:</td>
<td>(0.909)</td>
</tr>
<tr>
<td></td>
<td>(0.727)</td>
</tr>
<tr>
<td></td>
<td>(0.107)</td>
</tr>
<tr>
<td></td>
<td>(0.110)</td>
</tr>
<tr>
<td></td>
<td>(0.735)</td>
</tr>
<tr>
<td></td>
<td>(0.848)</td>
</tr>
</tbody>
</table>

Note: Values in parentheses are p-values. *, **, *** indicate 10%, 5% and 1% significance level, respectively. All standard errors are estimated to be robust. Two-step estimation process is also always followed in all analysis. Note: Time dummies and insignificant regional dummies are not reported. "": Education level is included to the matrix of instrumental variables in these regressions.

Though the Hansen J and AR(2) tests do not report a problem related to methodology once again, awkward results of the regressions can easily be realized once again by the comparison of the sixth and seventh columns of Table 9 and Table 10. While on the sixth column of Table 9 all of the control variables are insignificant, they become significant after the inclusion of regional dummies while the significance of overall globalization variable do not change. It is again plausible to state that exclusion of regional dummies causes the misspecification of the model. However, the difference is quite big in between the two regression results and it may be indicative of the lack of quality of Gini coefficient as suggested throughout the study. Nevertheless, it may also be the case that the control variables are related to each other and therefore, the change in significance of their coefficients may occur once the whole model is employed and the omitted variable problem is solved. Basically, similar to the use of industrial pay inequality as a measure of inequality, the use of Gini coefficient is also for the purpose of indicating the problems related to the quality of inequality measures. In order to analyze this problem, a careful and detailed approach has to be taken in another study.
5. Interpretation of the Results, Policy Implications and Conclusion

In this section, the results of the regressions which are denoted in Section 4 are interpreted. As the number of regressions is quite high, it is more beneficial to provide an overview of these results, which is done in Table 11. In this table, one may find all the valid relationships once accounted for all control variables. While the second, fourth and sixth columns indicate the results when overall globalization index is employed, third, fifth and seventh ones show the results with economic part of globalization. After the interpretation of the study findings, the policy implications are discussed in the next sub-section. In the last part of this section, the study concludes based on these findings.

5.1 Interpretation

To begin with, in this part of the section, the estimation results are interpreted. In Table 11, the overall results are provided for each inequality measure with their indicated signs in the relationship, if any. The first column represents the independent and control variables whereas the columns from second to seventh carry information over the significance and the signs of the relationships in between the three different measures of inequality and the explanatory variables including dummy variables. While in the second, fourth and sixth columns the results of the sensitivity analysis are given when the overall globalization index is used as the measure of globalization, the results from the regressions in which globalization is measured by the economic part of the same index are depicted in the third, fifth and seventh ones. Based on the results in Table 11, the disagreements over the effect of globalization on inequality are proven to come true and natural. Using three different measures of inequality, economic globalization variable is found to be insignificant while the discrepancy is still evident when overall globalization index it is employed as the globalization measure.

To begin with, using estimated household inequality as the measure of inequality, for which the results are provided in the second and third columns of Table 11, overall globalization is found to have a positive weak relationship with inequality which disappears in the sensitivity analysis. The insignificance of the relationship between overall globalization and income inequality, which is denoted in the second column of Table 11, becomes evident after the inclusion of
regional dummies to the model. Based on this finding, it is plausible to suggest that the unobservable country characteristics which have been attributed to overall globalization is differentiated in the sensitivity analysis and thus, the coefficient of the variable turns out insignificant. Another possible reason for the insignificance of the relationship could be the use of composite index instead of a separate economic globalization index. To check for this, economic part of globalization is included to the analysis and the relationship is controlled once again for which the results are provided in the third column. However, the results do not change as the economic part of globalization is also insignificant, separately. The same argument applies to economic globalization as well. Though there is some evidence of a significant relationship in the baseline regressions, it is not sufficient to claim that globalization increases inequality since the results are not robust to inclusion of regional dummies as can be seen in the third column of Table 11. Therefore, the correct causal relationship is expected not to exist in between both globalization variables and income inequality. Turning to control variables, evidence supports that the level of democracy is insignificant or positively related to inequality as opposing to the theory. It has been suggested that democratic governments are in favor of egalitarianism; but, it turns out that this is not the case in developing countries, indeed. Nevertheless, in the final regressions, this relationship also fades out. Financial depth in developing countries is found to be insignificantly related to inequality though the variable has significance up until the sensitivity analysis. Even though the baseline results support an argument that is in the line with the claim that financial depth helps the poor through the credit channel contrary to the argument of Maurer and Haber (2003), this relationship also loses out significance in the sensitivity part. Government spending which is added up to the regressions in the sensitivity section seems to be a significant part of the decrease in inequality as expected by the theory while the real interest rate is mostly insignificant except one regression in which the real interest rate is found to have a weakly significant and negative coefficient. In accordance with this finding, governments are supposed to be quite effective in the reduction of income inequality in developing countries through the subsidy channel. Among the regions, East Asia & Pacific and Latin America & Caribbean have negative and significant coefficients indicating the importance of the regional patterns in this context. Though the significance of Latin American dummy disappears in some of the regressions, Asian one stays significant supporting the argument that Asian countries tend to have less inequality, characteristically. However, the
evidence is not strong enough to claim that Latin American countries tend to have higher inequality as expected by several researchers.

The overall globalization index again occurs to be insignificant in the relationship when industrial pay inequality is employed as the measure of inequality, as evident from the fourth and fifth columns of Table 11. Though economic globalization is found to be negatively related to inequality in some of the regressions, that is a very weak relationship and is lost when the regional dummies are included. Overall globalization index has strictly insignificant relationship with industrial pay inequality. As it has mentioned before, the dispersion in the manufacturing sector earnings may not well represent the income inequality within the nation and therefore, overall globalization index which is a relatively broad measure covering several aspects of globalization may naturally turn out to have an insignificant relation to this measure. As the results are consistent with findings of estimated household income inequality, there is not much of argument is put forward based on the findings of that part. Within this analysis, the level of democracy is found to be insignificant while government spending and financial depth show some significance consistent with expected signs despite the significance is weak. As in the previous analysis, real interest rate shows no significance and East Asia & Pacific dummy is found to be negatively related to pay inequality in the manufacturing sector.

Gini coefficient has been the third inequality measure applied in the analysis. As it has been mentioned earlier, there is no reliance on these results as well as the results with industrial pay inequality. The main goal is to show the difference between the results of the regressions with different inequality measures and emphasize why rather than Gini coefficient, estimated household income inequality should be used in this context. In other words, the results with Gini coefficient are also interpreted as well as other regression results though the results are expected to be biased due to the problems related to the measure itself. The sixth and seventh columns of Table 11 carry information over the results with Gini coefficient. In accordance with these results, overall globalization has a positive relationship with income inequality in all baseline and sensitivity regressions except one. On the other hand, though economic part of globalization also seems to have a positive relationship with inequality, this relation disappears just after including the regional dummies to the model. Therefore, economic globalization is also interpreted as
being insignificant in the inequality context. For this reason, the significance of the overall globalization variable may plausibly be attributed to the significant relationship of social and political globalization with income inequality. Though the trade flows and policies are found not to be effective in changing the income inequality, the variables such as data on personal contact, information flows and cultural proximity together with the number of embassies in country, the number of international treaties seem to increase inequality within developing countries. That is quite expected as the poor in developing countries are supposedly lagging behind the rich to take advantage of these improvements, mostly. Therefore, not only the economic improvements but also the social and political ones may quite be harmful to the poor in developing countries, in accordance with this finding. This point is crucial to note down as it opens up a new dimension to the discussion of the effects of globalization on income inequality. Broadly, it has been emphasized that the poor are unable to reap the benefits of the economic advancements through globalization. However, this finding is suggestive of the fact that they are, indeed, lagging behind in the social and political dimension more than the economic part of globalization. Among the control variables, the level of democracy has a positive sign though with a weak significance. Financial depth as in other models also shows a weak significance with a negative sign signaling to promote equality. Similarly, government spending is helpful in the reduction of inequality although the effect seems to be small, indeed. On the other hand, real interest rate is again insignificant in these models, as well. Amongst the regional variables, East Asia & Asia shows weak significance with a negative sign while Latin America & Caribbean dummy is presented to have a positive sign and weak significance. This finding is in line with the expected signs of these regions as it has been noted earlier.

Overall, the findings with Gini coefficient mostly overlap with the results of estimated household income inequality regressions except the significance of overall globalization variable. Supposedly, the researchers, that have reached the conclusion of a positive relationship between globalization and inequality, have been faced with this result. However, most of them have attributed this fact to the economic globalization though in this study, the main trouble faced by the poor is due to social and political globalization. Nevertheless, estimated household income inequality is a rather recent and higher quality measure of inequality as there are several doubts cast over the use of Gini coefficient. Thus, the weak significance of overall globalization variable
in the analysis with Gini coefficient should rather be approached with caution. Therefore, the most plausible interpretation should be that economic globalization is not related to income inequality as suggested by the findings with estimated household income inequality and industrial pay inequality, as well. On the other hand, even though there is no sole reliance can be put on, the social and political part of the globalization are found to have a positive relationship with income inequality.
Table 11: An overview of the estimation results using three different inequality measures

<table>
<thead>
<tr>
<th></th>
<th>Estimated household income inequality</th>
<th>Estimated household income inequality</th>
<th>Industrial pay inequality</th>
<th>Industrial pay inequality</th>
<th>Gini coefficient</th>
<th>Gini coefficient</th>
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<tr>
<td>Globalization index (global)</td>
<td>(insign.)</td>
<td>-</td>
<td>(insign.)</td>
<td>-</td>
<td>(+)</td>
<td>-</td>
</tr>
<tr>
<td>Globalization index (economic)</td>
<td>-</td>
<td>(insign.)</td>
<td>-</td>
<td>(insign.)</td>
<td>-</td>
<td>(insign.)</td>
</tr>
<tr>
<td>Democracy index</td>
<td>(insign)</td>
<td>(insign)</td>
<td>(insign.)</td>
<td>(insign.)</td>
<td>(+)</td>
<td>(insign.)</td>
</tr>
<tr>
<td>Financial depth</td>
<td>(insign)</td>
<td>(insign)</td>
<td>( - )</td>
<td>( - )</td>
<td>( - )</td>
<td>( - )</td>
</tr>
<tr>
<td>Real rate of interest</td>
<td>(insign.)</td>
<td>(insign.)</td>
<td>(insign.)</td>
<td>(insign.)</td>
<td>(insign.)</td>
<td>(insign.)</td>
</tr>
<tr>
<td>East Asia &amp; Pacific</td>
<td>( - )</td>
<td>( - )</td>
<td>(insign.)</td>
<td>(insign.)</td>
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<tr>
<td>Latin America &amp; Caribbean</td>
<td>(insign.)</td>
<td>( - )</td>
<td>(insign.)</td>
<td>(insign.)</td>
<td>(insign.)</td>
<td>(insign.)</td>
</tr>
<tr>
<td>Europe &amp; Central Asia</td>
<td>(insign.)</td>
<td>(insign.)</td>
<td>(insign.)</td>
<td>(insign.)</td>
<td>(insign.)</td>
<td>(insign.)</td>
</tr>
<tr>
<td>Middle East &amp; North Africa</td>
<td>(insign.)</td>
<td>(insign.)</td>
<td>(insign.)</td>
<td>(insign.)</td>
<td>(insign.)</td>
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<td>(insign.)</td>
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<tr>
<td>Sub-Saharan Africa</td>
<td>(insign.)</td>
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<td>(insign.)</td>
<td>(insign.)</td>
<td>(insign.)</td>
<td>(insign.)</td>
</tr>
</tbody>
</table>

Note: In this table, only the models with all control variables including regional dummies are reported.

Note: While (insign.) denotes "no relationship" with inequality, (+) and (-) denote the "positively" and "negatively" significant relationship, respectively.

Note: "-" implies that the variable is not included in that analysis.
5.2 Policy Implications

As it has been underlined before, national policies play a significant role in both within-country and between-country inequality changes. According to Buchholz et al. (2009), globalization does not reduce; but, rather strengthens existing social inequality structures, which remains highly controlled by national institutional structures of social inequality. Besides, Fischer (2003) adds up that globalization should be carried out with good economic policies in order to be beneficial to the world as a whole and that places obligations on three main groups: the governments of the developed countries; those who determine the intellectual climate, which includes this audience but also government and non-government organizations and individuals; and the governments of the developing countries. At the broadest level, the policy consensus is expected to consist of four elements: policies to ensure macroeconomic stability; market-oriented microeconomic policies; integration into the global economy, particularly on the trade side; and a positive role for government in establishing, monitoring and developing the institutional framework of the economy, providing public goods including especially social expenditures, and conducting stabilization policies.

In 1990, John Williamson has put forward a list of policies which is called Washington consensus. As mentioned by Fischer (2003), the ten elements of the 1990 consensus were: fiscal discipline; public expenditure priorities in education and health; tax reform – the tax base should be broad and marginal tax rates should be moderate; positive but moderate market-determined interest rates; a competitive exchange rate as the “first essential element of an ‘outward oriented’ economic policy”; import liberalization; openness to foreign direct investment but “liberalization of foreign financial flows is not regarded as a high priority”; privatization (based on “the belief that private industry is managed to exist more efficiently than state enterprises”; deregulation; and protection of property rights. Though every country has different aspects and will be affected in a different way by these policies, they are still regarded as a critical part of desirable policy orientation. Overall, the elements of the consensus signal a fast transition movement towards globalization as it is defined in this context. On the contrary, Fischer (2003) proposes that capital controls should be removed gradually, at a time when the exchange rate is not under pressure and as the necessary infrastructure, a market-based monetary policy, an effective foreign exchange
market, and the information base for the markets to operate efficiently – is put in place. In the same line with Fischer's argument, this paper also concludes that liberalization should take place when the country is mature enough to open up its market to the world. In this way, the poor can take advantage of globalization and gain the most out of it.

Based on the findings with Gini coefficient, the overall globalization index is found to be a factor in the acceleration of income inequality among developing countries. Because the economic part of it is analyzed separately and found to have no impact on income inequality, the affect has been attributed to the social and political globalization. This is an important finding as the national organizations as well as international ones can easily avoid this harm caused to the society through correct policy orientation. Mainly, information flows can be regulated to be in support of the poor. That is, the governments in developing countries shall use public tools to increase transparency and allow the poor take advantage of the benefits provided by social and political globalization as well as the rich ones.

On the other hand, as economic globalization has been found not to be harmful to the society in terms of inequality, then considering the existence of indirect positive effects of globalization on growth which are not mentioned in this study, it may indeed be beneficial for the society. Though the analysis of the effects of globalization on growth needs another study with caution, it is not implausible to assume that globalization, to the least extent, brings about new opportunities of investment, jobs through foreign direct investment, which is a crucial part of economic globalization, and a bigger market in which players act in tougher competition. In several ways, competition is proven to be beneficial to the social welfare once a country is able to compete. The simplest example of this is the case of the unrealistic perfect competitive markets in which the consumers as a whole are the main gainers. Basically, the developing countries need to structure their economies to get mature enough to face competition brought by globalization and so on, be able to reap the benefits of globalization the most. Besides, the migration of labor, and temporary labor flows, are also important components of globalization. It is assumed that when the unskilled migrate, the convergence of income levels among countries take place. However, when the skilled migrates, this is called brain drain which is not desirable by developing countries for the sake of the development within the country. As the potentially high skilled
workers leave out the country, the workforce that is highly concentrated with low skilled workers leads to widening wage gaps between countries. Therefore, the policies towards controlling the composition of migration are also vital at national level in order to hold a hand over the movement of inequality.

Turning to control variables, where much of the literature argues that democracy is egalitarian, this study concludes that it is indeed not at least in developing countries. This evidence is also supported by Hsu (2008) as the author finds that democracy is not significantly reducing inequality by using the latest UTIP-UNIDO data set on economic inequality and an original, categorical data set on regimes. The main belief that democracy is in favor of equality is said to be a result of the data scales commonly in use. On the other hand, it is still possible that so-called democratic governments are corrupted and in the control of some lobbying power who are always the richest ones. In such a case, democratic governments also may come out with high income inequality. The policy orientation towards this problem should definitely include increased monitoring of government organizations as for democracy to take place effectively. In other words, mainly greater transparency about both data and the intentions of the government is the most important part while the adoption of international codes and standards with regard to the financial systems, fiscal and monetary policy transparency, accounting standards, and corporate governance are the other parts of a possible policy basket.

Financial depth should also be increased via efficient policy orientation as it enhances the ability of the poor to invest in human capital and reduce the existing income inequality. The findings of this study suggest that in most of the cases financial depth helps to decrease inequality as it is evident from the columns 4 to 7 in Table 11. Together with the help of non-governmental organizations, which are one of the important players of the financial market, the financial depth can be used effectively to reduce inequality; for instance, through the credit channel that allows the poor to take investment opportunities. Especially, the central banks are called out to work together with the government in this case as the level of broad money is mainly based on the central bank operations. Besides, government spending is also found to be an important tool for reducing inequality. Policy orientation towards freer health and education services as well as higher subsidies is expected to minimize the inequalities across countries.
Lastly, at the broadest level, Fischer (2003) states the need for improving the Washington consensus in four ways: first, a greater emphasis on social justice, to be implemented through health and education spending, social safety nets adapted to the economic structure of the country, and infrastructure spending; second, greater attention to developing the institutions of effective economic governance, including efficient judicial systems, civil service, the tax system, and other elements in the enabling environment for private sector activity; third, more attention to crisis proofing the economy, especially by strengthening the financial system, and macroeconomic policies; and fourth, labor market reform to allow a greater proportion of the workforce to enter the formal labor market. Under these conditions, together with the policy suggestions in above paragraphs, globalization is expected to benefit the poor as well as the rich as well as to the extent that everyone will be better off.

5.3 Conclusion

As it has been mentioned in earlier sections, the relationship between globalization and income inequality is quite complex and needs careful analysis. Besides the complexity of the relationship itself, the existence of econometric problems related to this context such as heteroskedasticity, endogeneity and autocorrelation makes it even more complex, reducing the effectiveness of the tools in hand. Nevertheless, using three different inequality measures, the relationship between globalization as it is defined in this study, and income inequality is analyzed as accurate as possible. The first measure of inequality, estimated household income inequality, has been thought to be the most reliable measure as the dataset has been the highest of quality among others. Based on the results of the regressions with estimated household income inequality, there is not a strong and significant relationship between overall globalization (and economic globalization) and income inequality. The second measure of inequality, which is indeed a part of estimated household income inequality, is the industrial pay inequality. The relationship stays insignificant in the regressions with industrial pay inequality similar to the case with estimated household income inequality. The last measure, which is Gini coefficient, is probably the most commonly used inequality measure in this context. However, the problems related to this measure prohibit the reliance on the results obtained by using that variable. In any case, the results indicate a weak but significant and positive relationship between overall globalization and
income inequality though the relationship is no more significant once economic globalization is separately used in the analysis. Most of the studies in the literature that underline the negative effects of globalization on equality have most probably reached the same conclusion, at higher significance without econometric adjustments, the situation which results in the misjudgment of the results by the researchers. However, in this study, rather than the economic part of globalization, social and political ones are found to have a negative impact on the reduction of inequality. This point has added up a new dimension to the discussion and further research is expected to reveal whether the finding is driven by the lack of quality of Gini coefficient as a measure of inequality or not.

Although it has been found out that the world is not becoming a better place for the poor in terms of inequality, it is not getting worse either if one ignores the results obtained by using Gini coefficient. On the other hand, based on the indirect positive effects of globalization on growth that are not mentioned in this study, it can be safely argued that the more the poor countries engage in globalization, the better off they will be as a nation. However, this is not unconditionally true as the other variables such as level of democracy, financial depth, and government spending are also at work in the relationship and should be considered. Nevertheless, none of the control variables is found to have significant and positive relationship with income inequality while financial depth and government spending occur to have crucial importance on the reduction of inequality. Moreover, the dark side of the governments is once again apparent in the analysis as the democratic governments turn out to have no significant effect on inequality. By its nature, democracy is supposed to help the reduction of inequality. Only in the case that the governments are corrupted, democracy may not indeed run effectively. In the light of this information, it is quite possible to suggest that rather than focusing on the effectiveness of policies (including liberalizing ones), much of attention has to be put on preventing the corruption that is no doubt evident especially in the governments of the poor countries.

All in all, with the right policy orientation and, a slow pace and existence of infrastructure, a country may benefit from globalization though not in the reduction of inequality; but, in the acceleration of growth. In other words, once it is proven that globalization is an important tool in boosting the growth, the inequality side of the discussion can safely be ignored, based on the
results of that study. Nevertheless, as most of the policy orientation and necessary infrastructure conditions are evidently not satisfied in most of the developing countries, the expected positive effects of globalization through growth may not take place. As a result, naturally, the developing countries are lagging behind as the developed ones continue to increase their living standards. It should be accepted that this is not their fate and international organizations as well as the governments of developed countries should act together overcoming this problem.
6. Limitations and Study Extensions

6.1 Limitations of Study

The most significant limitation is unfortunately the lack of quality data over inequality. This point is underlined by almost each and every researcher in the literature. However, as it is not possible to collect nation-wide income data individually, national representatives are the ones who should be taking care of this fact. However, except World Bank, there is almost no reliable source for inequality data. Frankly, World Bank data is also criticized and suggested to be biased somehow by several authors. Due to the lack of data and need for a long period dataset, income and consumption surveys are mixed with each other as done by Deininger and Squire (1996). For instance, Milanovic (2002) do not mix any macro data sets with each other in his efforts to measure the "true" evolution of household income inequality. However, as proposed by Galbraith and Kum (2005), this approach is limited by its own cost, complexity and by the limited availability of surveys. More in detail, Milanovic (2002) has only been able to provide results for three different years and this time period may not be sufficient enough to analyze a dynamic, slowly changing relationship such as the one in between globalization and income distribution. In one of their conclusions, Galbraith and Kum (2005) also mention this fact: "Income inequality measures do not, in real life, change over time with the high speed and amplitude found in the Deininger and Squire (1996) numbers, either within countries or cross-country averages." Based on this information, this study has made use of three different measures of inequality in order to deal with the problem of different data sources. However, it has not been possible to divide the income and consumption surveys due to the lack of data during the use of Gini coefficient as the measure of income inequality. Looking from one side of the medallion, the study is still limited due to this problem. However, from the other side, by checking for three different measures, this problem is also taken into account though not completely, but partially. Therefore, the first and the most important problem, which has to be taken care of in this context, is still the need for a common, reliable, comprehensive and quality dataset over inequality. In other words, that is a dataset, which will end up all measurement discussions and let researchers focus on the transmission mechanisms rather than methodological issues. If one of the international organizations could encourage the countries towards the collection of data over income shares in a single, standard, and commonly accepted way, this
problem would easily be overcome. As technology advances at a rapid pace and the ways of collecting data improve, it is quite possible to find the most appropriate way (income or consumption surveys) and more importantly, to produce a common network through which this information can be shared right after the collection. Via the help of this new network, researchers are expected to be able to use one, common, and reliable data set which carries reliable information over the income inequality.

Besides the low quality of data, there are also limitations related to the time period. Actually, it has been aimed to conduct research covering the period since the beginning of twentieth century until 2010, a period of 100 years which is quite enough to observe the changes in inequality. Nevertheless, due to the lack of availability of quality data, time period is also limited to the years between 1970 and 2008.

One last limitation is the lack of country coverage from the poorest countries as there are no available data for those countries. In this context, especially the poor are the main focus of the study. However, the government of these countries generally does not collect data regularly. Therefore, those poor countries, which indeed have been intended to be included in the study, are left out of the analysis.

**6.2 Possible Extensions**

In this study, most of the aspects of the relationship between globalization and income inequality are accounted for. However, as the researchers do not have a common opinion over this relationship, it is almost impossible to account for all of the problems mentioned in the literature. Therefore, in this section, the points that are not taken into consideration in this paper; but, indeed, are important and have to be dealt with over time are mentioned very briefly.

To begin with, though the importance of within-country income inequality in determining global income inequality is mentioned and the related studies are provided, this feature is not taken into account as in my opinion, the analysis needs to be done in another paper. However, it is still true that this study is limited to between-country component of inequality and within-country
inequality is not checked for. Therefore, I would suggest as it is done by Cornia (2003), to separate Thiel’s measure into two components which do include information over within-country inequality and between-country inequality at the same time. In this way, the study can be taken further and the reasons behind the overall trend of inequality may be analyzed more in detail with insights of the overall movement.

Secondly, this study has only looked at relative differences in income inequality between countries in relation to globalization. However, there is growing interest over the absolute differences as they could be increasing while relatively, the inequality is decreasing. Pointing out to this fact, Atkinson and Brandolini (2010) clarify that very rare studies have taken care of this phenomena though it is much more important than generally thought. The authors also suggest a social welfare calculation method in which way the absolute differences in inequality can be checked for. This approach is very recent and needs attention as it can be developed further. Moreover, the new measure, which is produced by Atkinson and Brandolini (2010), enables researchers to measure poverty and income distribution at the same time while the previous measures that are used to measure both of these macroeconomic aspects have been found to be insufficient and misleading as suggested by the authors.

Lastly, the income shares as suggested by Milanovic (2005) may be used in order to check for the movement of incomes among the income groups. This approach allows the researchers to analyze the changes in each income group of the population and therefore, provide further insights over the effects of globalization on income inequality. As an extension to this study, income shares may well also be included to the analysis and checked for an existing relationship more in detail, if any.
7. References


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World Bank (2011). World Development Indicators. Washington, D.C.

Appendix I – Transmission mechanisms

Figure 1: Mechanisms linking globalization to inequality.

Appendix II – Countries & Variables

1. List of Countries

<table>
<thead>
<tr>
<th>ID</th>
<th>Country</th>
<th>Region</th>
<th>Income level</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Albania</td>
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<tr>
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<td>Jamaica</td>
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</tr>
<tr>
<td>42</td>
<td>Jordan</td>
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</tr>
<tr>
<td>43</td>
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<tr>
<td>44</td>
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<tr>
<td>45</td>
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<tr>
<td>46</td>
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<td>47</td>
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<td>48</td>
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<td>49</td>
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<tr>
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</tr>
<tr>
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</tr>
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<tr>
<td>ID</td>
<td>Country</td>
<td>Region</td>
<td>Income level</td>
</tr>
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<td>------------------------</td>
<td>-------------------------</td>
<td>------------------------</td>
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<tr>
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<tr>
<td>85</td>
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<td>89</td>
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<tr>
<td>90</td>
<td>Yemen, Rep.</td>
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<td>Lower middle income</td>
</tr>
<tr>
<td>91</td>
<td>Zambia</td>
<td>Sub-Saharan Africa</td>
<td>Lower middle income</td>
</tr>
<tr>
<td>92</td>
<td>Zimbabwe</td>
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<td>Low income</td>
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## Definitions of Variables

<table>
<thead>
<tr>
<th>Variable Name</th>
<th>Description</th>
<th>Value Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>ID</td>
<td>Identification number of each country.</td>
<td>1 - 92</td>
</tr>
<tr>
<td>Year</td>
<td>3-year averaged time periods.</td>
<td>1970 - 2008</td>
</tr>
<tr>
<td>Gini coefficient</td>
<td>The ratio of share of total income earned by a certain part of population to the share of that part of population in total population.</td>
<td>0 - 1</td>
</tr>
<tr>
<td>Industrial pay inequality</td>
<td>The amount of inequality of personal earnings of an individual as measured by Theil's T statistic.</td>
<td>0 - 1</td>
</tr>
<tr>
<td>Estimated household income inequality</td>
<td>This inequality measure is derived from the econometric relationship between industrial pay inequality, other conditioning variables, and Gini coefficient.</td>
<td>0 - 1</td>
</tr>
<tr>
<td>Globalization Index</td>
<td>Index of globalization, including economic, social and political globalization</td>
<td>0 - 1</td>
</tr>
<tr>
<td>Globalization index (economic)</td>
<td>Index of globalization, including only economic globalization</td>
<td>0 - 1</td>
</tr>
<tr>
<td>Democracy index</td>
<td>Index of democracy, 0 = no democracy, 10 = perfect democracy</td>
<td>0 - 10</td>
</tr>
<tr>
<td>Financial depth</td>
<td>The ratio of broad money (M2) to gross domestic product (GDP).</td>
<td>0 - 1</td>
</tr>
<tr>
<td>Gross domestic product (per capita)</td>
<td>The annual average income of an individual living in a country.</td>
<td>-</td>
</tr>
<tr>
<td>Real rate of interest</td>
<td>The nominal interest rate that is deflated by the 12-month consumer price index.</td>
<td>-</td>
</tr>
<tr>
<td>Education level</td>
<td>The ratio of total enrollment in secondary school to the population of the age group that officially corresponds to secondary school.</td>
<td>-</td>
</tr>
<tr>
<td>Government spending</td>
<td>The share of government's expenditure to GDP of that country</td>
<td>-</td>
</tr>
<tr>
<td>Population</td>
<td>The amount of people officially registered to be residing in a country.</td>
<td>-</td>
</tr>
</tbody>
</table>

*(Continued)*
<table>
<thead>
<tr>
<th>Variable Name</th>
<th>Description</th>
<th>Value Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>East Asia &amp; Pacific</td>
<td>Regional dummy variable for East Asia and Pacific</td>
<td>0 - 1</td>
</tr>
<tr>
<td>Europe &amp; Central Asia</td>
<td>Regional dummy variable for Europe and Central Asia</td>
<td>0 - 1</td>
</tr>
<tr>
<td>Latin America &amp; Caribbean</td>
<td>Regional dummy variable for Latin America and Caribbean</td>
<td>0 - 1</td>
</tr>
<tr>
<td>Middle East &amp; North Africa</td>
<td>Regional dummy variable for Middle East and North Africa</td>
<td>0 - 1</td>
</tr>
<tr>
<td>North America</td>
<td>Regional dummy variable for North America</td>
<td>0 - 1</td>
</tr>
<tr>
<td>South Asia</td>
<td>Regional dummy variable for South Asia</td>
<td>0 - 1</td>
</tr>
<tr>
<td>Sub-Saharan Africa</td>
<td>Regional dummy variable for Sub-Saharan Africa</td>
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3. Components of the Index of Globalization\textsuperscript{38}

<table>
<thead>
<tr>
<th>Indices and Variables</th>
<th>Weights\textsuperscript{39}</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A. Economic Globalization</strong></td>
<td>[36%]</td>
</tr>
<tr>
<td>i) Actual Flows</td>
<td></td>
</tr>
<tr>
<td>Trade (percent of GDP)</td>
<td>(50%)</td>
</tr>
<tr>
<td>Foreign Direct Investment, stocks (percent of GDP)</td>
<td>(22%)</td>
</tr>
<tr>
<td>Portfolio Investment (percent of GDP)</td>
<td>(29%)</td>
</tr>
<tr>
<td>Income Payments to Foreign Nationals (percent of GDP)</td>
<td>(22%)</td>
</tr>
<tr>
<td>ii) Restrictions</td>
<td></td>
</tr>
<tr>
<td>Hidden Import Barriers</td>
<td>(50%)</td>
</tr>
<tr>
<td>Mean Tariff Rate</td>
<td>(22%)</td>
</tr>
<tr>
<td>Taxes on International Trade (percent of current revenue)</td>
<td>(28%)</td>
</tr>
<tr>
<td>Capital Account Restrictions</td>
<td>(27%)</td>
</tr>
<tr>
<td><strong>B. Social Globalization</strong></td>
<td>[38%]</td>
</tr>
<tr>
<td>i) Data on Personal Contact</td>
<td></td>
</tr>
<tr>
<td>Telephone Traffic</td>
<td>(33%)</td>
</tr>
<tr>
<td>Transfers (percent of GDP)</td>
<td>(26%)</td>
</tr>
<tr>
<td>International Tourism</td>
<td>(2%)</td>
</tr>
<tr>
<td>Foreign Population (percent of total population)</td>
<td>(26%)</td>
</tr>
<tr>
<td>International letters (per capita)</td>
<td>(20%)</td>
</tr>
<tr>
<td>ii) Data on Information Flows</td>
<td></td>
</tr>
<tr>
<td>Internet Users (per 1000 people)</td>
<td>(36%)</td>
</tr>
<tr>
<td>Television (per 1000 people)</td>
<td>(37%)</td>
</tr>
<tr>
<td>Trade in Newspapers (percent of GDP)</td>
<td>(28%)</td>
</tr>
<tr>
<td>iii) Data on Cultural Proximity</td>
<td></td>
</tr>
<tr>
<td>Number of McDonald's Restaurants (per capita)</td>
<td>(31%)</td>
</tr>
<tr>
<td>Number of Ikea (per capita)</td>
<td>(43%)</td>
</tr>
<tr>
<td>Trade in books (percent of GDP)</td>
<td>(44%)</td>
</tr>
<tr>
<td><strong>C. Political Globalization</strong></td>
<td>[26%]</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Embassies in Country</td>
<td>(25%)</td>
</tr>
<tr>
<td>Membership in International Organizations</td>
<td>(28%)</td>
</tr>
<tr>
<td>Participation in U.N. Security Council Missions</td>
<td>(22%)</td>
</tr>
<tr>
<td>International Treaties</td>
<td>(25%)</td>
</tr>
</tbody>
</table>


\textsuperscript{39} The numbers in parenthesis indicate the weight used to derive the indices. Weights may not sum to 100 due to rounding.
Appendix III – Descriptive Statistics

1. Panel Structure

<table>
<thead>
<tr>
<th>Country: 1, 2, ..., 92</th>
<th>n = 92</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year: 1972, 1975, ..., 2008</td>
<td>T = 13</td>
</tr>
<tr>
<td>Delta (year)</td>
<td>3 years</td>
</tr>
<tr>
<td>Span (year)</td>
<td>13 periods</td>
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</table>

(country*year uniquely identifies each observation)

<table>
<thead>
<tr>
<th>Distribution of T_i:</th>
<th>min</th>
<th>5%</th>
<th>25%</th>
<th>50%</th>
<th>75%</th>
<th>95%</th>
<th>max</th>
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<tbody>
<tr>
<td></td>
<td>13</td>
<td>13</td>
<td>13</td>
<td>13</td>
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<table>
<thead>
<tr>
<th>Freq.</th>
<th>Percent</th>
<th>Cum.</th>
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<tbody>
<tr>
<td>92</td>
<td>100.00</td>
<td>100.00</td>
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</table>
2. Summary statistics

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<tr>
<th>Variable</th>
<th>Scale</th>
<th>Countries</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Min.</th>
<th>Max.</th>
<th>Observations</th>
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<tbody>
<tr>
<td>Country</td>
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<td>92</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>92</td>
<td>1196</td>
</tr>
<tr>
<td>Year</td>
<td>-</td>
<td>92</td>
<td>-</td>
<td>-</td>
<td>1972</td>
<td>2008</td>
<td>1196</td>
</tr>
<tr>
<td>Gini coefficient</td>
<td>percent</td>
<td>90</td>
<td>0,426</td>
<td>0,0992</td>
<td>0,1683</td>
<td>0,674</td>
<td>511</td>
</tr>
<tr>
<td>Industrial pay inequality</td>
<td>theil</td>
<td>74</td>
<td>0,0607</td>
<td>0,0449</td>
<td>0,0015</td>
<td>0,4923</td>
<td>535</td>
</tr>
<tr>
<td>Estimated household income inequality</td>
<td>percent</td>
<td>71</td>
<td>0,4385</td>
<td>0,0553</td>
<td>0,2319</td>
<td>0,6425</td>
<td>532</td>
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<tr>
<td>Globalization index</td>
<td>percent</td>
<td>91</td>
<td>0,3898</td>
<td>0,1267</td>
<td>0,1217</td>
<td>0,7723</td>
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<td>Globalization index (economic)</td>
<td>percent</td>
<td>84</td>
<td>0,416</td>
<td>0,1545</td>
<td>0,0813</td>
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<td>index number</td>
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<td>10</td>
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<td>0,0092</td>
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</tr>
<tr>
<td>Gross domestic product (per capita)</td>
<td>dollars</td>
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<td>1563,55</td>
<td>2673,561</td>
<td>59,36</td>
<td>49480,64</td>
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<td>percent</td>
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<td>0,1508</td>
<td>-0,917</td>
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<td>0,3052</td>
<td>0,0117</td>
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<td>Population</td>
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<td>147,23</td>
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<td>1300</td>
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(Continued)
## Income Groups

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<th>Countries</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Min.</th>
<th>Max.</th>
<th>Observations</th>
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</thead>
<tbody>
<tr>
<td>Low income</td>
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<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<td>Lower middle income</td>
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<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>442</td>
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<td>Upper middle income</td>
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<td>-</td>
<td>-</td>
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<td>455</td>
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<tr>
<td>High income OECD and non-OECD</td>
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<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<tr>
<td>Total</td>
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<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1196</td>
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</table>

## Regional Groups

<table>
<thead>
<tr>
<th>Regional Groups</th>
<th>Scale</th>
<th>Countries</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Min.</th>
<th>Max.</th>
<th>Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>East Asia &amp; Pacific</td>
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<td>-</td>
<td>-</td>
<td>-</td>
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<td>247</td>
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<td>-</td>
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<td>-</td>
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3. Figures

Figure 1: The pattern of Gini coefficient and its fitted value from 1970 to 2008

![Gini Coefficient Chart]

Figure 2: The pattern of Estimated household income inequality and its fitted value from 1970 to 2002

![Estimate Household Income Chart]

Source: Author’s own calculations, Figure 1-5. Figures are produced by using the sample data.
Figure 3: The pattern of Industrial pay inequality and its fitted value from 1970 to 2002

Figure 4: The pattern of Globalization and its fitted value from 1970 to 2008
**Figure 5:** The pattern of Globalization (economic) and its fitted value from 1970 to 2008

![The pattern of Globalization (economic) and its fitted value from 1970 to 2008](image)

**Figure 6:** The pattern of Globalization from 1970 to 2008, World

Note: In Figures 6-10, X axis denotes ‘years’ and Y axis denotes ‘the index number of globalization’ while the figures are obtained by using raw data. The difference between Figure 2 and Figure 6 is caused by the difference between the dataset used in this study and the raw dataset. It is still beneficial to report both of them as the removal of some countries such as India or China could have changed the pattern of globalization. *Source:* Dreher, Axel, Noel Gaston and Pim Martens (2008). *Measuring Globalization – Gauging its Consequences.* (New York: Springer).

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41 Note: In Figures 6-10, X axis denotes ‘years’ and Y axis denotes ‘the index number of globalization’ while the figures are obtained by using raw data. The difference between Figure 2 and Figure 6 is caused by the difference between the dataset used in this study and the raw dataset. It is still beneficial to report both of them as the removal of some countries such as India or China could have changed the pattern of globalization. *Source:* Dreher, Axel, Noel Gaston and Pim Martens (2008). *Measuring Globalization – Gauging its Consequences.* (New York: Springer).
Figure 7: The pattern of Globalization from 1970 to 2008, Africa

Figure 8: The pattern of Globalization from 1970 to 2008, Asia
Figure 9: The pattern of Globalization index from 1970 to 2008, Europe

Figure 10: The pattern of Globalization index from 1970 to 2008, Oceania
Figure 11: The pattern of Globalization index from 1970 to 2008, South America