Sanctions and Income Inequality

How Economic Sanctions Affect Income Inequality

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Preface

I would like to express my deepest gratitude and appreciation to Dr. Tafreschi who has the attitude and the substance of a true mentor. He continually supported me throughout the course of this thesis and encouraged a spirit of creativity in conducting research which encompassed a feeling joy, challenge and learning in this journey. Without his guidance and persistent help this dissertation would not have been possible.

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Abstract

While many economists argue that trade openness leads to more efficient allocation of factors of production and eventually improves the well being of the society by bringing about economic growth, others emphasize on the associated price that comes with such growth. Due to change in the allocation of factors of production as a result of trade openness, certain economic sectors are better off while others suffer, leading to an increased income inequality. This paper, investigates what will happen to income inequality as a result of the declining level of trade openness, which may results from economic sanctions, natural disaster and wars. In order to study this, a sample of 113 countries, during 1982 and 2001 is used to investigate the effect of lowered trade openness on income distribution. The OLS model as well as fixed effects models has been applied for analyses. The results confirmed the expectation that economic sanctions will decrease income inequality in the society. This paper only focuses on the effects of U.S.A economic sanctions on the target countries, which prevents us to generalize the results to none U.S.A sanctions. Future research should investigate how the negative effects of trade openness could be prevented.

Contents

1. Introduction

Income inequality measured by Gini coefficient is the growing concern of the policy makers. In the last three decades income inequality gap has widen. According to Pickett and Wilkinson (2009), there is a positive relationship between income inequality and social problems. Therefore, it is important to look at what variables could affect the income inequality and how income inequality could be controlled.

At the same time globalization and more openness to trade between countries have increased. Trade openness of the country could potentially affect the income inequality. Since economic sanctions would decrease the level of import and export of the country, they would lead to decrease in the level of trade openness of the economy (Kaempfer and Lowenberg, 2007) which could potentially affect the income inequality of the targeted country.

Sanctions are commonly used as instruments that can affect the relationship between countries. Sanctions have different forms, such as withholding the diplomatic recognition and boycotting athletic events. However, sanctions that attract most attentions are international trade, financial flows and the travelling of the citizens of the targeted country (Davis and Engerman, 2003).

During the nineteenth century, economic sanctions consisted of blockading some specific ports via the navy force. In order to enforce such restriction, a country or a group of countries with superiority in military power over the targeted country use their navy force to interrupt the commercial trade between the ports of the targeted state with the other states. Such methods were used as coercive measures to settle disputes (as an alternative to war) and forced the targeted country to pay its debts. During 1940 to 1990, United Nations used sanctions only in five cases which are as follow: North Korea, South Africa, Portugal, Rhodesia and Iraq. However, after 1990 United Nations became more active in imposing sanctions on the targeted countries. Moreover, trade sanctions were imposed on 117 cases between 1970 and 1998. United States was primarily responsible for "part of the sanctions coalition" in over two-third of them (Elliot and Hufbauer, 1999). Since the early 1990, sanctions were used more often. Most of the sanctions that were imposed were done unilaterally by the United States. However, since 1990 a large fraction of the sanctions were imposed by the coalition of countries, mostly United States and Western Europe.

1.1 Social and Economics Relevance

Sanctions have both economic and social impacts. From the social perspective, they can lead to ''rally-round-the-flag effect''. According to (Galtung, 1967) rally-round-the-flag effect happens whenever the nationalist response happens and such response could undermine the effects of the sanctions and even could have opposite to expected results. Rally-round-the-flag effect means boosting internal cohesion even for brutal and suppressive regimes which would undermine the effectiveness of economic sanctions (Hovi, Huseby and Sprinz, 2005).

On the other hand, Sanctions could affect individuals who are not the target. Sanctions could also have unintentional effects. "Blunt instrument reversals in economic development in the target country, unjustly injured neighboring states, and could possibly strengthen the targeted regime" Bhoutros-Ghali (1995 cited Wood 2006, p.1). Moreover, sanctions are experienced collectively and it is difficult to exclude individuals from their effects in many cases. According to Crisis Group (2013) "Not all actors and sectors have felt the consequences (of sanctions) equally or precisely as intended".

From the economic points of view, according to Wood (2006), sanctions do have deleterious effect on public health, reduction in per capita GDP, increase in unemployment and infant mortality, malnutrition and migration.

Despite the popularity of sanctions in the last decade less than 34 percent of sanctions were considered even partially successful. Sanctions could decrease the welfare of the targeted country and encourage policy makers to use economic sanctions to achieve their political goals.

Sanctions can affect individual's wellbeing in many aspects. Some examples of the human rights violation through sanctions are violation of the right to life, right to liberty and security of person, right to adequate food.

1.2 Research Question and Methodology

The relationship between income inequality and trade was the concern among the scholars in the last decades since the proponents of the trade openness argue that it is important for economic growth. At the same time, income inequality is related to the welfare of the society. Many scholars argue that trade openness and income inequality are related. According to Cornia and Court (2001), technology and increase in trade openness issues have been put forward as major factors driving the rise in income inequality. Therefore, due to the importance of this matter for the economical fate of the nations, this topic deserves further investigation. For this reason, this paper is aimed at finding out how and to what extent do sanctions affect income inequality in the targeted countries.

In this paper I will examine how sanctions and trade embargoes could affect the income inequality of the countries. Therefore the research question of this paper is as follow:

How and to what extent is the income inequality (measured by GINI coefficient) affected by the economic sanctions imposed by the United States of America?

Therefore, my hypothesis is that, since according to Stolper-Samuelson theorem increase in trade openness could lead to higher income inequality in a country, one could assumes that decrease in trade openness such as sanctions-induced situations, could potentially lead to lower rate of income inequality. Moreover, Kuznets (1955), argued that income inequality and trade openness (in the first phase) are positively correlated. Therefore, one can assume that decrease in trade openness would decrease income inequality.

Therefore the proposed hypothesis would be as follow:

U.S economic sanctions will decrease income inequality in the target country.

In order to conduct this research fixed effects model will be conducted. Since many economic sanctions have been imposed by the U.S in 1990's, the scope of current paper includes data gathered since 1982. Moreover, since most economic sanctions will be effective in the long run (more than one year) I would use the economic sanctions which have lasted for the long time and changed the economic openness considerably. A number of other variables are included to add more credibility to

the results of the analysis. The variables are explained in detail in the data and methodology section of the paper.

The thesis structure is the following format:

In the second chapter literature review on the topic of sanctions are presented. Definitions of the sanctions are presented and their roles and their effectiveness on policy changing of the targeted country are elaborated.

In the third chapter of this paper theoretical framework is presented. In the forth chapter, Data and methodology as well as the results of the empirical research will be presented. In the last chapter of the paper the conclusion of the paper are provided.

2. Literature review

Not all economists and policy makers are in favor of using sanctions against targeted governments and populations. According to Hufbauer and colleagues (2008), the rate of success of the sanctions is usually low; in two- thirds of the cases the foreign policy goal was not achieved. One could argue that it is difficult to ensure that sanctions only affect the originally intended sector. For example: in the results. The proponents for not offering the rewards for compliance of the targeted country argue that, offering rewards would have destructive and extortive effects and encourage the targeted country not to comply with objectives of those who imposed the sanctions and ask for more rewards.

2.1 Definition and Role of Sanctions

Economic sanctions can be defined as "the actions initiated by one or more international actors (the "senders") against one or more others (the "receivers") with either or both of two purposes: to punish the receivers by depriving them of some value and/or to make the receivers comply with certain norms the senders deem important" (Galtung, 1967). Sanctions are unilateral or "collective action against a state considered to be violating international law" designed "to compel that state to conform [to the law] (Daoudi and Dajani, 1983).

Sanctions are imposed in response to an issue in the international affair and many cases are highly motivated by groups of elites that are following their interests. Therefore, it can be highly biased, for example countries like Saudi Arabia and China in which have questionable human rights records are not subject to sanctions due to their political and economical relationship with the world powers.

According to Pape (1997), sanctions seek to lower the welfare of the target country in a way to lower its international trade in order to persuade and coerce the target government to change their political behavior.

Economic sanctions consist of trade sanctions, such as restriction on importing from- and exporting to the target country, as well as sanctions on investments, such as restriction on the inflow of capital to the target country and even disinvestment (Kaempfer and Lowenberg, 2007).

According to Nurnberger (2003), there are constant debates concerning usefulness and efficiency of the sanctions. In the twentieth century in some cases sanctions were used as alternative for wars. The U.S president Woodrow Wilson in the second decade of the twentieth century called sanctions 'peaceful, silent, and deadly remedy' that no nation can resist (Garfield, 1999). Political scientists argue that records of sanctions in achieving their stated objectives is low (Hufbauer et al.,2008). However, despite the low rate of success in achieving the sanction goals, sanctions are still a popular option since it is still cheap in relation to the military intervention. There are two main views on how sanctions could be effective. According to Haufbaer, Schott and Elliot (2008), sanctions work best if the goals of the sender country are limited and the target country is already experiencing economic difficulty. Moreover, if there is a good relationship between the sender and the target country then sanctions would be more effective. On the other hand some economists came up with other important variables explaining the effectiveness of the economic sanctions in their research. This group of economists argues that even if strong economic pressure is put on the target country, it is not the definite reason for alternating the target country's policies as a result of sanctions. However, political cost of compliance/non-compliance is the factor that could lead to alter the policies of the target country. If the political cost of non-compliance is not high enough, for example if it does not increase dissatisfaction of the voters significantly, then it is less likely that the target country changes its policies.

According to Elliot, Oegg and Hufbauer (2008), there are three main reasons for imposing sanctions: to punish, to deter and to retaliate. Moreover, many individual and in some cases a group of countries use sanctions as a tool to achieve the political goals within their own countries. As an example, sanction against South Africa imposed by the United States, Europe and the British common wealth (1985-1991), were used to assuage domestic unrest and to make moral and historical statements (Elliot et al., 2008).

Sanctions can be applied for a variety of reasons, they can be used to show disapproval of certain policies, preventing war or pave the way for war as well as bringing about regime change. Sanctions can be used to decrease domestic pressure by imposing such policies to show the decisiveness of the sender country against the receiver, although without the expectation that the target country will suffer significant costs.

The purpose of the sanctions is "to maintain or restore international peace and security" (House of Lords, 2007).

The motives behind the use of sanctions parallel the three basic purposes of national criminal law: to punish, to deter, and to rehabilitate.

There are studies that show sanctions are not working and the set objectives are not obtained to the form or degree that was originally expected. In the study by Hufbauer and colleagues (2008), it was shown that out of many cases of sanctions only 34 percent of the cases were successful. Pape (1997), reanalyzed the same data that were used by Hufbauer and came up with only four percent rate of success. Therefore, at the first glance we might come up with the conclusion that sanctions rarely work. However, it is important to pay attention to the different situation of threat of sanctions and when the sanctions are actually imposed on the target country. Sanctions are usually applied in order to change the policy of the target country. However, in most of the cases they only applied after they have been threatened by the sender country and the target country does not intend to comply even if the sanctions are imposed. Therefore, it seems plausible that sanctions fail to meet their desired objectives.

2.2 Comprehensive Economic Sanctions

This thesis emphasizes the effects of the comprehensive sanctions on the society. This is because comprehensive sanctions in comparison to smart sanctions could affect everybody in the society and not only specific individuals and elites. One of the definitions of the comprehensive sanctions is as follow:

"Comprehensive economic sanctions are those which seek to deny a target state all normal international financial, trade and service interactions except those exempted on humanitarian grounds" (House of Lords, 2007). Moreover, according to Lowenberg and Kaempfer (2007), sanctions will decrease the welfare in aggregate due to the restriction on flow of goods or factors of production. Moreover, sanctions have distributional effects on both sender and target countries.

The best examples of the comprehensive sanctions since the Second World War are Yugoslavia and Iraq. In case of Yugoslavia the purpose was to bring the end to ethnic cleansing in Bosnia. Iraq was under comprehensive sanctions and its sanctions were more complicated due to a mixture of motives existed. Two of the main objectives were as follow: preventing Iraq from developing weapons of mass destruction and recognizing Kuwait and its borders and accepting liability and losses caused by invasion to Kuwait.

Although both Yugoslavia and Iraq gradually changed their policy in order to lift the sanctions, in reality, sanctions alone are not usually powerful enough to change the policy of the targeted country (House of Lords, 2007).

In case of Yugoslavia, UN economic sanctions lasted for three and a half years and they were considered to be an important factor in persuading Serbs to engage in Dayton negotiations. However, the military defeat of Serbs by Bosnian government and Croatians, which was supplemented by the help of NATO, forced Serbs to take the negotiations seriously. In case of Iraq, the economic sanctions were used after Iraqi invasion of Kuwait in the early 1990's. However, sanctions alone did not bring down Saddam's regime to its knees, although sanctions did hurt the Iraqi economy severely. "The perceived humanitarian costs arising from sanctions on Iraq are often cited as the key factor driving the move from general to targeted sanctions policy" (House of Lords, 2007).

Many of those who were responsible to observe the effects of comprehensive sanctions on the Iraqi people argue that the effects of comprehensive sanctions on people are so severe that they should never be applied. Ross(n.d), the first British secretary to UN between 1998 till 2003 stated the following: "I do not think that comprehensive economic sanctions should ever be imposed, on any country, ever again, because of what they did to the Iraqi people"

On the other hand, there are some people who argue that comprehensive sanctions have worked and should be used in the future as well."The trend towards smarter sanctions … has continued to develop … That does not mean, I think, that comprehensive sanctions can be completely ruled out. In the British Government in our review of sanctions policy conducted in 1998 and reported to Parliament in 1999, we were very careful not to rule it out." (House of Lords, 2007).

There are certain drawbacks with comprehensive sanctions. The comprehensive sanctions will result in an increase in the import prices because comprehensive sanctions blockade trade and financial transactions. In this way the price of import goods will rise. At the same time, comprehensive sanctions will make exporting of the goods very difficult for the targeted country due to barriers in trade and financial transactions. "The economic impact of the trade sanctions on the target country are reflected in their terms-of-trade effects, which are larger in the case of multilateral sanctions than unilateral"(Kaempfer and Lowenberg, 2007).

Changing the terms of trade could drive down GDP per capita in the targeted economy. In fact sanctions become a policy that can be seen as taxes levied on multinational firms that carry on businesses between the sender and target country prior to the application of the sanctions (Kaempfer and Lowenberg, 2000).

In the study by Martin (1992), it is shown that multilateral support for sanctions is an expensive commodity and it takes significant amount of political and economic effort by the primary sender to persuade other countries to participate in applying sanctions against the target country. Despite the significant amount of costs that the primary sender should undertake, many U.S led sanctions have been applied by the cooperation of many other countries.

2.3 Bilateral versus Multilateral sanctions

Economically, In order to make economic sanctions work they should be able to change terms of trade (Drezner, 2000). However, it is not happening easily, since cutting off bilateral economic relationship, does not necessary affect the terms of trade of the targeted country, due to the fact that targeted country can easily change the direction of trade towards other countries and minimize the costs which the sender would like to put on the target country. Therefore, the sender should have the ability to change the target's terms of trade regardless of the amount of effort by the target country to substitute.

 Intuitively, we expect to see a positive correlation between the rate of success of the sanctions and cooperation of the sanctioning countries. However, according to Drezner (2000), "No statistical test has shown a significant positive correlation between policy success and international cooperation among the sanctioning states."

However, in practice, U.S bears great amount of economic and diplomatic costs in order to persuade other countries to follow the sanction policies against the target country, which raises the question of why would the U.S should do that if there is not such link. One of the reasons for low rate of success despite the existence of multilateral sanctions could be due to mal-cooperation. There are two factors that undermine cooperation, bargaining and enforcement. At the beginning the senders agree to follow the sanction policies against the target country. However, due to the fragile nature of the coalition, countries tend to benefit from the rent seeking behavior. Thus, in order to turn sanctions to a successful policy the support of international organizations is a must (Drezner, 2000). Sanctions with greater international cooperation put greater costs on the target country because it is more difficult for the target country to trade. Moreover, if the economic sanctions are imposed and supported by the international organizations such as United Nation Security Council then such sanctions are more easily accepted and applied compared to the time when it is simply the imposition of the will of a stronger country against a weaker one.

In any case, economic sanctions could be effective only if they can change the terms of trade of the country in such a way that it makes import more expensive and more difficult and decreases the amount and value of export of the target country. Terms of trade of the country can change only if the target country cannot find the substitute goods and markets for its import and export. If sanctions

affect the terms of trade, they could potentially affect the distribution of income in the targeted country.

2.4 Varieties of Sanctions

The target countries could be affected by the imposed sanction in two ways. The first one is trade and another one is through financial sanctions. The purpose of trade sanctions is impeding the export and import of the goods to and from the target country and to make it more costly for the targeted country to trade. The second type of sanctions is financial sanction, which targets the financial transactions between the target countries' institute and other countries' institutes. For example, it aims at reducing the developmental aid and reduces the financing of projects within the target country.

2.4.1 Trade sanction

The major countries and institutions that impose sanctions are U.S, the European Union, and the United Nations. These countries/institutions restrict the trade activities with specific country. These restrictions are enforced by the government. Those companies who violate the trade restrictions will be punished and in certain cases should pay penalties in an amount that discourages the companies to violate trade sanctions. In the recent decades these restriction could also encompass the intuitions and organizations that facilitate trade such as insurance companies, financial institutions and logistic companies. If trade sanctions are imposed on the target country it would restrict the volume of specific imported and exported goods by setting the maximum amount of goods which can be exported or imported from the target country. Military equipment and weapons of mass destructions are the example of the trade sanctions. In order for the sanctioning countries to control the amount of export to the target country they use licensing system. Through the licensing system, a rent will be created which can be given to the government or directly to the exporter in the sender countries. In case the quota are given to the government some extra revenue could be earned by the government through auctioning of the quota (Golliard, 2013). In the same way as the export embargoes, there could a ban to import from the target country. The ban could happen for two main reasons, the sender country is willing to hurt specific industry in the target country and the second reason could be restricting the target country from earning foreign currency. However, import embargo is more

criticized because of its ineffectiveness. The target country could adjust to the new situation to find new market and sell its product to the target market via the third partner (Golliard, 2013).

2.4.2 Financial sanctions

Financial sanctions are one type of sanctions which its importance is increasing. The reason is that international trade is increasing and financial transaction is becoming more important due to increase in the international trade. At the same time after the terrorist attacks in September 2001, U.S improved significantly its tools and techniques for controlling and tracing financial transactions in order to combat terrorist activities. According to Smith (2014), sanctions will have significant effects on the target country since they can not only freeze financial transactions of the target country and discourage investment in the target country but such sanctions also impede trade as they lead to increasing challenges with regard to payment of the exports and imports in which the target country is involved with. Taking the U.S as an example, the office of foreign asset in the treasury department has provided the list of individuals and companies in which their assets are frozen because they are acting on behalf of the sanctioned countries. U.S citizens are not allowed to have any transactions with the people/companies in the above mentioned list except in the cases that are approved by the office of foreign assets (Jacobson, 2008).As an example of the effects of the financial as well as other sanctions imposed on the Iranian companies and individuals, Iranian businessmen are carrying cash due to the difficulty of payment that was resulted from the imposed restriction on opening foreign account in non- Iranian banks (Jacobson, 2008).

2.5 UN & US Sanctions

After the Second World War and the falling of the Berlin wall, economic sanctions become a usual tool for the Security Council for dealing with states that threaten the peace and security of the world. By 1990 the two most important sanctions by UN were against Rhodesia and South Africa in which these two states violated human rights in their counties. In Table 1 (Elliott, Hufbauer, Schott, and Oegg , 2008), the four main senders of the economic sanction are provided. All the aforementioned sanction senders used sanctions more intensively since 1990. According to Hufbauer et al.(2008),

sanctions are not always successful and only one-third of the sanctions in the history have ever achieved its objectives. What success means in this context is contribution to the complete or partial policy change of the target country (Elliott, Hufbauer, Schott, and Oegg , 2008). Sanctions that are a combination of both financial and trade sanctions are usually more successful than only the trade sanction.

*Table*1.

 principal senders of economic sanctions

	1970-1989	1990-1999
USA	25	38
EU	5	19
USSR/Russia	0	6
UN	1	11

Increasing globalization in communication and commerce undermines the odds of successfull unilateral sanctions policy (Bowdoin and Collins, 1999). Many trade sanctions failed because of the competitive global market and the nature of the regimes in the target countries. Although the U.S is by far the largest economy in the world, it has limited power in export/import of merchandise. For the export section, the U.S holds only 13 percents of the world's export and it holds 16 percents for the import section (Central Intelligence Agency, 2013).

As it is shown in Figure1 (Elliott, Hufbauer, Schott, and Oegg, 2008), the percentage of the U.S unilateral sanctions has decreased significantly over the last century.

Figure 1.

Decline in the rate of U.S.A unilateral sanctions
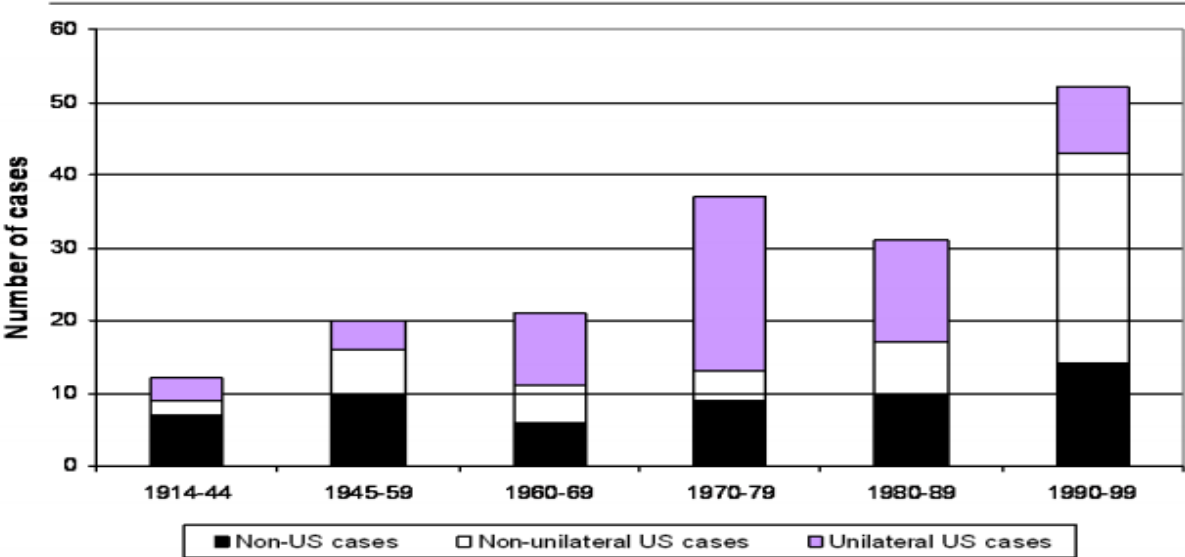
3. Theory

3.1 Income Distribution

In the last three decades the world has been witnessing an increase in the income inequality as well as an increase in the volume of the international trade. Therefore, there is a possibility that these two variables are positively correlated and since sanctions decrease the volume of the international trade there is a negative correlation between income inequality and sanctions. Therefore, one can assume that the increase in the sanction volume would lead to a decrease in income inequality. It is important to consider the factor abundance of the countries to know how sanctions could affect the income inequality of the country.

At 2011 World Economic Forum in Davos, it was declared that corruption and income inequality are two biggest problems in this era. Professor Freeman (2011), an economist at Harvard University, noted that income inequality has decreased between countries and at the same time it has increased within countries. The standard of living of most of the people has improved but at the same time income inequality has risen as well. Therefore, Freeman implied an important suggestion that income inequality between countries is decreasing but income inequality within countries is increasing.

As it is shown in the following Figure2 (The Conference Board of Canada, 2011), income inequality did not change much during the period between 1960 and 1982. Unfortunately, during the years between 1982 and 1994 income inequality rose sharply. Three reasons are presented for increasing income inequality between countries; firstly, disastrous performance of the African countries, declining relative income of Latin American countries and decline of income for countries in Eastern Europe in the transition period. Between 1994 and 2000 income inequality rises however with lower steepness. Since 2000, income inequality starts to decline due to high economic growth of China and India.

The comparison between the income inequality between the year 2010 and the year 1970 indicates that it increased significantly. It could be explained in two ways. A market force is the first reason. In the developed countries, skilled labor is increasingly becoming more valuable compared to less

developed countries. Due to globalization and the increase in the volume of trade, skilled biased technological changes created more demand for skilled labors. Edward Lazear, chairman of the U.S. President's Council of Economic Advisors, explained this in a 2006 speech: "In our technologically advanced society, skill has higher value than it does in a less technologically advanced society."Secondly, some economists argue that institutional changes also affect the income inequality. For example, by applying some concepts such as deregulation, and decrease in applying unionization and income inequality began to rise.

Figure 2

World inequality (Global Gini index where 0 represents exact equality and 1 represents total inequality)
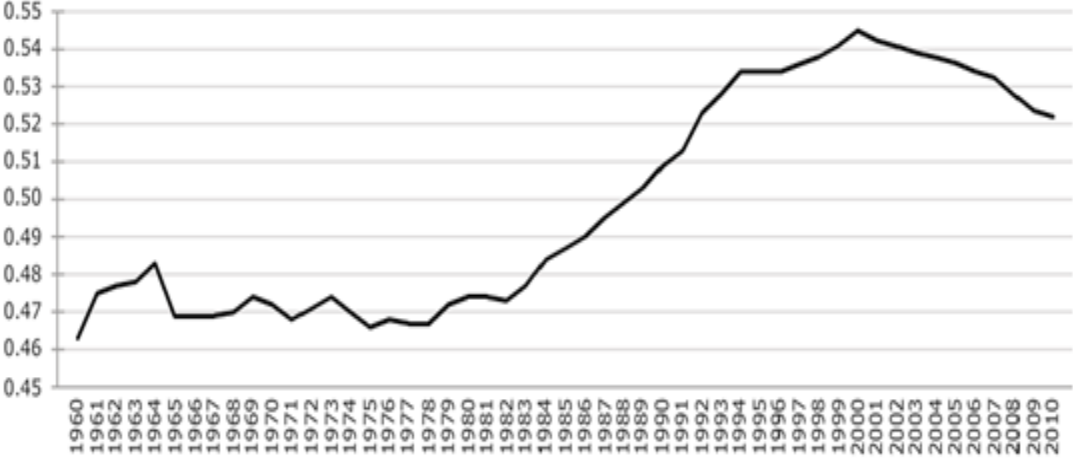
3.1.1 Stolper- Samuelson

According to Stolper Samuelson theory (1941), trade benefits the owner of abundant factor of production in a country. Therefore, by decreasing the amount of international trade via comprehensive sanctions and in the extreme case, autarky, the sector of the target country that used the abundant factor of production in the target country intensively, will be worse off. According to Stopler –Samuelson theorem one assumes that "factor rewards will tend to increase the most for those

factors that are used most intensively in the production of goods whose relative prices increased the most. Conversely, factor rewards will tend to decrease the most for those factors used the least intensively in industries whose relative prices have fallen the most" (Bowen, Hollander, and Viaene, 2012).Therefore, one can assume that if the international trade decreases significantly due to war, natural disasters or comprehensive sanctions, the sector that used to benefit the most from the factor abundance of production, is now worse off. Therefore, in case of labor intensive countries, after the sanctions occurred, return to labor decreases. On the other hand goods that used to be imported from foreign countries due to the lack of factor of production start to become more valuable in the target economy and their price starts to rise and therefore, the return to the factor of production starts to increase.

3.1.2 Kuznets curve

According to Kuznets (1955), there are two factors that influence the distribution of income. These two factors are saving and economic growth. The focus of this thesis is on economic growth and will make a link to explain the relationship between sanctions and income inequality.

Kuznets (1955), argues that at the early stage of economic growth demand for capital would increase because by using capital there is a possibility for using more labor saving technologies and earn a higher margin of profit. The abundant and cheap labor force at this stage of development will lead to capital accumulation without pushing the wage up. Kuznets assumed that at the early stage people are active in agriculture as a source for their income. However as technology starts to improve and rerun to capital increases, people leave rural areas and start to live in the cities in order to earn more income.

The rise in the rent for the capital will lead to increase in the income inequality. Therefore, those who live in the cities could earn higher income compared to the ones living in the rural areas. At this stage of economic growth there is a positive correlation between economic growth and income inequality. Therefore, while inequality is increasing, income per capita is increasing at the same time. However, this trend will not continue forever. Once the first stage of the economic growth is passed and more and more people are moving towards the cities, income inequality starts to shrink and at some point

in time the relationship between economic growth and income inequality will be negative. Therefore, we can assume that in the early phase of industrialization, the main source of economic development is capital accumulation, which leads to higher income inequality. In the later phases of economic development, labor becomes the engine of economic growth. The reason for negative relationship between economic growth and income inequality is that demand for labor force starts to rise. Therefore, the wage of the labor force surging and income gap shrinks (see Figure 3).One could assume, before sanction policies are applied, developing countries are experiencing some degree of economic growth and trade openness. At the time of sanctions, decrease in the level of trade openness will lead to decline in economic growth. As it is shown in Figure 3 (Bhattarai, Vijayaraghavan, and Yandle, 2002) in developing countries there is a positive correlation between economic growth and income inequality .Therefore, one could assume that, decrease in economic growth will lead to a decrease income inequality. In Figure 3, inverse U shape of the Kuznets curve is provided. Developing countries are experiencing the first phase of economic growth which there is a positive relationship between income inequality and per capita income. However, developed countries are experiencing a decrease in income inequality index while they are experiencing an economic growth.

Figure 3.

Kuznets curve shows the different phases of economic growth and income inequality.
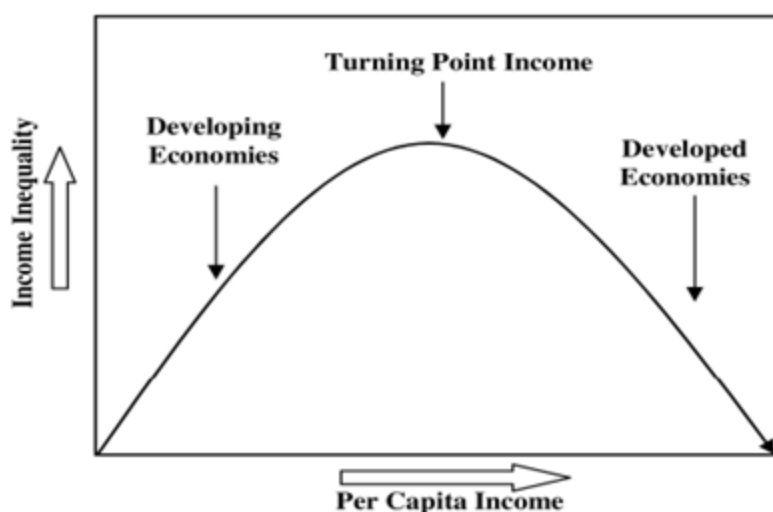
4. Data and Methodology

4.1 Data

Many researchers in the field of macroeconomics choose to take their data from the World Bank. It is also the case in this thesis. The main reason behind choosing the World Bank data base as a source for analyzing is its reliability. Most of the data that have been used to for analyzing are taken from World Bank as well as Penn world Table websites.

Data between 1982 until 2001 will be used. The reason for considering such period is that the data between these years for most of the countries are available. Moreover, in this period, sanctions began to be used more frequently and became more popular. In my analysis income inequality (measured by GINI coefficient) will be the dependent variable. The independent variables that I will use for different regression analysis are as follow: Trade openness, real GDP per capita, consumption GDP ratio, investment GDP ratio, and government consumption over GDP, inflation and population growth. In many researches and empirical studies that have been done for macro research these variables have been used.

The following part describes the variables which are used in my sample:
Gini Coefficient: Inequality is measured via the Gini coefficient which is one of the most common ways to measure inequality. It varies the range of 0 to 100 where zero means absolutely no inequality and 100 means absolute inequality. Since there are not many data available for the Gini coefficient and the Gini coefficient does not change significantly from one year to the other I decided to average out the Gini coefficients for every four years. Therefore, all the independent variables are averaged out for every four years period. This information is unavailable for certain countries which would limit the scope of this investigation to the countries for which this information is available on reliable sources.

Data on economic sanctions come from Askari, Forrer, Teegen and Yang (2004). I will use dummy variable which is equal to one for years in which a country is under sanctions and for the rest of the period it will take the value of zero. The main variables that are used as sanctions variables are Sanh, Sans and Sano. The severity of sanctions is divided into two categories in my thesis. In the paper written by Askari and colleagues (2004), Sano indicates the list of countries under

comprehensive/overall sanctions. The list consists of Afghanistan, Angola, Cuba, Iran, Iraq, Libya, Myanmar, North Korea, Sudan, Syrian Arab Republic, Vietnam, and Yugoslavia. However, I should drop certain countries for lack of data for the most of its variables; Afghanistan, Myanmar, North Korea, Syria and Yugoslavia. In some cases there is no information for the Gini variable and in some cases like Afghanistan and North Korea almost no information is available during 1982-2001. Therefore, countries under the comprehensive sanction in my list, during1982-2001 are as follow: Angola, Iran, Iraq, Libya, Sudan and Vietnam.

For the moderate sanctions I will use two lists. The first one is the same with the one used in the paper of Askari and his colleagues (2004). This list consists of the following countries: Bulgaria, China (Mainland), Czech Republic, Ecuador, The Gambia, Guatemala, Hungary, India, Indonesia, Nigeria, Pakistan, Peru, Poland, Romania, and Russia. I will keep the same list however I did not find reliable data for Russia, Czech Republic and Hungary. Therefore, final list for my Sanh variable contains the following names: Bulgaria, China (Mainland), Ecuador, The Gambia, Guatemala, India, Indonesia, Nigeria, Pakistan, Peru, Poland, Romania.

The third variable that also contains the list of countries under USA sanctions but not included in the Sanh variable, is called Sans, the following countries are in that list: Cameroon, Chile, Ethiopia, Haiti, Jordan, Kenya, Niger, Panama. This list is not used in other papers and is used in order to increase the scope of the research of this thesis. However, the main samples that I will use in my thesis for the sanction variables are Sano and Sanh

However, In order to be more precise I decided to consider every country under the sanction separately. Such consideration and preciseness will lead to more reliable results. For example Iran was under the sanctions since 1979; however sanctions intensified during Clinton presidency in 1995. Therefore, I decided to put Iran under comprehensive sanction since mid 1990s.

Government Consumption: This variable indicates the percentage of the GDP which is consumed by the government. This rate represents a measure of what percentage of the GDP is spent on goods and services by the government such as -education and- defense. The data which is used for government consumption are taken from Penn.

Inflation, real GDP per capita, investment rate and population growth are other independent variables. Population growth on the one hand could potentially increase the technological advancement and on the other hand could decrease real income per capita. Technological advancement could lead to higher economic growth and change the distribution of income in the country. Inflation is important macroeconomic indicator and a proxy for economic stability. All in one, these variables are used in many macroeconomic empirical studies. Inflation is taken from World Bank data base and then averaged out every four years. Trade openness, investment rate, real GDP per capita and population growth are taken from Penn World. Trade openness is calculated based on the following formula (Import+ Export) / GDP.

4.2 Methodology

In this section, I will undertake an empirical investigation of my hypothesis that U.S economic sanctions will decrease income inequality in the target country. The data set used in this research is an unbalanced panel data consisting of 113 countries.

In this paper, Gini coefficient will be regarded as dependent variable. The main independent variable is the sanction variable which is divided into two groups. Sano represent overall economic sanctions and Sanh as well as Sans represent sanctions with moderate severity. In order to have reliable result certain variables such as inflation, population growth, investment rate, consumption rate and government consumption rate as well as openness to trade has been added to the regression equation.

I expect that the econometric result for my analysis will be dependent on how severely the economic sanctions are imposed on the sanctioned country. This paper is aimed at finding out how and to what extent do sanctions affect income inequality in the targeted countries.

Therefore, the economic sanctions are divided into two groups (moderate economic sanctions and comprehensive /extensive economic sanctions.

The list of the countries for which the analyses were conducted is presented in Table2. Moreover, the descriptive statistics is presented in Table 3. Finally, a correlation analysis between the variables was conducted (Table4).

Since my thesis, examines the effects of sanctions on the income inequality on 113 countries in the world for the years between 1982 until 2001, my analysis is considered to be a panel data. Using Ordinary Least square (OLS) regression is not very efficient due to endogeneity problem. By using OLS, it is not clear if independent variables are leading to the dependent variable or vice versa. Other problem with OLS is inefficiency because it does not take into account unobservable individual effects. In other words, by using OLS regression we deny individuality among the countries and take the same coefficients for all the countries. Fixed effects model could be appealing way for controlling for unobserved heterogeneity within individuals. The advantage of using fixed effects model is that there is possibility to dispose of time-invariant component of the regression equation which would lead to lower level of biasness.

For the aforementioned reasons I will keep working with panel data analysis as well as OLS. There are several reasons for applying panel data analysis. The most important reason is that this method of analyzing takes into account cross sectional analysis and time series analysis for the countries. Therefore by both inter country and inter temporal variations, it is possible to reveal the information that is difficult to extract by applying other models. Moreover, since we are interested in assessment of the effects of the independent variables on the Gini coefficient for several countries, fixed effects model has qualities in this analysis. In addition, in order to make sure that the right statistical model will be used in this paper, I ran Hausman test which verified the theory. Therefore, in my analysis I will use fixed effects. In the Table 3, of this paper, the correlations between the variables are presented.

In my sample, five countries experienced a change in the severity of their sanctions, from non/medium level of sanctions to more extensive sanctions during 1982-2001.These five countries are: Angola, Iran, Iraq, Sudan and Vietnam. Moreover, China, Ecuador, Guatemala, Indonesia, India, Nigeria, Pakistan and Peru experienced a change in their sanctions status from non sanctions to the medium severity level of sanctions. Poland and Bulgaria experienced the lift of their sanctions at some point during 1982 -2001.

The result of Table 5, 6 and 7 are divided to four categories. The results that are significant on the .01 level (*). The second categories are those that are significant on the .05 level (**) and those results that are significant under .10 have been indicated by (***).The last group are those, that are not significant.

*Table*2.

Countries and covered period.

Country	Covered Period	Country	Covered Period
Angola	1994-2001	Macedonia	1998-2001
Albania	1994-1997	Madagascar	1990-2001
Algeria	1986-1997	Maldives	1998-2001
Argentina	1986-2001	Mali	1994-2001
Armenia	1994-2001	Malawi	1994-2001
Azerbaijan	1994-2001	Malaysia	1982-2001
Burkina Faso	1994-2001	Mauritania	1986-2001
Bangladesh	1982-2001	Mexico	1982-2001
Bulgaria	1994-2001	Micronesia	1998-2001
Bosnia and Herzegovina	1998-2001	Moldova	1990-2001
Belize	1990-2001	Mongolia	1994-2001
Bolivia	1990-2001	Morocco	1982-2001
Brazil	1982-2001	Mozambique	1994-2001
Botswana	1986-1989,1994-1997	Namibia	1990-2001
Cambodia	1994-2001	Nepal	1998-2001
Canada	1982-2001	Netherlands	1982-2001
Chile	1986-2001	Nicaragua	1990-2001
China	1982-2001	Niger	1982-1997
Cote d'lvoire	1982-2001	Nigeria	1986-2001
Cameroon	1994-2001	Pakistan	1986-2001
Colombia	1986-2001	Panama	1986-2001
Costa Rica	1986-2001	Paraguay	1990-2001
Croatia	1998-2001	Papua New Guinea	1994-1997
Cuba	1986-1989,1998-2001	Peru	1986-2001
Czech Republic	1990-1997	Philippine	1982-2001
Dominican Republic	1986-2001	Poland	1986-2001
Ecuador	1986-2001	Romania	1986-2001
Ethiopia	1982-1985,1994-2001	Russian Federation	1990-2001
France	1982-2001	Rwanda	1982-1985,1998-2001
Germany	1982-2001	SaoTomeand Principe	1998-2001
Georgia	1994-2001	Singapore	1998-2001
Ghana	1986-1993,1998-2001	Slovak Republic	1994-1997
Guinea	1990-1997	South Africa	1990-2001
Gambia-The	1998-2001	Spain	1982-2001
Guatemala	1986-1989,1998-2001	Sri lanka	1990-1997
Guinea-Bissau	1990-1993	St. Lucia	1994-1997
Haiti	1998-2001	Sudan	1990-2001
Hong Kong	1994-1997	Surinam	1998-2001
Honduras	1986-2001	Swaziland	1994-2001
Hungary	1986-2001	Sweden	1982-2001
India	1982-2001	Tanzania	1990-1993,1997-2001

Indonesia	1982-2001	Thailand	1986-2001
Iran	1982-2001	Trinidad and Tobago	1986-1993
Iraq	1986-2001	Tunisia	1982-1989,1990-2001
Italy	1982-2001	Turkey	1986-2001
Jamaica	1990-2001	Ukraine	1990-2001
Jordan	1982-2001	United Kingdom	1982-2001
Kazakhstan	1990-2001	United Sates	1982-2001
Kenya	1990-1997	Uruguay	1986-2001
Korea, Rep	1998-2001	Uzbekistan	1990-2001
Lao PDR	1990-1997	Venezuela	1986-2001
Latvia	1990-1997	Vietnam	1990-1993,1998-2001
Lesotho	1982-2001	Yemen, Rep	1998-2001
Libya	1990-1997	Zambia	1990-1997
Lithuania	1990-2001	Zimbabwe	1994-1997

*Table*3.

Descriptive statistics of the sample.

	N	Range	Min	Max	Mean	Std. deviation	Variance	Skewnwness		Kurtosis	
								Statistic	Std.	Statistic	Std.
Government Consumption	329	53	4	57	23.31	9.79	95.97	1.16	.134	1.49	-2.68
Inflation	326	24.07	-.072	24	.722	2.77	7.68	5.9	.135	38.70	.269
Investment Rate	330	41	0	41	11.36	7.906	62.50	.939	.134	1.319	.268
Log openness	330	2	1	3	1.86	.359	.129	-1.85	.134	2.17	.268
Population growth	329	7.94	-1.75	6.19	1.66	1.20	1.44	-.373	.134	.144	.268
Logreal GDPper cap	330	2	3	5	3.64	.486	.236	-..517	.134	-1.52	.268
Sano	330	1	0	1	.04	.195	.038	4.75	.134	20.75	.268
Sanh	330	1	0	1	.05	.221	.049	4.07	.134	14.70	.268
Sans	328	1	0	1	.03	.180	.033	5.206	.135	25.25	.268
ValidN	322										

*Table*4.

Correlations of variables

	Gini	Government consumption rate	Inflation	Investment rate	Log(Openness)	Population growth	Log (RealGDP per apita)	Sano	Sanh	Sano
Gini	1.00	-.002	.086	.233	.012	0.385	-.008	-.021	-.114	0.040
Government consumption rate	-.002	1.00	.141	.099	.185	-.034	-.122	-.030	-.094	.135
Inflation	.086	.141	1.00	-.002	-.064	.018	.023	-.019	0.040	-.039
Investment rate	.233	.099	-.002	1.00	.118	.119	.095	.092	0.85	-..012
Log(openness)	.012	.185	-.064	.118	1.00	-.106	.054	-.070	-.063	.074
Population growth	.358	-.034	.018	.119	-.106	1.00	-.335	.065	.024	.039
Log(Real GDP per capita)	-0.008	-..122	.023	.095	.054	-.335	1.00	-.039	0.001	-.003
Sano	-.021	-..030	-.019	.092	-.70	.065	-.039	1.00	-.045	-..035
Sanh	-.114	-.094	.040	.085	-.063	0.024	.001	-.045	1.00	-.045
Sans	.040	.135	-.039	-.012	.074	.039	-.003	-.035	-.045	1.00

For this stage of my research I will apply Ordinary-Least-Square (Table 5) regressions in order to estimate the effect of sanction on income inequality. By applying the OLS analysis it is possible to estimate the effects of the independent variables on the dependent variable holding constant the effect of the other independent variables (Cyrus, Elliott, Hufbauer and Winston, 1997).

I will apply the following regressions for analyzing the effects of sanctions on income inequality. In order to make statistically easier to interpret the results I decided to convert Openness and Real GDP per capita to the logarithm format.

GINI =α + β1 (Government consumption rate) + β2 (Inflation) + β3 (Investment rate) +

β4 Log(Openness)+ β5 (Population Growth) + β6 Log (Real GDP per Capita) + β6 (Sanction) + ε

Table 5, OLS regression

Variable Name	Equation1	Equation2	Equation3	Equation4
Constant	23.493	23.923	24.675	23.37
	0.00*	0.00*	0.00*	0.00*
Government consumption rate	-0.019	-.021	-0.036	-0.020
	0.742	0.721	0.540	0.743
Inflation	0.319	0.315	0.384	0.324
	0.111	0.116	0.079***	0.108
Investment rate	0.240	0.248	0.261	0.243
	0.01**	0.001*	0.00*	0.001*
Log(Openness)	1.048	0.925	0.815	0.957
	0.510	0.562	0.605	0.550
Population Growth	3.315	3.331	3.307	3.308
	0.00*	0.00*	0.00*	0.00*
Log(Real GDP per capita)	2.006	1.962	1.940	2.060
	0.102	0.11	0.114	0.096***
Sano		-3.277		
		0.282		
Sanh			-6.958	
			0.005*	
Sans				1.829
				0.552
R Square	0.18	0.183	0.183	0.182
Number of Obs	323	321	323	321

*** p<.10, ** p<.05, * p<.01

GINI = α + β1 (Government consumption rate) + β2 (Inflation) + β3 (Investment rate) +

β4 Log(Openness)+ β5(Population Growth) + β6 Log(Real GDP per Capita) + β6(Sanction) + ε

Table 6

Fixed effects model (one-way)

Variable Name	Equation1	Equation2	Equation3	Equation4
Constant	23.26	21.73	23.77	20.64
	0.03**	0.04**	0.02**	0.05***
Government	0.03	0.02	0.01	0.03
consumption rate	0.75	0.77	0.86	0.75
Inflation	0.119	0.06	0.123	0.10
	0.35	0.61	0.33	0.41
Investment rate	-0,01	0.01	-0.01	0.00
	0.88	0.89	0.90	0.98
Log(Openness)	3.46	3.75	3.44	3.52
	0.00*	0.00*	0.00*	0.00*
Population Growth	-0.02	0.02	-0.00	-0.12
	0.95	0.96	0.99	0.80
Log(Real GDP per	0.34	0.37	0.32	0.60
capita)	0.76	0.74	0.77	0.59
Sano		-6.99		
		0.05***		
Sanh			-0.93	
			0.54	
Sans				4.32
				0.03**
R Square	0.89	0.89	0.89	0.89
Number of Obs	323	323	323	321

*** *p<.10, ** p<.05, * p<.01*

The same regression equation that used for OLS and one way fixed effects, has been applied to create the 7th table. However, in order to enrich my paper fixed effects for both cross section and period specific effects have been applied (Table 7). "In a two-way panel, there are individual-specific

unobserved constants (individual effects) as well as time-specific constants" (Kunst, 2010).By using two way fixed effects model the omitted variable bias would decrease in two dimensions (time and cross section).The reason is that in the fixed effect model, the observations are average out and since unobserved time/cross sectional invariant variables are constant, we can get rid of such negative effects. Therefore, omitted variable bias is potentially less severe in two way fixed effects model than one way fixed effects model.

Table 7

Fixed effects model (two- way)

Variable Name	Equation1	Equation2	Equation3	Equation4
Constant	57.033	55.02	58.34	54.77
	0.00*	0.00*	0.00*	0.00*
Government consumption rate	0.133	0.129	0.116	0.13
	0.215	0.198	0.27	0.186
Inflation	0.179	0.133	0.183	0.186
	0.12	0.32	0.108	0.143
Investment rate	0.054	0.07	0.057	0.070
	0.41	0.21	0.396	0.32
Log(Openness)	0.36	0.675	0.265	0.26
	0.81	0.60	0.874	0.866
Population Growth	0.011	0.04	0.042	-0.098
	0.96	0.86	0.876	0.755
Log(Real GDP per capita)	-2.59	-2.50	-2.663	-2.306
	0.12	0.11	0.133	0.176
Sano		-6.625		
		0.00*		
Sanh			-1.353	
			0.103	
Sans				4.38
				0.00*
R Square	0.904	0.906	0.905	0.907
Number of Obs	323	323	323	321

*** *p<.10, ** p<.05, * p<.01*

4.3 Finding

Tables 5, 6 and 7 show the results of several regressions with a varying combination of variables. The purpose of this thesis is to find out how sanctions with different severity will affect the well being of the society and how distribution of the income will change if sanctions are applied. The hypothesis of this paper is as follow:

U.S economic sanctions will decrease income inequality in the target country.

Table 5 shows: In both types of sanctions (medium and overall) it is seen that sanctions will lead to decrease in income inequality. According to equation two, overall economic sanctions will decrease income inequality by 3.277 units in the OLS model (Table5). However, this amount is not significant. In case of sanctions with moderate level of severity, income inequality will decrease significantly by 6.95 units (equation4). It is shown in Table5, that openness to trade, investment rate and population growth raise income inequality. However, only investment rate and population growth will increase income inequality significantly at the 0.05 level in all the equations. One percent increase in investment rate will raise income inequality by 0.25 of a Gini unit. Inflation, also increase income inequality at the 0.2 significance level, and openness to trade affect on income inequality is not statistically significant. For all of the regression equation in Table5, R square is 0.18. Moreover, as it is indicated in the in the Table 5, population growth rate increases income inequality significantly. By 1% increase in population growth rate income inequality will increase by 3.3 units. In addition to that, real GDP per capita also could affect income distribution at the 0.2 significant level. 1% increase in real GDP per capita will increase income inequality by almost two units.

Table 6 shows the results of four regressions with a varying combination of variables. These results that are indicated in this table are more reliable compared to Table 5 due to cross section effect. The main results of this table approve the hypothesis of this paper. Both types of sanctions decrease income inequality. Overall economic sanctions do have significant effect on income inequality and decrease it by 6.99($p = .05$) units. In the case of more moderate sanctions income inequality decreases also, nevertheless it is not significant. In contrast to OLS result, in the fixed effects model, government consumption increases the income inequality however it is not significant. Inflation, and log (openness) also increase income inequality however only log (openness) is significant

(p=0.00).By 1% increase in openness income inequality will increase by 3.5 units. In Table 6, R square is 0.89.

Table 7 shows the results of four regressions with a varying combination of variables. The result of this table is the most reliable results of this paper since it is two way fixed effects model. The results also approve the hypothesis that economic sanctions decrease income inequality. Overall economic sanctions decreases income inequality significantly (p=0.00) and decreases income inequality by 6.6 units. Sanctions with medium level of severity decline economic inequality by 1.3 units however, it is not significant (p=0.103).Government consumptions, inflation and investment rate as well as log(trade openness) increase income inequality however none of these variable is significant even at 0.1 level. In contrast to the results of Table 5 and 6, 1% increase in real GDP per capita lowers income inequality by 2.5% however it is not significant.

By having a look at the results in the table 5, 6 and 7, it is shown that, at the first glance government consumption might lead to lower level of income inequality .However, in the panel data analysis it is proved that government consumption will indeed lead to higher level of income inequality. Inflation increase income inequality which is the case for openness of economic growth as well. Population growth will also lead to higher level of income inequality however it is not always the case. Finally, higher level of real GDP per capita in the OLS analysis and one way fixed effects model, increases income inequality. However, in the most reliable results of this paper's table it is shown that higher level of real GDP per capita decreases income inequality which is consistent with the Kuznets curve which indicated that in the developed economies income gap shrinks.

5. Conclusion

In this paper, I investigated that, how economic sanctions will affect income inequality in a country. U.S.A has played a major role as a sender of economic sanctions against the target countries more than any other country and institution. Therefore, I decided to limit the scope of my thesis to measure the effects of U.S.A economic sanctions against other target countries. The research studied 113 countries between 1982 till 2001. OLS model, one way fixed effects model and two-way fixed effects model delivered the same outcome.

The theoretical framework shows that economic sanctions decline income inequality and shrink the gap between the poor and rich. Certain variables that have been used in other macroeconomics studies such as inflation and population growth have been used in order to enhance the reliability of my results.

The findings in the previous section show that the decrease in trade openness, such as sanctions, indeed does have certain effects on income distribution. The two major samples that I used for evaluating the sanction effects of Gini coefficient showed that income inequality has decreased as a result of sanctions.

When the economy open up to trade the factor abundant of the country is better off since the country has the comparative advantage and other sectors are worse off, for that reason income inequality will increase. The regressions confirm the assumption/expectation that opening up to trade lead to higher level of income inequality.

In the fixed effects model, it is shown that overall economic sanctions lower income inequality significantly but it is not the case in the sanctions with moderate severity. One reason is that in the sanctions with moderate severity, countries easily can find substitute markets for their export or import of goods from other countries however this is less feasible in the overall sanctions.

Population growth and inflation also lead to more income inequality in both models. It is important to notice that although decrease in trade openness will lead to a lower level of income inequality, it is not recommended by the experts. Opening up to trade will indeed increase income inequality but it

also lead to more economic growth which will lead to higher level of employment and higher real GDP per capita.

One could assumes that policy makers should increase trade openness of the country , and at the same time in order to avoid the negative externalities of trade openness "such as increase in income inequality" government should apply certain policies to support those who are worse off as a result of the opening of the trade. That is why more studies is recommended in future, in order to show the effects of the change in trade openness rate on individual and different sectors of the economy.

Finally, there are some limitations for my empirical research. This paper only focuses on the effects of U.S.A economic sanctions on the target countries, which prevents us to generalize the results to none U.S.A sanctions. Secondly, my empirical result might be subject to a degree of omitted variable biase. The proximity of U.S.A with the target countries and the initial level of U.S.A trade with the targets are example of potential omitted variable bias. Finally, data availability was a problem. Certain countries which experiencing economic sanctions do not reveal data over their macro economics performance or simply there is no data available for them which is unfortunate to drop them out of research study.

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