

The effect of Globalization on Income inequality with emphasis on Intellectual property Rights

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Abstract

Income distribution and effective factors on it have always been among the economical issues being discussed in many societies. Therefore, this research studies on the effects of two important parameters “globalization” and “intellectual properties rights” on income distribution in two groups of countries with high and upper-middle income ‘according to classification of World Bank’ in 2007-2010 by using Panel Data method. Results showed that Gini index, globalization, and intellectual properties rights are in better conditions about high-income countries in comparison with countries in level of upper-middle income. In high-income countries the globalization index is about -0.08 and index of Intellectual Property Rights is 0.11. So globalization decreases the income inequality and supporting the rights of intellectual properties increases the income inequality. In upper-middle income countries, globalization with 0.09 coefficient increases income inequality while supporting the rights of intellectual properties with -0.06 coefficient decreases income inequality.

Keywords: Globalization, intellectual properties rights, income inequality, panel data, *JEL* :F₀₂, C₂₃, D₆₃, O₂₄

Introduction

From ancient times up to the present, income distribution and its inequalities appeared with different concepts in different fields of economic, political and social. Hence, always are tried to identify the causes of variation in the income distribution till could do some measures for achieving to social justice and sustainable development. One of the main differences between past and present time is globalization and according to high speed of globalization, it is important to understand its meaning and dimensions. On the other hand in the age of globalization by focusing on thinking and creativity in different aspects of the cultural, economic, political and so on all people are as consumer or manufacturer of intellectual property ‘Adams, 2008, 726’. Hence supporting of intellectual property rights and globalization are as major aspects of conflict between countries. So this paper is focused on effect of globalization and supporting of intellectual property rights on income inequality.

For this purpose is used of main index of World Bank for classification of economy means GNI Per Capita for selecting the proper sample of this research. The World Bank considered per capita Gross National Income in form of large-scale as the best indicator of economic and development capacity. Based on per capita Gross National Income, the whole economies are classified as low, lower middle, upper middle and high incomes. The stages of planning per capita income are through stable relationship between indicators such as welfare, poverty and so on and economic variables such as per capita Gross National Income. According to this issue World Bank’s annual communication and available resources are as main factor for creating the threshold of Per capita income. This matter is

updated each year till always be in real level with combined effects of International Inflation during the time. Economies which their per capita Gross National Income is lower than bank’s operational level are considered economies with low-income and countries that this measure is higher than the bank’s operational level are considered as high income ‘WDI, 2013¹’.

The countries for this paper are selected of two groups about countries with high-income and upper-middle income. Countries which are having information about paper’s indexes of high-income countries in period 2007-2010 include: Dominican Republic, Ecuador, Brazil, Chile, Colombia, Jordan, Panama, Mexico and Costa Rica. Countries which are having information of upper-middle-income countries in period 2007-2010 include: Spain, Zionist regime, France, Germany, Belgium, Netherlands, Austria, Canada, Finland, UK, Ireland, Sweden and Norway. In addition, this paper plans to evaluate the following hypotheses.

Globalization has significant effect on reduction of income inequality. Intellectual property rights have significant impact on reduction about income inequality.

Theoretical Studies and Research Background: The means of income distribution and inequalities in economy is the manner of dividing income between groups and different social classes about the performance of economic system and finally how much income is concentrated in specific groups. Income distribution is about the share of a country’s people of national income. In other words, it describes degree of inequality between people income of a country, Jaafari Samimi 1992, 71². For this reason equitable distribution of income and fighting

against poverty are as the main economic and social objectives of governments.

One of the effective factors on reducing the income inequality is globalization. Globalization is one of the most controversial issues of countries in the present era and there are many different ideas about it. The phenomenon of economic globalization is process of integration of National economies in global sweeping economy where the factors of production 'labor-capital' technology and freely information pass from geographic boundaries. Also products enter in to markets indifferent countries freely. More reliance on market system and privatization and liberalization about on different aspects including trade liberalization, financial markets and foreign direct investment are as main features of this process 'Dadgar, Naji Meydani 2004, 107³. In the theories of international trade, such as Huckster-Ohlin and Stolper-Samuelson is referred to relationship between income distribution and international trade. According to these theories, international trade increases the owners' income of abundant production factors and reduces owners' income of scarce production factors. For example, if in a country abundant labor and owners of production factors be scarce, labor income rises and income of capital owners is low. International trade causes this country export user goods and import the capital goods. So the demanding for labor and wage increases and conversely demanding for capital also income of capital owners reduces. Thus, trade liberalization 'globalization', caused improving of income distribution 'Nazari and Fotorehchi, 2009, 239⁴.

On the other hand in the age of globalization by focusing on thinking and creativity indifferent aspects of the cultural, economic, political and so on protection of property rights is important and cannot ignore its impact on income inequality. About ownership concept the issue of monopoly stated by right owner and this means that for the right owner this matter creates benefit that encourages him about this issue. Otherwise, there was no any necessity with emphasizing on monopoly right. Also insisting on maintaining the monopoly power will also mean that there is possibility of occupation to another in this paper 'Nayeb, 255. So all goods such as durable and consumables goods, land, labor, knowledge, securities like money as an asset are as property rights' issue. However, these assets are not important in terms of time and place equally. Some of them such as land and labor are about property rights throughout the history and others, such as securities or knowledge are born in the modern era. One of the branches of property rights is intellectual property rights. As defined by the World Intellectual Property organization, it is defined as law rights that people gain it through activities which they do in areas such as industrial, scientific, artistic and so on. In other words, intellectual property rights is defined as rules and regulations which supported of thought, creativity and human ingenuity that have economic value and are traded and in this respect, a series of time-limited and intellectual property rights are granted to its creator 'Zarei Dolat abadi, 102⁵. Some of authors believe that protecting the

intellectual property rights impact on economy through numerous channels. In some articles, are studied the oretically and experimentally about impact of property rights on international trade, investment, foreign direct investment, transmission of technology, economic growth, capital accumulation, savings and consumption. Property rights have relationship with capital accumulation such as physically, humanities and socially. Through six impacts which causes production and accumulation of physical capital. These impacts include: Determining the economic potential of assets, Gathering dispersed data in system. Accountability to people. Assets to be exchanged, Classification of people, Supporting of transactions, Tafazoli, 2006, 80.

Property rights have relationship with investment in private sector. Whenever property rights be protected in a weak form, will be created gap between capital marginal product and expected rate efficiency in view of investors. So if expected efficiency of investors is different even with equal marginal product of capital in two different countries therefore investment rate of whole country would not be the same 'Sevensson 1998'.

There are three perspectives order to investigate the positive relationship between property rights and investment decisions at the micro level which include: Traditional theory, Collateral Theory. Profits resulting from the exchange of property rights 'Besley 1995, 906'.

Property rights have relationship with savings and consumption of private sector. Ignoring the current consumption because of consumption in the next periods depends on future expected benefits and rate of future expected and reliability depends on real understanding of such benefits. Whenever the probability of looting a person's assets increase for example, due to the lacking of legal protection of property rights or lacking of clear definition about it, the ensure level of person will decrease about taking advantage of future benefits of their savings and he will increase the ircuitent consumption and savings will reduce. Initially the patterns of how intellectual property rights influences uneconomic growth about protection influence of intellectual property rights on income in equality is checked, then it will examine its impacton inequality. There are several studies which indicate that imperfect protection of property rights enter into patterns of economic growth and are as formula form. Most parts of the studies are about expenses related to imperfect protection of property rights including reduction in investment due to the predation and political rent. Here we can refer to some of them like Tornell and Velasco, Tornell Lane, Grossman and Kim, Lindnero Strulik, Mino, Van Long Surgery, Gonzalez. In these papers imperfect protection of property rights is analyzed as common pool issue. In other words, because the benefit of people's investments plundered by others so people are discouraged from investing thus protected property rights reduces economic growth. All of these studies have been performed in the form of Ramsey pattern. Now we

can refer to some of the other researches, such as Svensson, Gradstein, Dincer and Ellis, these papers have been performed about effect of lacking of complete protection of property rights on growth and capital accumulation in form of growth model with Generations interference. Svensson, wanted to determine optimal level of selecting cost of efficiency of legal system and Dincer and Ellis assumed that protection rates of property rights is proportion of production that enterprises are able to support it. The papers of Teng and Sylwester are in the framework of Game theory. They created atwo-stage game with two players includes a large number of economic agents and government ownership which it is assumed that some parts of production expropriated of entrepreneurs. In some studies, including Palda, Grossman and Kim used of other methods apart from those methods. Palda measures property rights status with a parameter which indicated that part of current income taken up by persons who do the rent. Also he related optimal level of property rights to numbers of people who do the rent, Motavasel, 30⁶.

According to the studies that are done in field of intellectual property rights and economic growth, can be expressed that protecting of intellectual property rights in other words, supporting of creativity and innovation in order to create generating employment and entrepreneurship, increasing the productivity and wealth of science and technology which can lead to growth and economic prosperity that this matter leads to reduction of poverty and improving of income distribution. It is important to note that in some cases because of increasing of goods' prices, services and technologies resulting from

monopolization caused bad situation of income distribution.

Effectiveness of intellectual property rights are influenced by correct supporting of rights arising from intellectual activity in the industrial, scientific, literary or artistic areas and technology transmission to countries' economy and rights to use of assets and income from it which it lead to investment, savings, consumption and capital accumulation. As a result, growth and prosperity is created and finally income distribution improves, Shafiei, 44⁷.

Research Background: Panupon, studied about relationship between globalization and income distribution among countries of South Asian with using of General Equilibrium model. In This model selected 57 sectors and 87 countries and result shows that these countries tend to be more capital-goods producing more than user goods since liberalization time and because these countries are more users the income gap between countries with high income and low income is higher⁸.

Ibrahim Haidar and Velasquez, evaluated relationship between property rights and income inequality in 22 countries of colony of Europe. The results indicate that more protection of property rights has unexpected effect on income distribution and lead to more income in equality. However they indicated that this conclusion does not mean that should not follow the protection of property rights, because more protection of property rights is associated with higher economic growth⁹.

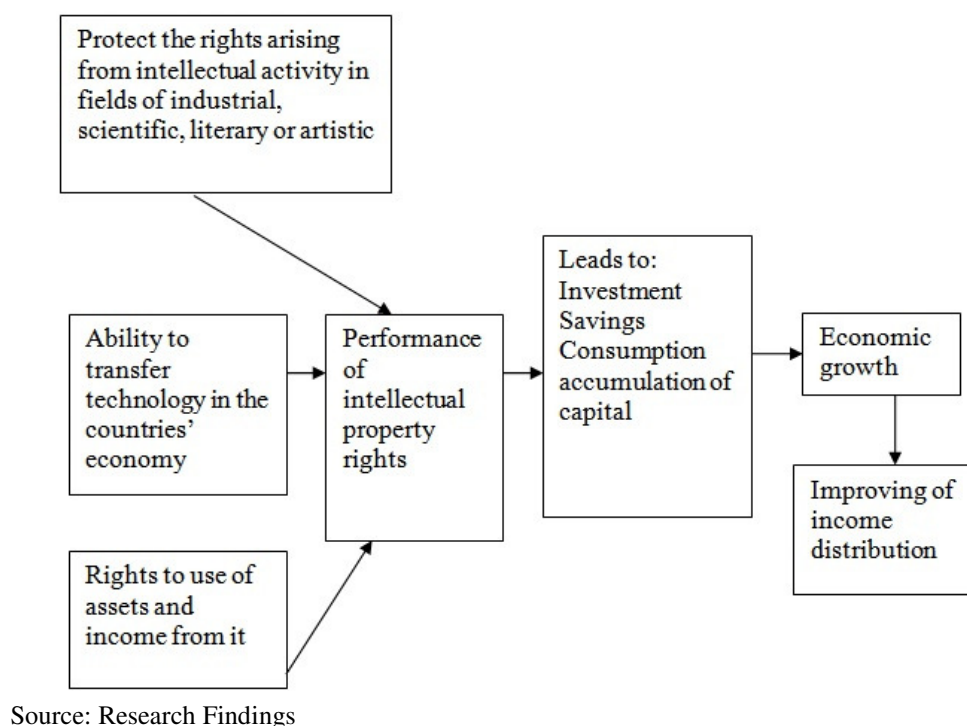


Figure-1
The relationship between intellectual property rights and income distribution

Gorji and Borhanipour investigated the effect of globalization on income distribution in Iran. They with using of Johansen and Juselius method also with using of trade intensity index as a criterion for globalization have been estimated the relationship between these two variables based on data for the years 1968-2004. Finally according to current structure of Iran's economy, globalization causes increasing of in equality and causes more critical situation for income distribution¹⁰.

Shah Abadi and Sari Gol, in an article entitled "The effect of intellectual property rights on income distribution in countries of MENA region" evaluated the effect of intellectual property rights on income distribution in the MENA region particularly Iran during the period 1995-2005. Results suggested that intellectual property rights has two different effects on income distribution. On the one hand, with supporting of creativity and innovation in order to create productive employment and entrepreneurship, increasing of productivity and wealth through science and technology can improve the income distribution also it is possible that because of increasing in goods' prices, services and technologies resulting from monopolization causes bad situation for incomedistribution¹¹.

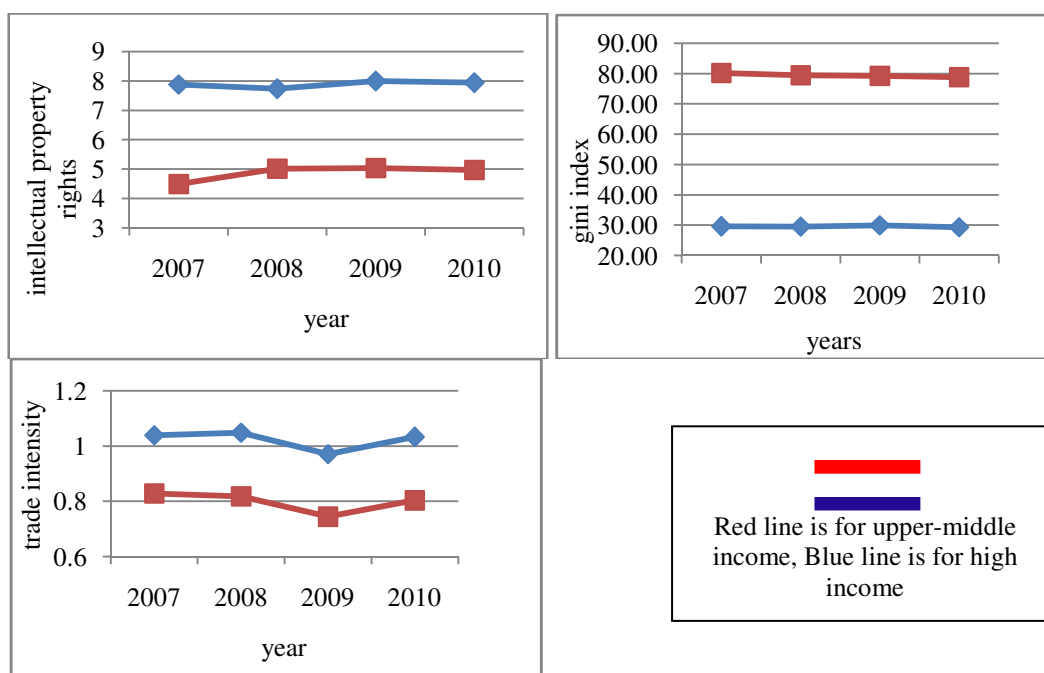
Adams, in a research with this title 'Globalization and income inequality: Consequences for intellectual property rights', studied on the effect of globalization on income in equality in 62 developing countries during the period 1985-2001. The results indicated that globalization explains only 15% of the income inequality variance and more protection of intellectual property rights and trade liberalization on income inequality has

positive and significant effect. Also research erargues protection of intellectual property rights has positive effect on consumer welfare and social advancement especially in developing countries which are holder of innovation, research and extensivedevelopment¹².

Analysis of model and hypothesis: Evaluating the trend of variables: Information which obtained by using of evaluation the data is a reflection of reality. Whatever awareness due to the related data to each variables be more, interpretation data and discovering of relationship between variables become easier and according to the manner of these processes can achieve to more appropriate analysis. It is obvious, the variables' process are very different indifferent countries with various economies. But some studies about countries with same economies can achieve somewhat to regular trend about data.

Charts show that in high-income countries the economic indicators have more favorable situation that are faced with the same level of lower income inequality and with more favorable economic conditions compared to countries with upper-middle income.

The amount of Gini index for Iran is about 44.15 in the year 2007. This amount is placed between mean values of the Gini index of two income groups in 2007. It can be concluded while Iran's situation is not suitable about equitable distribution of income and welfare indicators but has more suitable condition than countries with upper-middle-income.



Source: Research findings

Figure-2

Comparison of Gini indicators, commercial intensity and intellectual property rights in countries with high income and upper-middle-income countries during the period 2007-2010

The amount of trade intensity index is about 0.47 for Iran in 2007. This means there are many trade barriers about foreign trade and Iran's very bad condition about international relations. Based on data in the reports of international intellectual property rights, the amount of protection of intellectual property rights for Iran in 2010 is 3.8 and located in position 109 in the world. These indicate that Iran does not have a desirable place internationally in the field of intellectual property rights.

In this paper studied on two important relationships in the economy means economic globalization and income distribution and intellectual property rights and income distribution with using of panel data. Statistical sample includes 22 countries about two groups of income and also is according to the World Bank classification.

Model specification: In this paper based on theoretical and experimental studies is presented appropriate economic equation order to evaluate the effects of economic globalization and intellectual property rights on income distribution in selected countries and with using of Adams model as follows:

$$\text{LOG}(\text{Gini}_{it}) = \beta_0 + \beta_1 \text{LOG}(\text{OPEN}_{it}) + \beta_2 \text{LOG}(\text{IPR}_{it}) + \beta_3 \text{LOG}(\text{SEC}_{it}) + \beta_4 \text{LOG}(\text{GDP}_{it}) + \mu_i + \varepsilon_{it}$$

There are: Gini_{it} : Measuring index of income inequality in i country and t time, OPEN_{it} : Trade openness index in i country and t time, IPR_{it} : Intellectual property rights index in i country and t time, SEC_{it} : Education index 'acquisition of skills and expertise' in i country and t time, GDP_{it} : Gross domestic product per capita in i country and t time, Also $\beta_0, \beta_1, \beta_2, \beta_3$ and β_4 are intercept and coefficients of the model's independent variables which should be estimate.

First Test: Limer Test: $H_0: \alpha_0 = \alpha_1 = \dots = \alpha_n = \alpha$, $H_1: \alpha_i \neq \alpha_j$

Now it should be show that model must be processed as panel data or combination data that used of F-test. The null hypothesis states that there is no difference between the estimated coefficients for each levels and collective estimated coefficient. That is not necessary to estimate the model by using panel data, in other words, Pool model is preferred to fixed effects model. After t testing, calculated F-statistic will compare with critical

amounts of F-statistic. If the calculated F-statistic be greater than the critical amounts, the null hypothesis will not be accepted then model should be estimated by panel data manner, so the model of fixed effects is preferred to Pool model.

The critical amount of F statistic for upper-middle-income countries is 3.12 in level of 95% and can be seen the calculated F-statistics greater than the critical value. Therefore, the null hypothesis based on equality of all intercept for this group of countries does not accept and it is necessary that models estimate through panel data. The critical amount of F statistic for countries with high-income is 2.45 in level of 95% and can be seen the calculated F-statistic is greater than the critical value, therefore, the null hypothesis based on equality of all intercept for this group of countries does not accept and it is necessary that models estimate through panel data. After the model's estimation as panel data method, the main question that arises is, the model should be estimate as fixed effects or as random effects?

The second test: Hausman Test: Choosing between constant or random effects. Hausman test is used as follows for selecting among these two kinds of effects: H_0 : Random effects. H_1 : Fixed effects.

Null hypothesis is that the estimation of random and fixed effects do not have any significant difference basically. If null hypothesis be rejected we concluded that the manner of random effect is not appropriate and it is best to use of fixed effects method. Hausman statistic has X^2 distribution with degrees of freedom equal with the number of estimated coefficients in the model. If calculated statistics be larger than X^2 distribution in certain probability level so in this case, the null hypothesis is rejected.

In the income inequality model for upper-middle-income countries, according to X^2 statistic critical value which is 9.48 in level of 0.05 and this amount is lower than estimated X^2 , therefore, the null hypothesis based on random effects is rejected, so it is necessary to estimate the model as manner of fixed effects.

Table-1
Result of Limer test for determining the panel data approach or combination

Model	freedom degrees of numerator	freedom degrees of denominator	amount off statistic	probability amount	critical value of statistic
income inequality model for upper-middle-income countries	8	23	266	0.0000	3.12
income inequality model for high-income countries	12	35	438	0.0000	2.45

Source: Research findings

Table-2
Results of Hausman test for fixed or random effects

model	X ² statistic amount	probability amount	degrees of freedom	Statistic critical value of X ²
income inequality model for upper-middle-income countries	9.99	0.0405	4	9.48
income inequality model for high-income countries	19.2	0.0007	4	9.48

Source: Research findings

In the income inequality model for high-income countries according to X² statistic critical value which is 9.48 in level of 0.05 and this amount is lower than estimated X² so the null hypothesis is rejected based on random effects so it is necessary to estimate the model as manner of fixed effects.

Estimated model for countries with upper-middle-income: Finally following pattern is as estimated model in the period 2007-2010 for countries with upper-middle income:

$$\text{LOG}(\text{Gini}_{it}) = 6.79 + 0.09 \text{ LOG}(\text{OPEN}_{it}) - 0.06 \text{ LOG}(\text{IPR}_{it}) - 0.17 \text{ LOG}(\text{SEC}_{it}) - 0.23 \text{ LOG}(\text{GDP}_{it})$$

$$R^2 = 0.99 \quad R^2 = 0.99 \quad F = 6.418 \quad D-W = 1.74$$

Adjusted determination coefficient of R² is 0.99 which indicates that the independent variable means Gini index, totally describes about 0.99% changes of dependent variables. As can be seen F is estimated about 6.418, considering that the probability is equal to 0.000, we can say that generally all the estimated coefficients of independent variables are effective on Gini index.

The coefficient C 'intercept' represents amount of effective factors in the model which do not enter into the pattern as independent variables but there are as random effects in the error. Totally its estimated value is 6.79.

The amount of Durbin – Watson is 1.74 represents lacking of autocorrelation in the model. Trade intensity variable which is considered as measure for trade liberalization and globalization has direct and significant relationship with Gini index and the research's hypothesis based on existence of a significant and inverse relationship between globalization and income inequality rejected. Interpretation of these results is that globalization increases in equality in the economy. This result is obtained according to current structure of these countries and its institutions in the studied period. This situation can be improved according to the manner of countries' domestic changes and importance of inequality about political economy. The variable of intellectual property rights has reverse and significant relationship with Gini index and the research's hypothesis based on existence of a significant and inverse relationship between protection of intellectual property rights and income inequality is confirmed about countries with upper-middle income. In this group of countries, supporting creativity and innovation in order to create generating employment and entrepreneurship,

productivity increasing and wealth through science and technology could lead to an improvement in income distribution. The variable of Gross domestic product per capita has significant and inverse relationship with the Gini index. In this group of countries increasing of GDP per capita leads to economic prosperity, finally it is possible that demanding for labor and employment raises, thus reducing the poverty and improving the income distribution. Education index variable has reverse and significant relationship with Gini index. In this group of countries, increasing of training, skills and expertise reduces poverty and improves income distribution.

Model for countries with high-income: Following pattern is as estimated model in the period 2007-2010 for countries with high income: $\text{LOG}(\text{Gini}_{it}) = -0.08 - 3.07 \text{ LOG}(\text{OPEN}_{it}) + 0.11 \text{ LOG}(\text{IPR}_{it}) + 0.74 \text{ LOG}(\text{SEC}_{it}) + 0.27 \text{ LOG}(\text{GDP}_{it})$, $R^2 = 0.99$ $R^2 = 0.99$ $F = 554.54$ $D-W = 1.64$

Adjusted determination coefficient of R² is 0.99 which indicates that the independent variable means Gini index, totally describes about 0.99% changes of dependent variables.

As can be seen F is estimated about 554.54, considering that the probability is equal to 0.000, we can say that generally all the estimated coefficients of independent variables are effective on Gini index. The coefficient C 'intercept' represents amount of effective factors in the model which do not enter into the pattern as independent variables but there are as random effects in the error. Totally its estimated value is -3.07.

The amount of Durbin – Watson is 1.64 which represents lacking of autocorrelation in the model. The logarithm variable of trade intensity has significant and inverse relationship with Gini index and research's hypothesis is confirmed. The effect of this variable is negative according to opinions of Heckscher–Ohlin and Stolper Samuelson and is consistent with theory that obtained from theoretical foundations and research background. In this group of countries following the liberalization and resolving the trade barriers the international trade exchanges rises that itself causes reduction of inequality and improving in income distribution. The logarithm variable of intellectual property rights has direct and significant relationship with Gini index and research's hypothesis based on the existence of a significant and inverse relationship in the group of countries with high income between intellectual property rights and income inequality rejected. In these countries, those who

achieve to new technology by doing long-term researches and with paying costs are owner on their achievements through intellectual property rights that this matter increases price of goods and worsening the income distribution. Logarithmic variable of education index has significant and direct relationship with the Giniindex. It means that with increasing the educational level inequality would increase. In interpreting these results, we can say group of high-income countries are countries with knowledge-based and in these countries employment is done based on skills and expertise. Initially the skills and expertise are monopolized by a small number of communities and it worsens the income distribution. Also in this group of countries the logarithmic variable of GDP per capita has significant and direct relationship with the Giniindex, it means that by increasing of GDP per capita the inequality raises, because in countries with high-income large share of GDP is because of these individuals' high skills and expertise.

Conclusion

The results of their research indicate that globalization has advantages and disadvantages. Therefore, studying on the effects of economic globalization could be as properly and wisely approach and since globalization has many consequences in all aspects of human life causes that reflection and focus on it be impossible. Increasing of globalization in countries with high income inequality decreases inequality in economy. In this group of countries according to liberalization and removing the trade barriers international trade exchanges raises. This matter will reduce in equality and improve the income distribution. But in the group of countries with upper-middle-income, increasing of globalization increases the inequality in economy. This result is obtained due to the current structure of the country and its institutions in the considered period. This situation can be improved by due to the manner of these countries' domestic changes and the importance of inequality in political economy.

Intellectual property right is one of the fundamental rights of individuals in the society which becomes more important with growing intellectual and cultural production. Therefore, attention to its disadvantages and advantages can be effective in improving the economic situation. Increasing of intellectual property rights protection causes increasing of income inequality in countries with high-income. In this group of countries attention to intellectual property system and its supporting is performed in high level, because results of research and intellectual products is competitiveness and when it reaches to the final stage, is possible without any efforts and no any costs be exploited by other persons. Therefore, inventors and innovators should have certain rights in this field, because otherwise they will lose their tendency in various areas of research. But the wide supporting of these rights to avoid duplication of technology caused technology monopolization, increasing of goods prices, services, technology and worsening of income distribution. But this does not mean that this group of countries should not support the intellectual property rights,

because now a day's intellectual property has very high position, and most commercial organizations such as the World Trade Organization have been applied acceptance of optimal standards of intellectual property as prerequisite for membership. In the group of countries with upper-middle-income, increasing of intellectual property caused reduction about inequality in economy. Ability to access to innovation by using of human's creative resources is as factor for converting knowledge in to wealth and increasing of productivity that itself will improve the income distribution.

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