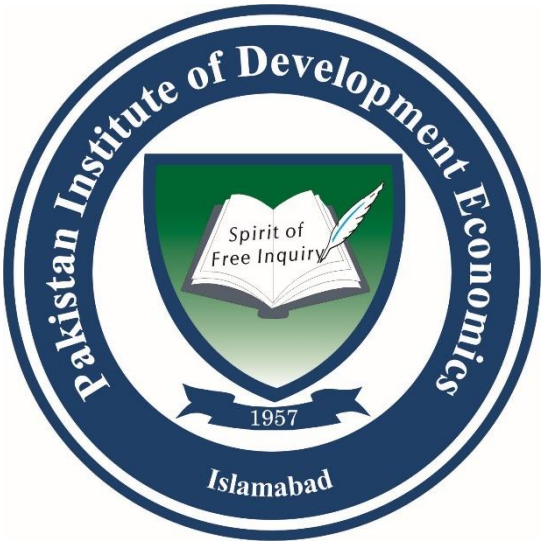
Income Inequality and Foreign Aid: Evidence from Panel Data



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CERTIFICATE

This is to certify that this thesis entitled **"Income Inequality and Foreign Aid: Evidence From Panel Data"** submitted by **Ms. Saima Ashraf** is accepted in its present form by the Department of Economics and Finance, Pakistan Institute of Development Economics (PIDE) Islamabad as satisfying the requirements for partial fulfillment of the Degree of Master of Philosophy in Economics and Finance.

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I Saima solemnly declare and affirm on oath that I myself have authored this MPhil Thesis with my own work and means, and I have not used any further means except those I have explicitly mentioned in this document. All items copied from internet or other written sources have been properly mentioned in quotation marks and with a reference to the source of citation.

SAIMA ASHRAF

DEDICATED

To

*My **Beloved Parents***

All my love to them because, having them made me feel the luckiest daughter in the world.

&

*Of course my **Honorable Teachers***

Who educate me and made me believe that I can do everything.

This dissertation is for you!

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I am thankful to my family for their kind support, good wishes and tolerance. I am especially thankful to my eldest sister for her prayers and kind considerations throughout my life.

SAIMA ASHRAF

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ABSTRACT

Foreign aid effectiveness has become debatable issue in the literature. To accompaniment the concerned literature, this study aims to investigate whether, foreign aid plays any decisive role in worsening or improving income inequality. For the sake of this purpose this study considers the panel data estimation of regression on the relationship between foreign aid and income inequality controlling for other variables. Furthermore, in order to analyze the impact of foreign aid on income inequality it is necessary to recognize the factors which can enhance the effectiveness of foreign aid. In order to achieve this purpose, the study introduces interaction terms between: foreign aid and institutional quality, foreign aid and corruption rate, foreign aid and trade policy, and foreign aid and government policies. The current research encompasses the sample of 43 aid receiving countries covering Asia, Africa, Latin America and Europe, over the period of 1990-2014. In order to overcome the problem of endogeneity, current study employs two-step system GMM. This study concludes that foreign aid improves income inequality though, in smaller magnitude in; Asia, Africa, Latin America, and Europe. Moreover, empirical results of interaction terms reveal that foreign aid effectively reduce income inequality with improvement in institutional quality. However, menace of corruption adversely affect the relationship.

Keywords: Foreign Aid, Income Inequality, System GMM, Trade Openness, Government Size

CHAPTER 1

INTRODUCTION

Foreign aid is one of the important determinants of income inequality. One of the main purpose of foreign aid flows from developed nations to developing world is to lower the income disparities in developing countries. Development Assistance Committee (DAC) of the organization of OECD defines "Foreign aid as financial flow, technical assistance and commodities that is provided for economic development and welfare and provided as either grants or subsidized loan." Most of aid is given directly by donors, in the form of bilateral assistance, as one country directly gives aid to another country. Aid is also provided by donors indirectly in the form of multilateral assistance, which pool resources together from many donors. The major multilateral assistance are; World Bank, The International Monitory Fund, The African, Asian, and Inter-American Development Banks and various United Nations agencies.

No single event can be attributed to the cause and motivation behind the inspection of foreign aid. Large number of processes lead to the commencement of period of foreign aid. History of international aid is as old, as the history of interrelationship between the organized human communities (Keenleyside, 1995). In addition Hjertholm and White (2000) have traced the roots of bilateral foreign assistance in two events that occur in the 19th century in the US overseas aid. One is the 1812 Act for the Relief of the people of Venezuela and the other deals with the supply of the surplus US food to international markets in 1896. The same authors also state that the 1929 Colonial Development Act was an important step in the British

bilateral aid history, which sanctioned loans and grants for development, mostly physical infrastructure to its colonies.

In the same way Rist (2002) claims, the origin of international cooperation is during the era of League of Nations, when China being the member of the organization appealed to the international community for capital and technical assistance in its effort of modernization. This demand was met under the aegis of the League and China was provided with the knowledge and expertise it needed. He further explains that the collaboration extended to education, transport and the organization of rural cooperatives.

Most of the writers and historians of development and development studies trace back the history of foreign aid to the epoch-making speech of the United States President Truman and his Point Four Program. President state in his address, "we must embark on a bold new program for making the benefits of our scientific advances and industrial progress available for the improvement and growth of underdeveloped areas" So after Second World war and point four program lead to the birth of foreign aid in its modern form.

In many cases foreign aid is allocated for the support of governments in the pursuing of their economic and political policies, which may be economically unproductive. These policies may include restrictions on private trade and the flow of private capital and enterprises, assets removal and price policies that discourage agricultural production and expropriation of foreign capital and enterprises. Pursuing such policies worsens the country's economic performance and effectiveness of foreign and the country will continue to be classified as the one which is requesting the assistance because its situation is worse. In addition, aid receiving countries may face the problem of ineffectiveness of aid due to donor agencies, as well. Sometimes

due to political, geographical and economic interests of donor agencies democratic government receives less aid. Sometime donor countries/ agencies implements their policies in recipient countries, but these policies remain ineffective due to cultural, environmental and political differences.

Moreover it is argued by (Dalgaar, 2008), recipient countries face strict condition from donor agencies for the effectiveness of aid. Specifically, aid which takes the form of structural adjustment requires that recipient must implement the policies of donor agencies for aid effectiveness. Conditional aid critics argue that the structural adjustment program lead to higher inequality. Foreign aid inflow badly affect the recipient country's competitiveness by the appreciation of real exchange rate (Doucouligous and Paldam, 2008; Rajan and Subramanian, 2011).

Foreign aid is provided by donor agencies to the developing countries for the several purposes. 1) to achieve the growth rate through the construction of infrastructure, by supporting the productive system like agriculture sector through new ideas and technology, 2) To support education and health sector and political system, 3) To support the humanitarian crisis, 4) to stabilize the economy. The major objectives of foreign aid is the poverty reduction and slandering the income gap between rich and poor among the developing nations by stimulating the economic growth .This goal of foreign aid can be attain when aid money is allocated only for the reduction of poverty, rather than promoting any other interests. Such as promoting the interests of donor countries/ agencies, allocating aid money for the military support and allocating aid for the financing budget deficit. Mosley (2004) argues that aid money can be allocated for improving income distribution, controlling corruption rate and for the betterment of economic policies of the recipient countries. However, Pedersen (2001) asserts that sometime foreign aid act as a barrier for poverty

reduction as poor countries receive larger amount of aid money, in order to receive huge aid money government of recipient countries sometimes intentionally tolerate higher poverty.

In addition, with advantages and disadvantages of foreign aid inflows, impact of foreign aid on income inequality in developing countries is a very important and debatable issue. Income inequality refers to the extent to which income is distributed in an unequal manner among a population. According to Alia et al. (1972) there are two types of income inequality; inequality between persons and inequality between sub groups. Inequality between the persons refers, inequality in the distribution of income between the set of persons. On the other hand, inequality between sub groups denotes, the difference between the mean of income between two sub groups of group. In addition with foreign aid there are large numbers of other determinants of income inequality such as; economic growth, corruption, institutional quality education rate, inflation rate, unemployment, trade openness, foreign direct investment (FDI), economic freedom, government size etc. These determinants of income inequality effect income inequality differently.

There are several studies which discussed the association of the above determinants of income inequality with income inequality. Such as Kuznets (1995) concludes, there is inverted U-curve relationship between growth and income inequality. In contrary to Kuznets, Saith (1983) concludes that inverted L-curve is better fit than inverted U-curve. Access to better education is responsible for higher income inequality (Simpson, 1990). In addition Education has a decreasing impact on income inequality (Li et al., 1998; Barro, 2000); Simpson, 1990) examines curvilinear relationship between inequality and democracy. Bornschier et al. (1978) examines that FDI is responsible for higher income inequality. However, Gottschalk (1985)

argues that structural change causes higher income inequality. In opposition, Oskooee (1997) claims, devaluation causes higher inflation which in turn causes higher income inequality. The empirical study of Guscina (2006) concludes that trade openness has negative impact on income inequality.

Moreover, foreign aid is one of the important determinants of income inequality. One of the main purposes of flowing of foreign aid from developed nations to developing world is to lower down the income disparities in developing countries. There are several empirical and theoretical evidences which show the impact of foreign aid on income inequality. Such as Chong et al. (2009) by using system GMM concludes that foreign aid has no robust impact on income distribution. In conflict with this study Shafiullah (2011) confirms, foreign aid improves income inequality. This postulate is further supported by Burnside and Dollar (1997) by stating that, foreign aid may reduce income inequality in the presence of high quality of institutions and good polices.

Although there are several theoretical and empirical works is founded on the association between foreign aid and income inequality, still impact of foreign aid on income inequality and effectiveness of aid money is a question mark. On the other hand, effectiveness of foreign aid is more important issue. Effectiveness of foreign aid is conditional with the implementation of good policies and high quality of institutions in recipient countries. For instance, Africa receives huge amount of aid money due to higher level of poverty but lack of good policies make foreign aid ineffective in African countries.

The current study examines the effect of aid on income inequality in the countries of Asia, Africa, Latin America and Europe. Another important contribution of this study is to recognize the factors and policies which can make foreign aid more

effective in reducing income inequality in above regions. In order to recognize the potential predictors of aid effectiveness this study introduces four interaction terms; interaction between foreign aid and corruption rate in order to examine whether, the effectiveness of foreign aid is conditional with corruption rate or not. The interaction term between quality of institutions of recipient countries and foreign aid in order to judge whether, quality of institution is conditional for the effectiveness of foreign aid or not. In the interaction between government size and foreign aid, government size represents the government policy of recipient countries. This interaction term shows that whether the government policy plays any role for the effectiveness of foreign aid or not. The last interaction term between trade openness and foreign aid examines whether, trade policy of recipient countries has any role in making foreign aid effective or not.

1.1 Research Questions:

- What is the role of corruption and institutional quality for the enhancement of aid effectiveness in aid receiving countries?
- What is the role of trade policy and overall Government policy for the effectiveness of foreign aid in aid receiving countries?

1.2 Objectives:

- To examine the association between income inequality and foreign aid, along with some control variables in the aid receiving countries of Asia, Africa, Latin America and Europe.
- To examine the role of trade and overall government policy and the role of corruption and institutional quality in connection to aid effectiveness in aid receiving countries of Asian, African, Latin American, and European countries.

1.3 Significance of the study:

Income inequality is one of the major problems among developing nations. Developed countries take some effective measures for reducing income inequality in developing countries. One of the main objectives of donating foreign aid is to diminish the income inequality in aid receiving countries. Sometimes, aid improves income inequality and sometimes foreign aid worse income inequality. Therefore, it is essential to identify which predictors can improve the effectiveness of foreign aid for reducing income inequality. These important factors are not explored jointly in literature of the previous studies therefore it is an open zone for work. The importance of this study is obvious because every year developing countries receive huge amount of foreign aid money but provision of aid remains ineffective. Therefore, it is essential

to recognize the predictor which can enhance the effectiveness of foreign aid. This study is also important because Pakistan is an aid receiving country so it is essential to detect the factor which can enhance the effectiveness of foreign aid for reducing income inequality.

1.4 Organization of the study:

This study is established as follows: chapter 1 presents the brief introduction of the study. Chapter 2 explores the theoretical as well as empirical literature review related to foreign aid and income inequality and literature review of the determinant of income inequality. Chapter 3 is about data and methodology. Chapter 4 demonstrates the empirical results of the current study. Chapter 5 represents the conclusions and policy recommendations.

CHAPTER 2

LITERATURE REVIEW

This chapter is based on the previous studies which examine the determinant of income inequality and investigate the impact of foreign aid on income inequality. Income inequality is the main problem of the whole world specially in developing world it is very serious problem. Researchers identify large numbers of the determinant of income inequality with every new research. Analyses of researchers indicate that impact of foreign aid on income inequality varies region to region. In case of some regions foreign aid remains ineffective; in some cases foreign aid worse income inequality and in some cases foreign aid improve income inequality.

2.1 Inequality and Foreign Aid

Different donor agencies such as Central Government, non-central Government and Non State actors give aid to the developing countries. Aid is provided for several purposes; like technical help for policy reforms, budget support, and debt relief. As in the resolution of 1970, United Nation General Assembly suggests that rich countries should give 0.7% of their GNP to poor countries in the form of official development aid. Over the period of 1960-2013, at least 3.5 trillion dollars (2009 USD) were given by rich countries to the poor in the form of foreign aid. Data shows that foreign aid inflow remains constant and donors of aid also remain unchanged during 1960-2013, however recipient of aid significantly changed during this time period.

According to Rajan and Subramanian (2011) on one hand foreign aid can increase the growth rate when Government invested aid money for the development of public infrastructure and human capital development. On other hand larger inflow

of foreign aid led to triggering the Dutch Disease, such as larger inflow of aid money increases the price of exports by increasing the exchange rate which led to reduce the competitiveness of manufacturing sector.

Likewise effects of foreign aid on conflicts consider the mix result theoretically. Collier and Hoeffler (2002) concluded that foreign aid inflow can reduce the conflicts because large aid inflow can relax the Government budget constraint which led to increase the military spending and discourage the group from involving in conflicts. Moreover, Bassely and Persson (2011) suggest that foreign aid which is the exogenous source of Government revenue, an increase in the exogenous source of Government revenue can increase the conflict only in the presence of weak institutions and non-representative Government.

According to Alesina and Dollar (2000) direction of foreign aid is highly influenced by political consideration than economic need. By using dependency theory Dumn (1975) found that aid put increasing impact on income inequality. Chenery and Strout (1996) introduce, "The Financial Two Gap Approach", which is based on the assumption that gap exist either between saving and investment or between exports and imports. The Financial Two Gap Approach suggest that foreign aid should differentiate either there is saving-investment gap or exports-imports gap. In addition Papane (1973) argues, foreign aid can fill the gap of foreign exchange and saving

The impact of foreign aid on income inequality is ambiguous such as, Boone (1996) by using; infant mortality, life expectancy and primary schooling as an indicator of welfare founded that, foreign aid created higher inequality because it always ended with benefiting wealthier population. He argues that politicians promote their self-interest in pleasing their supporters in order get success in elections they

spend foreign aid resources on the supporters by paying their life expenses and giving jobs in public offices which contribute higher income inequality. He argues, Government always supports high income political elite who support government in office. He states, if Government decide to give equal aid money to the poor and their supporters inequality will increases because money given to the poor distributed among large group, and the equal amount given to Government supporters is distributed among small group.Donor agencies put conditionality in order to force the recipient government to use aid for the benefits of the poor (Bauer, 1993; Calier et al., (1997); Leandro et al., 1999). Since the conditionality implements unwanted policies on government, therefore Government find way to move away from these policies. Some time they do not fully implement the policies, sometime they implement policy until they get money, some time they refuse to implement the policy due to these problems with aid conditionality aid money will go in the hand of elite class led to higher income inequality. In line with previous study Nielson and Tierney (2003) state, sometimes donor agencies gives incentive to the politicians of recipient countries that, if they want aid they must encourage the programs that are introduced by the members countries of donor agencies to give them aid, Showed that LDCs are more likely to use the aid money to improve their standard with donor countries, than to improve the welfare of the poor. This will encourage higher income inequality because aid money is used to connect the elite with donors.

In same way, inequality rises because elite political group continuously receives aid funds while; there is no evidences which force the direct distributional role of ODA in cross countries. The selfish donors compromise the merit base allocation of aid like the interest of commercial donor is to allocate in the areas of industrial cluster rather than in highly poor areas. In the same way by using aid for the

purpose of political support by local power full class give incentive to the donor agencies to support the political and commercial self interest in recipient countries, the incentives of donor agencies might against the inequality reducing policy

Reuveny and Lee (2003) conclude that good governance and institution reduced inequality by redistribution of taxes and by decreasing the role of political elite through crackdown on corruption. However, Azam and Laffont (2003) argues that sometime recipient countries intentionally keep their institution away from improving because better institution reduced inequality thus inflow of aid will reduce. As Government has little incentive to improve the welfare of poor. If the welfare of poor does not completely improved, aid will keep coming (Svensson, 2000)In line with this study Gupta et al. (2002) and Hyden et al. (2003) founded that elite class and Government officials misuse the aid resources through rent seeking and corruption which led to higher income inequality.

If elite class invests their money in domestic country inequality will reduces, as higher opportunity of investment led to growth by creating more jobs and by the availability of credit to the society (Azam and Laffon, 2003). However, Easterly (1999) and Boone (1996) conclude that risk encourage elite class to invest in foreign market. Since openness facilitate investment in foreign countries and increases the investment choices which make higher and more stable portfolio.

Feeny (2003) argues, foreign aid can decrease income inequality through various channels; if donor agencies focused highly upon the poorest group of society in recipient country or by paying high attention toward social related sectors like, water, sanitation, health and education. If foreign aid is allocated in the social sectors like water, Health, Sanitation and Education through public expenditures then, foreign aid promotes development indicators like human development index (Gomanee,

2005). Foreign aid reduced inequality if donor agencies supporting the trade union activities which produce better labor market institutions, like minimum wages. These factors are responsible for reducing income inequality in Argentina and Uruguay.

Likely, donor agencies can promote macroeconomic stability through structural reforms; these reforms are to improve term of trade, real exchange rate and reduce the inflation rate, which could help in reducing income inequality. Stable economy and better environment for investment attract more FDI in recipient countries thus unemployment could decreased by demanding more un-skilled labor by incoming firms which lead to reduce the income inequality Asymmetric information creates more incentive problem for allocating the aid against inequality reducing policy. Thiele et al. (2007) argue that most of aid agencies are interested to allocate aid in higher education than in primary education.

In conflicting with above study, Dalgaar (2008) reported that recipient countries face strict condition from donor agencies for the effectiveness of aid. Specifically aid which takes the form of structural adjustment form requires that recipient must implement the policies of donor agencies for aid effectiveness. Conditional aid critics argued that, structural adjustment program lead to higher inequality. Aid inflow badly affects the recipient country's competitiveness by the appreciation of real exchange rate (Doucouligous and paldam, 2008; Rajan and Subramanian, 2011). According to Bjornskov (2010) poor population might be affected highly either due to higher inflation or because of discharge of low skilled labor for intensive production of exports. Odedokun and Round (2004) found the inflation has not visible effect on income distribution pattern in African countries. Moreover, Angeles and Neanidis (2009) argues, if recipient country has larger powerful elite group that country has lower impact of aid on growth. Study suggests

that elite group with Government officials redirect aid from poor group to the benefit of their group which led to higher income inequality.

Layton and Nielson (2008) discussed the political aspect of aid distribution they argue that in order to get the support of rich and powerful class to win the elections politicians hold the control over trade resource to pursue the favorable transfer to interest group which create higher inequality. In the same way income inequality is also affected by foreign aid through ethnic diversity, when political leader of particular ethnic group distribute the foreign aid they will prefer their ethnic group when distributing foreign aid. Leader of political group directly invest aid money in the resident areas of their ethnic group for improving infrastructure and development, which lead to higher inequality.

Hezer and Nunnenkamp (2012) by using panel co integration for the sample of 21 countries over the period of 1970-1995 conclude that aid has increasing impact on income inequality. They claim that inequality increases with aid due to moral hazard behavior of elite class and due to inefficient aid allocating policies of donor agencies. Calderon et al. (2009), by using data set over the period of 1971-2002 found that aid has very weak impact on equal distribution of income when quality of institution was undertaken. Chong et al. (2009) report the result by using cross-section and GMM technique that, foreign aid has no strong impact on income inequality. Bjornskov (2010) by using the Random effect panel analysis concluded that, the influence of democracy and foreign aid in recipient country shows positive impact on income inequality. McGillivray et al. (2011) by using data on assets, education, and health for population quintile for 45 LDCs founded that foreign aid improve the living slandered, but bottom two quintile get much less benefit than rich class which led to income inequality.

Similarly, by employing fixed and random effect model Shafiullah (2011) concludes that foreign aid has reducing impact on income inequality. He argues that aid might worse the income inequality due to availability of unequal access to the education. He also report that in many aid recipient countries less skilled population employed in informal sector of economy with low wages. As more aid resources make less incentives for recipient government to bring reforms in informal sector of economy through such a way that foreign aid can possess higher income inequality.

Helsinki and Finland (2014) investigate the factors which are responsible for reducing inequality in Latin America study based upon 18 panel countries over the period of 1990-2008 by using system GMM. It was founded that international trade has significant impact in reducing income inequality in Latin America.

Like income inequality, foreign aid also has a significant impact on economic growth of recipient countries. It is an overview that capital inflow put negative impact on economic growth of aid receiving countries, because foreign aid is fully consumed and substituted for domestic resources instead of complement for domestic resources, aid displace domestic saving foreign aid mostly benefit the inefficient and corrupt Government in developing countries. in line with this study Levy (1984) recognize that negative association between foreign aid and growth is due to; economic policies, Government intervention, instability of foreign aid inflow in aid receiving countries and business cycles. The impact of foreign aid on economic growth is either positive or negative depending upon; the aid absorption capacity of aid receiving countries, economic and political structure of recipient country and upon the aid receiving duration (Cassen, 1994). Burnside and Dollar (2000) determines that aid can increase growth rate with better institution in recipient countries.

In addition with the previous study Chenery and Strout (1966) detect that aid can eliminate the investment-saving gap and export- import gaps and bring higher growth and productivity in developing countries. In contrast, Mosely (1987) concludes that aid has no significant impact on growth. Armha and Nelson (2008) by using the data set for the sample of 21 SSA countries over the time period of 1995-, claim the significant impact of aid on growth. Higher growth rate achieved by Taiwan in early 1960 was due to loss of foreign aid Taiwan from America (Friedman, 1958; Bauer, 1972; Krauss, 1997). By using instrumental technique and panel data, Boone (1996), concludes that foreign aid has no impact on economic growth and investment. He claims that foreign aid is only beneficial for wealthy and powerful group of society.

In addition with previous study Griffin (1970) concludes that foreign aid reduces the public saving and thus investment decreases which lead to reduce the economic growth. In line with this study Mosley (1980) examines positive impact of foreign aid on economic growth of the countries which are receiving aid from UK, while negative impact upon the countries which received foreign aid from French and Scandinavian countries. He concludes that foreign aid failed to improve the economic betterment condition in India, Bangladesh and in countries like Kenya, Malawi and Korea.

Kosack (2003) determine, in a democratic society foreign aid putt positive impact on Human Development Index (HDI), but in autocratic societies aid putt negative impact in HDI. In addition Gomanee et al. (2005), by using quintile regression founded that aid might not effective directly for human development but it remain effective indirectly by Pro-poor expenditure,

Foreign aid also affects the rate of corruption in recipient countries and there are several studies which show the association between foreign aid and corruption. Okada and Samreth (2012) suggest, aid reduces the corruption however this effect is higher in less corrupt countries and impact varies with donor agencies. Tavares (2003) claims, foreign aid reduce the corruption rate. In addition Odedokun et al. (2004) found that anti-corruption measures have no impact on income inequality. They found that anti-corruption programs only reduced the share of middle income group. Corruption, bad polices and weak governance make foreign aid ineffective (Wolfensohn, 2002).

Pakistan is an aid receiving country, so knowing the impact of aid on the economy of Pakistan is indeed. Over the period of 1960s, 1970s, and 1980s Pakistan was one of the highest aid receiving countries. Le and Ataullah (2002) state that purpose of Pakistan's five year plan from 1965-85 is to reduce the dependence upon foreign aid, but dependence has increased since then. Pakistan receive approximately US$ 73.14 foreign aid from 1960-2002, but benefit of foreign aid has not reached to whole society (Michaelowa, 2006). Higher inflow of foreign aid in Pakistan are not use for development purpose, foreign aid goes in the hands of few people of society which are political elite in Government.

In line with the previous study Husain (1999) indicate that Social indicator like employment, health and education reflect that foreign aid failed to improve the economic betterment condition in Pakistan. Literacy rate still remained around 50% trade gap expended and saving rate remained low. Likewise Ali et al. (1993) detect that foreign aid inflow has no significant impact on the economic growth of Pakistan. Khan and Rahim (1993) claims that foreign aid decreases the domestic saving, while aid shows not any significant impact on economic growth. On the other hand Iqbal

(1997) perceive that foreign aid inflow in public sector has significant positive effect on social and non-developmental spending however, little impact on developmental expenditures. In contrary with this study Khan and Ahmed (2007), by using ARDL co integration approach over the period of 1972-2006 for the annual data of Pakistan identify that foreign aid does not support economic growth and economic conditions both at aggregate and disaggregate level.

It is examine that due to under-funding and insufficient resources Pakistan is heavily dependent on foreign aid for its tertiary education it is started in 1962. Donor agencies not spent too much in primary education sector initially. However during 1980-1992 approximately 78% of foreign aid received by Pakistan from donor agencies for the betterment of education sector goes to the primary education. Likewise, interest of donor agencies for allocating aid for promoting female participation in primary education has been increases.

2.2 Inequality and Growth

In the presence of high income inequality, economic growth does not reduce the poverty significantly. According to Kaldoro (1957) in the countries where distribution of income is more unequal, marginal propensity to save is more for rich people than poor people which increases the accumulation of capital and aggregate growth rate.

Modernization theory explain that during early stage of growth firm's demand for skilled labor is higher, so firms offer higher wage rate which lead to higher income inequality. With higher growth rate skilled labor force increases which lead to lower inequality (Stack, 1978; Zimmerman, 1982; Prechel, 1985; Simpson, 1990 682). In line with this study Kuznets (1995) predicts that inequality would be higher during early growth period since, upper income group receive higher income therefore

inequality would be higher. So Kuznets predicts inverted U-curve in order to show the relationship between income inequality and economic development Furthermore Inequality reduces during higher growth period due to trickledown effect. Additionally Altimar (1995) and Beccaria et al.2013) contradicted the inverted U-curve and argue that inequality would be higher during recession and lower during recovery period.

In contradict with U- curve, Saith (1983) uses the 41 developing countries as a sample, and concludes that inverted L-curve is better fit than inverted U-curve. While jha (1996) reports that growth rate is insignificant variable. In the same way Field (2000) concludes from the observation of 35 countries that inequality and growth rate has no definite relationship. Growth rate reduces because of higher income inequality due to imperfect credit market (Galer and Zera, 1993; Banerjee and Newman, 1993; Aghion and Bolton, 1997). They argue that in the presence of credit market imperfection due to higher collateral level poor cannot borrow, so the poor cannot enjoy all those opportunities in life those rich people enjoying they cannot give better education to their children and cannot take the loan to start up their business.

Deninger and Squire (1996) used the household survey data, covering all sources of income rather than only wage for 108 sample countries over the period of 1960-1974 founded no association between income inequality and growth for all sample and sub-sample defined as rich or poor, equal or un-equal, fast growing or slow-growing countries. However, Barro (2000) considered 84 countries from Deninger and Squire (1996) sample of countries and divided countries in rich and poor countries, used 3SLS founded the evidence of negative effect of economic growth on income inequality for poor countries and positive association for rich countries. When sample of countries is divided in rich and poor sample Forbes (2000)

considered the sample of 45 countries and used fixed effect model concluded that economic growth and income inequality had positive relationship in short run, but negative association in long- run.

Bartic (1994) indicates that growth of the region led to reduce the income inequality of the region. As growth may increase the demand for low skilled labors and hence their wages also increases which led to reduced income inequality. Levernier et al. (1995) rejected this argument of Kuznets.

2.3 Inequality and Education

Studies on the association of education and income inequality are divided in to three categories. Some studies focus on the impact of average level of schooling on income inequality, such as Dougherty and Psacharopoulos (1982) used the standard earning function of human capital theory and concluded that, income inequality increases by increasing the school leaving age. Psacharopoulos and Steier (1988) report that income inequality reduced by increasing the school level.

Schultz (1969) found that higher human capital investment is a most important factor in reducing income inequality. On the other hand, Fields (1980) claims that Educational resources in developing countries play no role in reducing income inequality. However Jimenez (1986) identify that in Africa educational subsidies give more benefit to white collar counterpart than working class children.

Some studies focus on the impact of schooling inequality on income distribution, such as, Chiswick (1974) verify that schooling income inequality does not shows any impact on income inequality. In contradict Caniglia (1988) concludes that higher rate of schooling inequality increases income inequality. However, Ahluwalia (1974) indicates that primary schooling enrollment putt significant impact

on income inequality. While, Secondary school enrollment increases income of middle income bracket though, decreases the share of highest income group. Plotnick (1982) concludes that either increase occurr in schooling inequality or schooling level, causes higher income inequality. In contrast with this study Ram (1984) suggests that schooling level and schooling inequality has no significant impact on income inequality. While, Lam and Levison (1992) and Park (1996) verify that increase in schooling level related with decrease in schooling inequality, is good for income inequality. Likewise Saltongn's article (14) shows that education level produces more skilled labor and thus Income inequality will reduces. Marshall (1961) claims that investment that parents made in their children through education, make productivity difference which lead to higher wage of and thus causes higher income inequality. In the same way Simpson (1990) indicate that access to the education is responsible for inequality instead of economic changes.

Special Evolutionary theory test shows that, educational enrollment is a significant determinant of income inequality. In the study for developing and OECD countries, De Gregorio and Lee (2002) conclude that school enrollment has negative impact on income inequality, while schooling inequality has positive association with Gini coefficient. While, in reverse Li et al. (1998) and Barro (2000) also examine negative impact of primary and secondary schooling enrollment on income inequality. Braun (1988) reported that educational attainment is an important determinant of income inequality, as educational attainment is directly related with wages. Region which has higher rate of education, workers of that region will receive higher wages as compared to other regions, lead to more income equality. Manacorda et al. (2005) observed that in Latin America expansion in secondary school enrollment lead to decrease the income of worker with such schooling even demand for skilled labor was

higher, because the demand for those with tertiary education was higher than secondary educated workers. Gunatilaka et al. (2006) diagnose, in Sri Lanka middle income class receive disproportional benefit from the provision of education than poor income class thus increasing inequality.

2.4 Inequality and FDI

Large numbers of empirical work support the rising impact of FDI on income inequality in developing countries due to higher skill premium. Feentsa and Hanson (1997), argue that in North South FDI model, FDI increases income inequality due to widen the wage gap between skilled and unskilled labor in both source country and host country. Accordingly in FDI involve activities which skilled labor intensive relative to unskilled labor intensive in host countries due to higher demand wage will be higher which increases the gap between skilled and unskilled labor. Conferring to Bruno et al. (2004) foreign direct investment raises the wage gap between skilled and unskilled labor for the case study of Czech Hungry Republic.

Bornschier et.al (1978) verifies that foreign direct investment lead to higher income inequality. Dependence theory gives the idea that development of developing countries depends upon the developed countries and level of dependence includes the foreign investment. Moreover Bodenheimer (1971) displays that country which depend more upon the developed country the dominance and power of depending country will lower down which lead to more inequality. In the same way Feenstra and Henson (1996) report that FDI lead to higher demand for skilled labor and thus causing inequality in the distribution of income.

In order to examine the impact of FDI on income inequality within the country, a single country (Mexico) has been taken. It has been founded that the region

which are closer to the border of USA has larger flow of FDI due to lower labor cost and to sell the product in USA. FDI inflow in Mexico increases the demand skilled and un-skilled labor and thus wage increases for all workers which reduce the income inequality. As evidence are founded that un-skilled worker in Mexico are not perfectly mobile so wage difference occur in Mexico and the impact of FDI on income inequality in Mexico is higher.

Velde and Morrissey (2002) by using the data of ILO for wages and employment by occupation for five East Asian countries over the period of 1985-1998, they do not report the strong evidence that FDI reduce the wage inequality. Figini and Gorg (2006) use the panel of 100 countries over the period of 1980-2002, in order to examine the relationship between wage inequality and FDI conclude that association between wage inequality and FDI depend upon the development level of country. Income inequality decreases with the higher stock of FDI in developed countries, however in developing countries higher stock of FDI increases income inequality. TeVelere (2003) in his analysis for link between FDI and income inequality for Latin America it was concluded that skilled workers gain from FDI.

According to Taylor and Driffield (2005) FDI has positive impact on wage income inequality within the industries in United Kingdom. Choi (2006) in his analysis of impact of FDI on domestic income inequality by using pooled Gini coefficient for 119 countries over the period of 1993-2002, conclude that income inequality increases by increasing the FDI as a percentage of GDP. Bhandari (2007) identify that the empirical results of the association of FDI and income inequality for transitional countries in Eastern Europe and Central Asia, over the period of 1990-2002. Results show positive impact of inward FDI on wage income inequality, while negative impact on capital income inequality.

Vijaya and Kaltania (2007) by using cross country analysis, in order to analyze the link between FDI and wages in manufacturing sector result shows that association between the two variable is negative, and this association is stronger for the wages of female workers. Sun (2007) by using pooled time-series cross-sectional model for 68 countries over the period of 1970-2000, he claimed that FDI have no impact on income inequality, however inflow of FDI shows non- linear relationship with income inequality. According to Basu and Guariglia (2007) who observe the relationship between growth, FDI and income inequality by using panel of 119 developing countries FDI raised growth and inequality. Chintrakarn et al. (2012) uses the panel co-integration for US states over the period of 1977-2001, found that on average FDI at state level reduces the income inequality; however impact of FDI is heterogeneous for states. Hezer and Nunnenkam (2013) use the panel co integration and unbalanced panel regression in order to analyze the impact of inward and outward FDI on income inequality in Europe, result shows the negative association between inward outward FDI and income inequality in long-run.

Nunnenkamp (2014) used country specific and panel co integration technique in order to analyze the long run impact of FDI on income inequality for five Latin American countries, Bolivia, Chile, Colombia, Mexico and Uruguay. According to results, income inequality increases with larger stock of FDI except for Uruguay. Asteriai et al. (2014) by using the panel of 27 EU countries, by including sub-groups reported that FDI is one of the important determinants of income inequality.

2.5 Inequality and Openness

Guscina (2006) investigate by his empirical study that, trade openness has negative impact on income inequality. In a study for more than 100 developed and developing countries over the time period of 1960 and 1997, Harrison (1999)

confirms negative impact of trade openness on income inequality. Additionally Jayadev (2007) state that openness increases capital mobility, which lead to reduce the labors share due to which Firms have option to move toward other countries, this impact is severe in developed countries. Middle income countries observe negative impact, while no evidence of negative impact founded in poor countries.

Moreover theories suggest that openness reduced the income inequality, justified by Samelusion and Hecksher-ohlin theory. On contrary Davis (1997) investigate, openness increases the income inequality in developing countries, due to openness technology increases the revenue of skilled labor which lead to widen the gap between the revenue of skilled and un-skilled labor. In line with this study Williamson (1997) found that before world war-1 income inequality was higher due to trade openness. In the same way Sarviles (1998) examine that, cross- section of developing countries increases the income inequality due to openness over the late 1980s, however this effect is not observed in developed countries.

2.6 Inequality and Unemployment

Keynes's (1994) shows that employment level is the major determinant of income inequality, he claims that employment level is negatively related with income inequality. Rehman, et al. (2008) confirms that employment level has negative impact on income inequality (Gini coefficient) in both lower income countries and in high income countries. Additionally employment rate of the region shows negative impact on income inequality of that region (Druden and Schwarz-Miller, 1982; Braun, 1988)

By using time series approach, Blinder and Esaki (1978), found that variation in unemployment rate has a visible impact on the size of income distribution. According to Beach (1977), and Budd and Whiteman (1978), unemployment rate has

increasing impact on the size of income distribution. In order to investigate the impact of change in unemployment level on the income distribution in UK, Nolan (1986), display positive association between income inequality and unemployment level. By using monthly data for six largest metropolitan cities, Cardoso (1993) and Cardoso et al. (1995), indicate that change in unemployment rate responds quickly to income inequality and there is a positive relationship between income inequality and unemployment.

2.7 Inequality and Government Spending

Government spending is an important determinant of income inequality. For the sample of Latin American countries Calderron and Serven (2004) suggest, government expenditure has positive Impact on long run growth which lead to lower income inequality. Chatterjee and Turnovck (2012) report that government spending has negative impact on income inequality, While in long run income inequality increases in long run with Government expenditure.

2.8 Inequality and Corruption

Corruption increases the income inequality with in countries, because it hurt poor (Bjornskov and Justese, 2012). Furthermore Gupta (2002) verifies that corruption lead to higher income inequality because corruption causes uncertainty and high risk which decreases the investment among poor and middle class. While upper class has power due to which they avoid risk. In Latin America income inequality reduces due to low rate of corruption (Dobson, 2010; Anders and Dobson 2011). On the other hand Jong-Sung et al. (2005) examine that inequality which is caused by corruption lead to more corruption.

Gupta et al. (2002), identified that higher rate of corruption lead to higher income inequality through various channels. According to author there are several channels which show the positive impact of corruption on income inequality. First one is biased tax system, it is a form of corruption which causes tax evasion, unsound tax administration and tax exception support the rich people and make tax base ineffective and lower down the possibility of redistribution of wealth from rich to poor thus increases the income inequality.The second channel is ineffective targeting and inefficient allocation of funds which are used for the purpose of poverty reduction and for the welfare of most needed people of the society. Due to corruption these funds illegally goes in to the hands of rich/ powerful people of the society, so rich becomes more rich and gap between poor and rich become wider.Third channel is related to the impact of corruption on income inequality through the inequality in the returns on human capital investment. Gupta et al. (2002) argue that corruption decreases the public revenues and public expenditures containing public expenditures on human capital investment/ education. Moreover (1998) and Gupta et al. (2001) conclude, corruption has a significant impact on the composition of public expenditure so that education level significantly decreases. Due to corruption public expenditure on education lowers down which affect the ability of the poor to invest in education of their children through public sources which ultimately reduces the return on the investment of poor in education sector relative to the returns on the investment by the rich who give education to their children through non-public resources. Due to difference in the return/ wages on human capital investment by rich and poor income inequality increases.

2.9 Inequality and Economic Freedom

Berggren (1999) provide theoretical framework and describe the impact of economic freedom on income inequality through various channels. Net effect is theoretically ambiguous. Grubel (1998) by using the panel of 39 countries and Economic Freedom World (EFW) index suggest that higher level of economic development reduces the income inequality by increasing income earning prospects.

Likewise Berggren (1999) and Carter (2006) recognize that Government redistribution policy lower down economic freedom, which lead to reduce income inequality. According to Barro (2000) it is also possible that, redistribution increases income inequality through various channels. Resources which are uses to finance the redistribution mostly generated from distortionary taxation which create disincentive to work. If disincentive are larger, then individuals which are eligible for transfer programs become dependent on Government and they get fix level of income over long period of time, while labor force receive higher income relative to disincentive individual therefore inequality increases with redistribution. Redistribution is not the only policy related to economic freedom, which affect income inequality. Furthermore Clark and Lawson (2008) relate tax policy with economic freedom and verify that higher marginal tax reduces the income inequality. On the other hand Berggren (1999) found that other aspects of economic freedom like trade openness and financial deregulation reduces the income inequality. Scully (2000) by using multiple stage approach conclude that economic freedom negatively affect income inequality across the country, when market share of income earned by two lowest quintile increases, and share of highest quintile decreases.

Furthermore Scully (2002) relate Government size as a share of GDP (measured by Government expenditures and transfer programs and subsidies) with

economic freedom founded the negative association. Ashby and Sobel (2008) conclude in their analysis for fifty U.S states that policy change which increases economic freedom lead to higher growth in income and higher income level for all the groups, thus reduces the income inequality. By using fixed effect approach for cross country analysis Carter (2006), indicate tradeoff between economic freedom and income inequality. Moreover analysis of Apergis et al. (2013), for US states report that there is bi-directional casualty between economic freedom and income inequality in long run as well as in short run. By using non-linear framework Bennett and Vedder (2013), examine the relationship between economic freedom and income inequality over the period of 1979-2004 across fifty US states, they examine inflection point at which any additional increase to economic freedom lead to reduce the income inequality, there is inverted U-shaped curve which shows association between two variables. By using International panel of countries, Murphy (2015) investigate that income inequality put negative impact on economic freedom. Apergis and Cooray (2015) by using both linear and non-linear panel co integration approach for 138 countries in order to identify the long run and short run relationship between economic freedom and income inequality. They conclude that linear long run parameter estimates suggesting negative relationship for the period under study, while non-linear long-run parameter estimates suggesting above threshold point there will be negative relation between economic freedom and inequality, while below this point there will be positive association.

2.10 interactions of Foreign aid and Government spending

The largest aid receiving countries receive 50% of government expenditure in the form of foreign aid (Svensson, 2000; Berg et al. 2007). The impact of foreign aid on government fiscal policy is a major question in the aid effectiveness debate. Since

most of the aid is provided directly to the government of recipient country so it is essential to access how aid money is allocated. One of the main concerns of donor agencies is to allocate the aid money to finance non- developmental expenditures this phenomenon is commonly known as fungibility, in which expenditures are financed by foreign aid which will otherwise be financed by taxes. Another similar concern of donor agencies is the potential tax displacement of foreign aid. It is argued that higher inflow of foreign aid reduce the government incentive to increase it tax effort (McGillivray and Morrissey, 2000). In this case aid is not additional to domestic resources since it is substitute for tax revenue. Sometime foreign aid is also used to return the domestic debt.

Osei et al. (2005) suggest that aid does not have a direct impact on the volume of government expenditures but it is considered as a substitute for domestic borrowings. Government spending can significantly rise aid inflow, this is principally due to indirect effect arises from higher tax revenue associated with aid inflows.

2.11 Interaction of Foreign aid and Corruption

Aid and corruption has two way causality relationship, one standard of the literature has examine the impact of foreign aid on the corruption (Alesina and Dollar, 2000; Tavares, 2003; Charron, 2011). Other standard of the literature has examine the influence of corruption rate on foreign aid (Berthelemy et al., 2004; Dela et al., 2014).

Alesina et al. (2000) argues that corruption can favors aid allocation because corrupt countries have lower productivity and hence lower per capita income which support larger allocation of foreign aid money. By taking the sample of 63 countries over the time period of 1981 to 1995, Alesina et al. (2002) conclude that more aid is not associated with lower corruption rate. In contrary to this study Svensson (2000)

examines, aid seems to increase the corruption in recipient countries, particularly in ethnically fragmented countries. in contrast, Tavates (2003) reports that by one percent inflow of foreign aid lead to 0.2 percent decrease in corruption .

In contrary to the above study, Dalgaard (2008) investigate that impact of aid on corruption is not linear. When aid is provided in lower amount, it will lead to decrease in corruption rate however, high level of aid does not decrease the corruption rate. While, Dunning (2004) argues that end of cold war has changed the relationship of foreign aid and corruption. During cold war donors allocation of aid is strongly correlated with their own political and strategic interests, which decreases the credibility of aid allocation. However at the end of nineteenth century donor agencies put more intentions for fighting against corruption in developing countries.

2.12 Interaction of foreign aid and institutional quality

Durbarry et al. (1998) argue that aid provides up to 40 percent to 45 percent of GDP boost to economic growth and development to recipient countries, when there are strong institution and macroeconomic policies in these countries. Positive level of growth will in turn open new channels of revenue generation, which can be used for funding the improvement of institutional quality. In contrary Knack (2001) provides the evidence that higher inflow of aid weaken the quality of institutions, based upon the cross-sectional data set of developing countries. In the same way Groning (2009) concludes, by using the data set of 106 aid dependent countries, aid has negative impact on the quality of institution. Base on the data set of 108 countries over the time period of 1966 and 1999, Djankov et al. (2008) report the adverse relationship between foreign aid and institutional quality.

2.13 Interaction of Foreign aid and Trade openness

Burnside et al. (2000) claims that aid has a positive impact on economic growth, their concrete finding is that countries with good fiscal, monetary and trade policy benefit more from foreign aid in terms of growth than the countries that do not have strong policies. The authors construct a 'good' policies index and one of its components is trade openness dummy developed by Sachs et al. (2005), they conclude the positive impact of trade openness on aid.

In the literature review of the current study, the analysis of the post studies is discussed. These studies represent the ambiguous impact of the control variables on income inequality. There are large numbers of empirical and theoretical literature which observe the impact of foreign aid on income inequality. Literature of past studies authorizes both positive impact of foreign aid on income inequality as well as negative impact on income inequality.

However, there is a limited empirical work which identifies the factors/ predictors and policies that make foreign aid more effective in different regions. Therefore, it is required to evaluate the effective predictors of foreign aid for reducing income inequality. As these important factors are not explored jointly in literature of the previous studies therefore it is an open zone for work.

In order to recognize the effective predictors/ factors of foreign aid this study introduces four interaction terms; Interaction between foreign aid and institutional quality, interaction between foreign aid and corruption, interaction between trade policy and foreign aid and interaction between foreign aid and Government policy.

CHAPTER 3

DATA AND METHODOLOGY

This chapter specifically, explores the econometric strategy for the estimation of the hypothesis of the current study. In section 3.1 of the present chapter we deal with data sources and time period for the analysis of this study. In section 3.2 econometric models are presented; the first Model of the current study present the impact of foreign aid on income inequality. The second Model presents the potential predictors of aid effectiveness

In current chapter of the study further the description of variables, data sources and the construction of variables are discussed. The study employs unbalanced country level annual panel data over the period of 1990-2014. Furthermore in last section of this chapter the research display the methodology which is used for the estimation of the two Models.

3.1 Data

The sample of this study consists of 43 aid receiving countries of Asia, Africa, Latin America and Europe, over the time period of 1990-2014. Selection of aid receiving countries is based upon the limited availability of data on Gini index, and Foreign aid for appropriate time period. The data set is taken from multiple sources, specifically from world data indicator. Overall the data set for this study contains unbalance dynamic panel data covering 43 net aid receiving countries; the foreign aid taken for this study is lump sum aid.

Gini index is calculated from gross income, data is taken from World Development Indicator (WDI). Foreign aid is measured as net ODA received per

capita (current US$), data is collected from WDI. Growth rate is measured by GDP per capita PPP (current international $), WDI is the source of data. Corruption index is taken from International Country Risk Guide (ICRG). Corruption index ranks between 0 and 12. 0 means most corrupt country and 12 shows least corrupt country. Education index is calculated by using mean years of schooling and expected years of schooling. This study contains the data of education index from International Human Development Indicators. Economic Freedom Index basically measures degree of freedom in five major areas, such as Size of Government, Sound money, Freedom to international trade, Regulation and Legal system and security of property rights. Each indicator is measured from 0 to 10 score, 0 signify no economic freedom and 10 denote there is full economic freedom. The data set of EFI for this research is taken from two data sources; World Bank data base and Global Economy. Unemployment is measured by, total (% of labor force) (modeled ILO estimate) data set is comprises from WDI.

Institution index is calculated by using six indicators which are: 1) Control of corruption 2) Government effectiveness 3) Political stability and absence of Violence/Terrorism 4) Regulatory quality 5) Rule of Law 6) Voice and Accountability. This study considers the estimates of all indicators. Data for all six indicators is collected from World Governance Index (WGI) the index of institution is calculated through principal component analysis (PCA).

FDI stock is measure by US Dollars at current price and current exchange rate. We consider FDI stock rather than FDI flow because our assumption is that FDI contribute to the stock of general purpose technology available in economy. Source of FDI data is UN-World investment report. Openness is measure as the sum of Exports of goods and services (% of GDP) and Import of goods and services (% of GDP).

Government size is measure by General Government final consumption expenditure (current US$), data set of both variables taken from WDI.

3.2 Econometric Model Specification

Main target of this study is to examine the impact of foreign aid on income inequality and to find out the impact of interaction term on income inequality. This study develops two models; first model investigate the impact of foreign aid on income inequality in the countries of Asia, Africa, Latin America and Europe. Foreign aid is main variable of the Models of current study, remaining variables of the Model, which are the determinants of income inequality consider as a control variable. Second Model of the study analyzes the impact of interaction term on income inequality in Asian, Africa, Latin America and Europe. The Models of this study are taken from the research work of, Ahmad and Aman Ullah (2006) and from the research work of Khuhro et al. (2011)

$$Gini_{it} = \alpha + \beta_1 GINI_{it-1} + \beta_2 ODA_{it} + \beta_3 GROWTH_{it} + \beta_4 CORR_{it} + \beta_5 EDU_{it} + \beta_6 EFI_{it} + \beta_7 FDI_{it} + \beta_8 G_{it} + \beta_9 UNEMP_{it} + \beta_{10} OPEN_{it} + \beta_{11} INST_{it} + + \beta_{12} DAfrica_{it} + \beta_{13} DLatin_{it} + \beta_{14} DEurope_{it} + u_{it} \ldots\ldots\ldots\ldots\ldots (1)$$

$$Gini_{it} = \alpha + \beta_1 GINI_{it-1} + \beta_2 ODA_{it} + \beta_3 GROWTH_{it} + \beta_4 CORR_{it} + \beta_5 EDU_{it} + \beta_6 EFI_{it} + \beta_7 FDI_{it} + \beta_8 G_{it} + \beta_9 UNEMP_{it} + + OPEN_{it} + \beta_{11} + \beta_{12}(ODA_{it} * INST_{it}) + B_{13}(ODA * GROWTH)_{it} + \beta_{14}(ODA * CORR)_{it} + \beta_{15}(ODA * G)_{it} + \beta_{16} DAfrica_{it} + \beta_{17} DLatin_{it} + \beta_{18} DEurope_{it} + u_{it} \ldots\ldots\ldots\ldots\ldots (2)$$

Where *i* shows Counties (Albania to Vietnam) 43 countries

t=time period (1990-2014) 25 years

$\beta_1, \beta_2, \beta_3 \ldots\ldots\ldots\ldots\ldots\ldots \beta_{19}$ = represents the coefficients of variables.

$DAsia_{it}$ Shows the intercept dummy for Asian countries over the appropriate time period

$DAfrica_{it}$ Shows the intercept dummy for African countries over the appropriate time period

$DLatin_{it}$ Shows the intercept dummy for the countries of Latin America over the appropriate time period

$DEurope_{it}$ Shows the intercept dummy for the countries of Europe during appropriate time period

Gini index is the dependent variable foreign aid is the main variable and growth, corruption, education, economic freedom index (EFI), foreign direct nvestment (FDI), government Size, unemployment, inflation, trade openness and institutional quality are the determinants of income inequality consider as a control variables of the model.

This study employes dynamic panel model, also known as an autoregressive model. If the model contains one or more than one lagged value of the dependent variable on the right side among independent variable then model is known as a dynamic model. Dynamic panel data model was first introduced by Nerlove and Balestra (1966).

We develop dynamic panel model because post studies such as, (Li et al. 1998), claim that income inequality is a persistent series means current level of income inequality is predicted by past level of income inequality. In order to deal with the problem of persistence we explore dynamic panel specification, taking lag of Gini index as an additional control variable.

3.3 Explanation of variables

3.3.1 Dependent variable: income inequality

In model $Gini_{it}$ Measure the income inequality in country *i* and time t. There are several indicators of income inequalities, which are developed in order to investigate the determinant of income inequalities. Many indices are used to measure the income inequality such as, Gini coefficient, Lorenz curve, Theil Index, the mean log deviation, coefficient of variations, inter-quartile range, ratios of income received by the highest income group and lowest income group. Gini index and Lorenz curve are commonly used as a measure of income inequality in literature of our study. We select gini index because it is most commonly available measure of income inequality upon which data is available for many countries from many data sources. Gini index is a statical measure for the dispersion of the income distribution of the nation's residents. Gini index was developed by Italian stratification and sociologist Corrado Gini in 1921. Value of Gini index ranges from 0 to 100% A Gini index of 0 means perfect income equality, whole population of a country has equal distribution of income level. Where, Gini index of 1(or 100%) means maximum level of income inequality among the large numbers of people whole income goes in the hand of one person.

Lorenz curve is basically the graphical representation of income distribution. It was first developed by Max O. Lorenz in 1905. Lorenz curve gives complete information of the distribution of income of a nation and an accurate description of the relative living standard of the household of various groups. In the graph Lorenz curve which is closer to 45° line shows less income inequality while, Lorenz curve which is at a distance from 45°line shows higher income inequality.

3.3.2. Independent variables:

On the right hand side of model foreign aid is the main variable of model remaining variables are control variables which are the determinant of income inequality.

Foreign Aid:

In the model $ODA_{it}\ is$ Official Development Assistance which is a proxy for foreign aid in country *i* and time t. Official Development Assistance is most common measure of foreign aid. This measurement of aid is developed by the Development Assistance Committee of the Organization for Economic Cooperation and Development (OECD). Foreign aid is the transfer of resources without any charge from one country to another. Aid can be a gift, a low interest loan or free of interest loan, a grant or a combination of all these terms. Aid is donated for several purposes: it may be given for improving diplomatic relationship or it may be granted for making military of recipient country strong, aid is sometimes donated for exploring the culture of donor countries, aid is sometime provided for building- up infrastructure for the sake of taking out resources from recipient countries or to get other type of commercial access. Major types of aid disused in literature are: Bilateral aid, multilateral aid, Tied aid, project aid and Military aid.

Economic Growth:

In the model $Growth_{it}\ is$ Growth rate in country i and at time t. Growth is measured by real GDP per capita which is calculated as GDP of a country of initial and final year divided by population. Economic growth is basically the rise in inflation adjusted/ real market value of goods and services of an economy over a specific time period. Traditionally economic growth refers to hoarding of human

capital and physical capital it is also attributed to the rise in productivity which occurs due to technological advancement. Economic growth might be positive or negative, positive growth rate raise the living standard of a nation while, negative growth rate worse the living standard. Two types of economic growth are discussed in literature. First one is actual growth i.e is change in real GDP of a country. Second one is potential growth rate which shows the gain in the potential of economy's productivity. There are several determinants of economic growth few of them are, productivity which is ratio of output to labor input this is an important factor effecting economic growth. Another one is intensity of the working hour of labors. Demographic change is another important factor which effect economic growth by making variation in employment of the population and by affecting labor force participation rate. As industrial revolution bring demographic changes which lower down average birth rate, and increase the average age population.

Corruption:

In the model $Corr_{it}$ Is corruption in country i at time t. Corruption is an immoral or a dishonest act of a person who owned the position of authority, make misuse of his authority for achieving personal benefits. Corrupt person is theft, nepotism, fraud and misuses his power. Corrupt act is not necessarily illegal. There are small and large scale of corruption like, petty corruption which takes place at a small scale like corruption in registration office, in police station, and in many small government and private sectors. Corruption that is conducted on a large scale by Government or politications which affect politics legal and economic system at a large scale is known as grand corruption. Any sector which has lower public interest than personal interest can conduct corruption. So there may be a sectorial wise corruption like, Government or public sector corruption, police sector corruption,

political sector corruption, judicial corruption, educational sector corruption, within labor union corruption, religious sector corruption and, corruption in philosophy. In our study we consider Government/public sector corruption we uses corruption index which is developed by International Country Risk Guide (ICRG), which ranges from 0 to 6, most corrupt nation is represented by 0 and least corrupt nation is represented by 6.

Education:

In the model Edu_{it} $shows$ Education in country i and time t. Education is an action/process of learning the knowledge, values, belief, skill and, habits. In the literature of our study few proxies are used for the measurement of educational level. These are primary and secondary schooling enrollment rate, average year of schooling, Gross enrollment ratio (publically or privately enrolled), human capital Investment, and education index which is calculated by using the value of mean year of schooling and expected year of schooling used by international Human Development Indicators.

Economic freedom index:

In the model EFI_{it} Shows Economic Freedom Index in country i and time t. Economic Freedom Index is basically a ranking introduced by the Heritage Foundation and The Wall Street journal in 1995. The index was developed to examine the degree of freedom of nations. Large numbers of studies have examined the difference in economic freedom across the different countries. These studies reported that, it is more common for economic freedom to be significantly related with good outcomes, like good standard of living and high growth rate while; indication of bad outcome association with economic freedom is higher income inequality. Economic

freedom index represent the degree of freedom in the following areas; in size of government, in sound money, in legal system and security of property rights, freedom to international trade and, in regulation of business, credit and labor. Each indicator is ranked from 0 (shows no economic freedom) to 10 (shows full economic freedom). Economic freedom index is calculated by using the arithmetic mean.

Unemployment:

In the model $Unemp_{it}$ Un-employment in country *i* and time t. unemployment takes place when a person is keenly searching for a job but he does not get it. According to International Labor organization (ILO) labor force which is willing to work for payment and they actively searching for the job, but they remains unable to find the job is known as unemployed labor force. Unemployment is sometimes refers as a presenter for the health of the economy. Unemployment is categorized as structural unemployment, frictional unemployment, hidden unemployment, voluntary unemployment and, involuntary unemployment. In the literature of our study unemployment is measured by % of labor force (modeled ILO estimates).

Institutional Quality:

In the model $Inst_{it}$ is quality of institutions in country i and time t. Institutional quality play a vital role in the growth of an economy, institutional quality varies across the countries. Poor institutions of a country create higher income inequality and much social deterioration. In the current study index of institution is calculated by Principal Component Analysis (PCA), index is calculated by using six major dimensions which are: control of corruption, Government effectiveness, Political stability and absence of Violence/Terrorism, Regulatory quality, Rule of

Law, Voice and Accountability. Institution index varies from -2.5 (shows weak quality of institution) to 2.5 (shows good quality of institution).

Foreign Direct Investment:

In the model FDI_{it} Shows Foreign Direct Investment in country i and time t. Foreign direct investment is defined as, the investment in which business ownership is controlled in one country by an organization of another country. Following types of FDI are disused in literature horizontal FDI, Vertical FDI and Platform FDI. Two categories of FDI are known, FDI stock which is defined as value of FDI at a given point of time, and FDI flow is defined as value of foreign owned asset over a period of time i.e. one year.

Trade Openness:

In the model $Open_{it}$ is trade openness in country i and time t. openness is taken as sum of exports and import as a percentage of GDP. Basically trade openness defines the policy of trade between the countries that either to invite or to restrict the trade partners. Many studies reveal that trade openness is an accelerator of economic growth. It is argued that open economies develop much faster than closed economies.

Government Size:

In the model $G_{it}\ is$ Government size in country i and time t. Government size is measured by government finial consumption expenditure. It takes the value of goods and services which are provided by government for the direct welfare of whole society. There are three types of government expenditures 1) current expenditure /government final consumption expenditure 2) capital expenditure /fixed capital formation and 3) transfer payments.

3.3.3 Interaction term:

Second model of present study capture the impact of interaction term on income inequality. Interaction term has very accurate meaning in statics interaction term shows how the response of an independent variable to the dependent variable depends upon the value of another independent variable.

In the current study we introduce four interaction terms: first one is the interaction between foreign aid and trade policy (ODA*open) which indicate that, either foreign aid effect income inequality due to trade policy or trade policy effect income inequality due to foreign aid. Second one is the interaction between foreign aid and corruption (ODA*Corr) which specify that, foreign aid put the influence on income inequality due to corruption or corruption put influence on income inequality due to foreign aid. Third one is interaction between institutional quality and foreign aid (ODA*INST) which implies that, foreign aid effect income inequality due to institutional quality or institutional quality effect income inequality due to foreign aid. Last one is interaction between foreign aid and government size (ODA*G) this new variable implies that effectiveness of foreign aid may depends upon the government policies of recipient countries or government policies of recipient countries may affect the inflow of foreign aid.

3.4 Methodology:

Following econometric problems may arise in above models:

1) Explanatory variables such as corruption, economic growth, institutional quality and inflation rate are endogenous in the above model. Because causality runs in both directions from explanatory variables to dependent variable and vice versa. These variables can also correlate with error term.

2) Time invariant characteristics (fixed effect) of individual cross sections may be correlated with independent variables.
3) The presence of lagged dependent variable $gini_{it-1}$ gives rise to the autocorrelation between independent variables and error term.

In order to overcome these problems and for the treatment of the unobserved unit-specific heterogeneity and the presence independent variables which are not strictly exogenous in our dynamic panel data model is challenging. In addition the identification of the coefficient of time-invariant regressors give rise to more problems, and need more assumptions on the orthogonally of the regressors and unit-specific effects. Generalized Methods of moment (GMM) elaborated by Arellano and Bond (1991) amongst others, is most common practice in empirical framework. While Binder et al. (2005), Bun and Windmeijer (2010), highlight that, GMM could be affected by weak instruments when unobserved unit-specific heterogeneity is large. In addition number of instruments may become large as compared to sample size. Roodman (2009), concluded that, as a result of increase in the number of instruments range estimates may exhaust the specification test. To defeat with the problem of weak instruments under the condition of estimating the effect of time-varying regressors. Hsiao et al. (2002), developed a transformed likelihood method it is based on model in first differences, but this method could not estimate the coefficient of time-invariant regressors. Therefore two-steps GMM estimate is more appropriate practice in empirical framework. In the first-step we estimate the coefficient of time varying regressors. Later on we regress the first-step residual on time invariant regressors. At the second stage, both time-varying and time-invariant variables which are supposed to be uncorrelated with unit-specific effects eligible as a instruments. At the second stage corresponding over identification restrictions may

be tested with specification test. The two-stage GMM is neither restricted to short time period dimension, nor to dynamic model. The most appropriate advantage of using two-stage GMM is the estimation of coefficient of time-varying regressors is robust to the model misspecification with regard to time invariant variable

CHAPTER 4

EMPIRICAL RESULTS

This chapter starts by presenting the summary statistics. Next, we report the results of the correlation matrix. We then report the result of the model presenting the impact of foreign aid on income inequality and the influence of control variables on Gini Index. Then in Model 2 of Table 5 present the association of interaction terms with income inequality.

4.1 Summary Statistics

We present summary statistics of the data set to explore the distribution characteristics of the different variables used in our model. Table 1 reports summary statistics of African countries for the sample period: 1990-2014. Both means and standard deviations are reported. The first column of Table shows the mean values of different variables used in our study, while the next second column displaces the standard deviations of variable

Table 4.1 : Summery Statistics of Africa

Variables	Mean	S. Deviation
Gini	42.82815	7.355364
ODA	37.37858	21.56504
Growth	2302.636	2432.047
Corruption	2.447519	0.864738
Institution	0.0000	0.972595
Openness	57.48621	18.61298
Unemployment	7.531206	5.205895
Education	0.389747	0.129596
EFI	5.990037	0.696294
FDI	9194.615	23059.49
G	4.663109	1.072451

Results of Table 4.1 reflect the descriptive statistics of dependent and each independent variable which are uses in this study. Table 1 shows descriptive statistic like Mean and Standard Deviation values of the variables. Table 4.1 displays that the average value of Gini index in African countries is 43 percent, over the time period of 1990 to 2014 and standard deviation is 9.9 percent. This study reports that on average, African countries receive 37.37858 per capita (current US $) official development assistance over the time period of 1990-2014, with Standard deviation of 21.56504. This value reflects that deviation from mean is approximately 21.56504. The average growth rate of aid receiving countries of Africa is approximately 2302.636 GDP per capita, while deviation of value from mean is 2432.047. The value of standard deviation of growth is higher because, the cross section of this study are not homogenous therefore, they do not have same growth rate. The higher volatility in growth rate shows that, in some countries of African region there is a very higher growth rate while, other have very low growth rate.

The average rate of corruption in aid receiving countries of Africa over the time period of 1990 to 2014 is 2.447519 percent. This rate indicates that African countries bear higher corruption rate during the appropriate time period. The value of standard deviation is approximately 0.864738, this value indicate that all the aid receiving countries of Africa, approximately bear same corruption rate during appropriate time period.

The average value of institutional quality is 0.0000 because it is an index which is calculated through principal component analysis (PCA). The rate of dispersion of institutional quality from mean is 0.972595. This value reflects that in the aid receiving countries of Africa the quality of institution is almost same over the appropriate time period. Average value of trade openness in receiving countries is

57.48621 percentage of GDP and the rate of deviation from mean is18.61298l. The average value of education level in Africa is 0.389747 units over the time period of 1990 to 2014, which shows that on average education level in Africa is very lower and the rate of dispersion is 0.129596 units.

Table 1 reflects that on average, total economic freedom score in Africa during 1990-2014 is 5.990037, and standard deviation is 0.696294. The average value of Government expenditures in the Aid receiving countries of Africa is 4.663109 million US $ and rate of dispersion is 1.072451.

On average value of FDI stock in Africa is 9194.615 million US $ and the deviation of FDI is round about 23059.49which is higher rate of dispersion. Higher rate of volatility of FDI indicates that in some aid receiving countries of Africa there is relatively very higher rate of FDI, while in some countries there is relatively very small rate of FDI.

Table: 4.2 Summery Statistics of Asia 1

Variables	Mean	S. Deviation
Gini	37.26624	5.381145
ODA	38.67959	61.95606
Growth	7208.736	6659.719
Corruption	2.606254	0.934063
Institution	0.00000	0.972013
Openness	84.81773	43.18917
Unemployment	6.50845	4.154235
Education	0.595096	0.155871
EFI	6.473822	.7984495
FDI	44934.93	114781.3
G	3.544310	1.300213

Table 4.2 indicate that on average the income inequality in aid receiving countries of Asia is 37.26624 percent and the deviation from mean is 5.4. However on average Asian countries receives 38.7, per capita foreign aid over the time period of 1990-2014.

Table 4.3: Summery Statistics of Europe

Variables	Mean	S. Deviation
Gini	31.31811	4.792242
ODA	66.63475	67.27572
Growth	10764.8	8060.467
Corruption	2.700816	0.983140
Institution	0.00000	0.975900
Openness	86.29308	33.29451
Unemployment	11.40424	6.67372
Education	0.690705	0.097526
EFI	6.34697	0.945656
FDI	16647.47	31607.26
G	9.823709	1.809212

Table 4.4: Summery Statistics of Latin America

Variables	Mean	S. Deviation
Gini	51.74742	5.106944
ODA	29.87877	39.30118
Growth	7633.649	4378.266
Corruption	2.59375	.9839018
Institution	0.00000	0.975900
Openness	61.87827	26.87422
Unemployment	6.616667	3.174244
Education	0.569936	0.109434
EFI	6.592188	0.916438
FDI	40648.41	101899.8
G	2.361536	6.210954

Summary statistics of all the four regions show that on average income inequality in Latin America is higher among all the four regions in contrary Latin America receive the least amount of aid money among the four regions of this study.

4.2 Detecting Heteroskedasticity:

Heteroscedasticity is the phenomenon in which the variability of the variable is unequal across the range of the values of second variable that predict it. In other words if the error terms do not have a constant variance, they are said to be

heteroscedasticity. It may be very problematic in various regression methods; it can produce biased and misleading estimates.

There are various tests for detecting heteroscedasticity, in this study Breusch-pagan/Cook-Weisberg test is used. The Breusch-pagan test is designed to detect any linear form of heteroscedasticity. First of all regression has been run for Breusch-pagan test and then we run the command of heteroscedasticity on this regression.

Table 4.5: regression for Heteroscedasticity

Variables	Coefficients	P-Value
Logoda	-0.0637789	0.001
Logedu	-0.1581124	0.088
Logefi	0.6225069	0.000
Logcorr	0.0759954	0.099
Logopen	-0.0446464	0.335
Logfdi	0.0225543	0.027
Log	-0.0302358	0.085
loggrowth	-0.068562	0.070
logunemp	0.0425361	0.212
Loginst	-0.0234668	0.152
Cons	3.745135	0.000

Prob > F	0.0000
R-squared	0.2678
Adj R-squared	0.2259

The null hypothesis of Breusch-Pagan / Cook-Weisberg test state that the error variances are all equal and the alternative hypothesis demonstrate that the error variances are a multiplicative function of one or more variables.

Ho: Constant variance Variables: fitted values of loggini

chi2 (1) = 1.52

Prob > chi2 = 0.2170

As the p-value is greater than 0.05, so we cannot reject the null hypothesis which implies that there is no heteroscedasticity in the model of this study.

4.3 Correlation Matrix

A correlation matrix is used to explore the dependency between multiple variables at the similar time period. The result contains a table that shows coefficients between each main variable and the others. The most common measure for the investigation of the association between multiple variable is the pair-wise (Pearson) correlation matrix.

Tables 4.6, 4.7, 4.8, and 4.9 reflects the result of coefficient of correlation matrix for dependent and each independent variables and their significance level for the countries of Asia, Africa, Latin America, and Europe. It is possible to observe from the Table 4.6 that, correlations are significant for most of the variables, but this table also depict insignificant correlations for some variables. The first column of Table 4.5 shows the association of dependent variable with dependent and the association of independent variables with dependent. The association between the independent variables is shown in the next columns..

Table 4.6: Correlation matrix of Asia

	Gini	ODA	Edu	EFI	Corr	Open	FDI	G	Unemp	Inst
Gini	1.0000									
ODA	-0.1882*** (0.0000)	1.0000								
Edu	-0.1999*** (0.0001)	0.0835** (0.0455)	1.0000							
EFI	0.2202 (0.0000)	0.1385 (0.0002)	0.3781*** (0.0000)	1.0000						
Corr	-0.0243 (0.5568)	0.2268*** (0.0000)	0.1373*** (0.0015)	0.0981*** (0.0099)	1.0000					
Open	-0.2312*** (0.0000)	0.3086*** (0.0000)	0.3882*** (0.0000)	0.2959*** (0.0000)	0.0824** (0.0077)	1.0000				
FDI	0.1599*** (0.0001)	-0.1866*** (0.0000)	0.1489*** (0.0003)	0.0327 (0.3773)	-0.0599** (0.0530)	-0.1313*** (0.0000)	1.0000			
G	0.1649*** (0.0000)	-0.1362*** (0.0000)	0.0748* (0.0741)	-0.1033*** (0.0054)	-0.0462 (0.1405)	-0.1594 (0.0000)	0.9089*** (0.0000)	1.0000		
Unemp	0.0474 (0.2465)	0.3237*** (0.0000)	0.2752*** (0.0000)	0.1081*** (0.0036)	0.2668** (0.0000)	-0.0070 (0.8154)	-0.0749** (0.0120)	-0.0616** (0.0402)	1.0000	
Inst	-0.0228 (0.5888)	0.0635** (0.0479)	0.0287 (0.4903)	0.1078*** (0.0035)	0.1981** (0.0000)	-0.0010 (0.9754)	0.0112 (0.7265)	0.0635** (0.0479)	-0.0313 (0.331)	1.0000

*** denote significant at 1%, ** denote 5% significance level and * shows 10% significance level.

First column in table 4.6 shows that, there is a negative correlation between foreign aid and income inequality in Asia. There is negative correlation between education and income inequality and the correlation is highly significant at 1%. Economic freedom index and income inequality has positive association, while the coefficient is highly significant. The correlation between corruption and income inequality is negative and insignificant.

Table 4.7: Correlation matrix of Africa

	Gini	ODA	Edu	EFI	Corr	open	FDI	G	Unemp	Inst
Gini	1.0000									
ODA	-0.1907* (0.0944)	1.0000								
Edu	0.6949*** (0.0000)	-0.1097 (0.1317)	1.0000							
EFI	0.4357*** (0.0022)	0.4357*** (0.9049)	0.6639 (0.0000)	1.0000						
Corr	0.2330** (0.0401)	0.1213 (0.0194)	0.1265* (0.09540	-0.1035 (0.1112)	1.0000					
Open	-0.1213 (0.2931)	0.0412 (0.4109)	0.3258*** (0.0000)	0.1266** (0.0394)	-0.0863 * (0.0974)	1.0000				
FDI	0.5483*** (0.0000)	-0.2171*** (0.0000)	0.5772*** (0.0000)	0.3302 (0.0000)	0.0002 (0.9969)	0.1315*** (0.0087)	1.0000			
G	0.6871*** (0.0000)	-0.2289*** (0.0000)	0.5729*** (0.0000)	0.3449*** (0.0000)	0.1436** * (0.0069)	0.0389 (0.4365)	0.9290** * (0.0000)	1.0000		
Unemp	0.5372*** (0.0000)	-0.2064*** (0.0000)	0.6462*** (0.0000)	0.3511*** (0.0000)	0.2219** * (0.0000)	0.1868*** (0.0002)	0.5982** * (0.0000)	0.6898** * (0.0000)	1.0000	
Inst	-0.1189 (0.3697)	0.1503*** (0.0054)	-0.1790** (0.0150)	0.0457 (0.4729)	0.1744** (0.0026)	-0.0761 (0.1697)	- 0.1265** (0.0229)	-0.0589 (0.2898)	-0.0313 (0.331)	1.0000

The first column of Table 4.7 indicates that there is weak and negative association between foreign aid and income inequality in Africa.

Table 4.7: Correlation matrix of Europe

	Gini	ODA	Edu	EFI	Corr	open	FDI	G	Unemp	Inst
Gini	1.0000									
ODA	-0.1583 (0.1841)	1.0000								
Edu	- 0.7828*** (0.0000)	-0.1944* (0.0820)	1.0000							
EFI	0.1183 (0.2867)	0.4816*** (0.0000)	0.0748 (0.4530)	1.0000						
Corr	-0.0004 (0.9970)	-0.2092** (0.0322)	0.1285 (0.2440)	0.2325** (0.0141)	1.0000					
Open	- 0.2423*** (0.0107)	0.1989** (0.0131)	0.3306*** (0.0004)	-0.2071** (0.0172)	-0.0374 (0.6532)	1.0000				
FDI	0.4728*** (0.0000)	-0.2709** (0.0022)	-0.1161 (0.2703)	0.2030** (0.0268)	-0.1544* (0.0843)	- 0.2732*** (0.0002)	1.0000			
G	0.3919 (0.0000)	-0.3237*** (0.0001)	-0.1784* (0.0687)	0.0632 (0.4768)	-0.1221 (0.1433)	- 0.3806*** (0.0000)	0.9090** * (0.0000)	1.0000		
Unemp	0.1244 (0.1934)	0.6229*** (0.0000)	- 0.3061*** (0.0014)	0.1376 (0.1199)	- 0.2515** (0.0024)	-0.1492** (0.0266)	-0.0886 (0.2306)	-0.0471 (0.4942)	1.0000	
Inst	0.0909 (0.3562)	0.1301 (0.1297	-0.0986 (0.3242)	0.4250*** (0.0000)	-0.0646 (0.4653)	0.0240 (0.7424)	0.3352** * (0.0000)	0.1815** (0.0142)	0.0608 (0.4047)	1.0000

The correlation matrix of Europe displays that foreign aid has no impact on income inequality in aid receiving countries of Europe.

Table 4.9: Correlation matrix of Latin America

	Gini	ODA	Edu	EFI	Corr	open	FDI	G	Unemp	Inst
Gini	1.0000									
ODA	0.0194 (0.7660)	1.0000								
Edu	-0.1618* (0.0628)	-0.4651*** (0.0000)	1.0000							
EFI	-0.0962 (0.1965)	0.1035** (0.1098)	0.2794 *** (0.0001)	1.0000						
Corr	-0.2014*** (0.0020)	0.1033** (0.0528)	0.0628 (0.4076)	0.1260 (0.0512)	1.0000					
Open	-0.0200 (0.7644)	0.3404 *** (0.0000)	-0.2157*** (0.0045)	0.5363*** (0.0000)	-0.1981** (0.0302)	1.0000				
FDI	0.0695 (0.2793)	-0.2397 *** (0.0000)	0.3004** (0.0000)	0.0169 (0.7882)	0.0287 (0.5834)	-0.2612*** (0.0000	1.0000			
G	0.1647 ** (0.0109)	-0.2385*** (0.0000)	0.2194*** (0.0034)	-0.1266** (0.0501)	0.0157 (0.7696)	-0.3690*** (0.0000	0.9231 *** (0.0000)	1.0000		
Unemp	-0.1938*** (0.0024)	(0.0000)*** (0.0000)	0.3004** (0.0000)	0.1039* (0.0971)	0.0006 (0.9911)	-0.3873*** (0.0000)	0.0142 (0.7832)	0.0435 (0.4004)	1.0000	
Inst	-0.0017 (0.9804)	0.0341 (0.5539)	0.2194** (0.0034)	-0.2128*** (0.0009)	0.2531** (0.0000	-0.0745 (0.2092)	0.0976 (0.0894)	0.0449 (0.4357)	-0.0127 (0.8249)	1.0000

4.5 Estimation Results

This section empirically examines the impact of foreign aid on income inequality in the countries of Asia, Africa Latin America and Europe. Foreign aid is the main variable of this study, while some control variables which are the determinant of income inequality also taken as independent variables in model

This study estimates two empirical models; first Model indicates the impact of foreign aid on income inequality in the countries of Asia Africa, Latin America and Europe. The control variables are growth, corruption, education level, economic freedom index, institutional quality, foreign direct investment, government expenditure, trade openness and unemployment rate, are also estimated. Second

Model measure the impact of interaction term on income inequality in the countries of Asia, Africa, Latin America and Europe.

Table 4.10: Estimation results of panel Countries

Variables	Model-1	Model-2
GINI(-1)	.6830048*** (0.000)	.6515841*** (0.000)
ODA	-.0048155** (0.0184)	-.0463712** (0.032)
CORR	-1.394903* (0.0948)	-.6320711* (0.016)
GROWTH	.0000407 (0.356)	.0000981* (0.069)
INST	-.422582** (0.028)	-.4008516** (0.013)
OPEN	.0154843 (0.208)	.0002624 (0.984)
UNEMP	.2907731*** (0.003)	.3255704*** (0.007)
G	2.03e-11** (0.015	2.03e-11*** (0.006)
FDI	5.82e-07 (0.786)	3.52e-07 (0.833)
EFI	-.6311494*** (0.007)	.8783566** (0.027)
EDU	-15.76407 (0.003)	-19.15878** (0.003)
DLatin	5.083341** (0.014	4.658895*** (0.009)
DAfrica	-.8627013 (0.626)	-2.07152 (0.411)
DEurope	.5570049** (0.0432)	.1755574 (0.838)
Constant	12.29081** (0.031)	16.28801*** (0.004)
ODA*INST		0.110677* (0.1029)
ODA*open		1.33006 (0.5043)
ODA*CORR		0.089532*** (0.0057)
ODA*G		-0.026675 (0.2809)

Diagnostic Tests

AR (2) Probability	**-1.21** **0.227**	**-1.26** **0.208**
J Test Probability	**227.86** **0.231**	**245.67** **0.327**

The Table of diagnostic test, specifically show the special effect of J-test and AR (2) test. These special effects reveal that the instruments uses in model are robust. Specifically, J-test estimations provide the evidence of accepting the null hypothesis that the instruments are statistically independent of residuals. Precisely, we find J-test's p-values as 0.231 and 0.327 for Models (1, 2) respectively. This study reports AR (2), which has p-value of 0.227 and 0.208 respectively. These results did not show any major evidences of the accordance of autocorrelation in tested models. These diagnostic tests deliver the proof that the instruments are valid.

The results contains in the first column of Table 4.10, indicate that foreign aid and income inequality are negatively and significantly related with each other. This result shows that by inflow of foreign aid income inequality will improve in aid receiving countries; however coefficient of foreign aid shows that foreign aid has a very little impact on income inequality. This finding is consistent with the study of Feeny (2003) which confirms the reducing impact of foreign aid on income inequality.

Feeny (2003) argues, foreign aid can decrease income inequality through various channels; if donor agencies focused highly upon the poorest group of society in recipient country or by paying high attention toward social related sectors like,

water, sanitation, health and education. If foreign aid is allocated in the social sectors like water, Health, Sanitation and Education through public expenditures then, foreign aid promotes development indicators like human development index (Gomanee, 2005). Foreign aid reduced inequality if donor agencies supporting the trade union activities which produce better labor market institutions, like minimum wages. These factors are responsible for reducing income inequality in Argentina and Uruguay.

In the first column of Table 4.10 it is exposed that the coefficient of corruption has significant and negative association with income inequality but, actually it indicates that increase in corruption causes higher income inequality because, the range of corruption index 0 shows most corrupt country, while 6 shows least corrupt country. .

The finding of this study is in line with previous studies. Such as, Gupta et al. (2002), identify that higher rate of corruption leads to higher income inequality through various channels. According to author there are following three possibilities which show the positive impact of corruption on income inequality.

1) The first possibility is biased tax system, it is a form of corruption which causes tax evasion, unsound tax administration and tax exception support the rich people and make tax base ineffective and lower down the possibility of redistribution of wealth from rich to poor thus increases the income inequality.
2) The second possibility is ineffective targeting and inefficient allocation of funds which are used for the purpose of poverty reduction and for the welfare of most needed people of the society. Due to corruption these funds illegally goes in to the hands of rich/ powerful people of the society, so rich becomes more rich and gap between poor and rich become wider.

3) The third possibility is related to the impact of corruption on income inequality through the inequality in the returns on human capital investment. Gupta et al. (2002), argue that corruption decreases the public revenues and public expenditures, containing public expenditures on human capital investment/ education. Since corruption has a significant impact on the composition of public expenditure therefore; public expenditure on education level significantly decreases which affect the ability of the poor to invest in education of their children through public sources which ultimately reduced the return on the investment of poor in education sector relative to the returns on the investment by the rich who give education to their children through non-public resources. Due to difference in the return/ wages on human capital investment by rich and poor income inequality increases (Mauro et al., 1998; Gupta et al., 2001).

The results of Table 4.10 in first column expose that coefficient of institutional quality is negatively related with income inequality. The coefficient signifies that when qualities of institutions improve then, income inequality goes down.

Findings of the current study are supported by past studies. Such as, Chong and Gradstein (2007) justify, there is a strong correlation between poor quality of institution and higher rate of income inequality. It is argued that low quality of institutions support higher income. Inequality because in the presence of weak institutions, poor are not given the insurance of judicial system and their power to extract the rents is lowers than rich. It is also argued that rich have higher influence on political system as a result quality of institution has reduced. The current history of Russia in transition and history of many Latin American countries such as, Bolivia

shows that higher income inequality and lower quality of institution support each other.

Findings of the study in the first column of Table 4.10 suggest that, unemployment has significant positive influence on income inequality. This finding is consistent with previous study such as, Cardoso (1993) and Cardoso et al. (1995) state that change in unemployment rate responds quickly to income inequality and there is a positive relationship between income inequality and unemployment.

The estimated results of first model in Table 4.10 display that education rate has significant impact on income inequality. Several studies support negative correlation between education and income inequality. Schultz (1963) finds higher human capital investment is a most important factor for reducing income inequality.

In the estimated results of current study Economic Freedom Index indicate the positive and significant influence on income inequality. Empirical results of the current study are supported by Clark and Lawson (2008) they relate tax policy with economic freedom and founded that higher marginal tax reduces the income inequality.

The first column of Table 4.10 represents that government expenditures has significant and positive effect on income inequality. This finding is supported by past Literature which examines the positive impact of Government spending on income inequality. Government spending increases income inequality due to several reasons. Some time it is very difficult task to target the needy and poor peoples for regular education and health expenditures because, in many countries the government expenditures programs are launched in urban areas therefore, these programs remains ineffective for the peoples of rural areas and for those living in unofficial urban areas

(Aspe and Sigmunt, 1984; Aspe, 1993; Birdsaill and James, 1993; Gonzalez, 1995; Harberger, 1998; Schwartz and Ter-Minassian, 2000).

The insignificant impact of growth rate on income inequality is consistent with previous studies. Field (1991) concluded from the observation of 35 countries that inequality and growth rate has no definite relationship. jha (1996) reports that growth rate has insignificant impact on income inequality.

In this study, four dummies are generated for the regions of Asia, Africa, Latin America and Europe. Dummy of Asia is considered as a base relative to the dummies of other three regions. In the results of Model-1 Table 4.10 coefficient of Latin America dummy shows that income inequality in Latin America is higher relative to the income inequality in Asia. The coefficient of dummy of Africa shows that income inequality in Africa is low as compare to income inequality in Asia. Coefficient of dummy of Europe indicates that income inequality is approximately same as in Asia.

Main findings of Model-2 of Table 4.10 are the results of interaction terms. In the current study, four control variables are interacted with foreign aid in order to investigate whether the impact of foreign aid on income inequality is conditional with these control variables or not. The Model-2 considers Institutional quality, trade openness which represents the trade policy, corruption and government expenditures which represent government policy, as a predictor for the potential effectiveness of foreign aid in aid receiving countries of Asia, Africa, Latin America and Europe. The purpose of these interaction terms is to judge which of these factors play a role in making foreign aid effective.

The results contain in Model-2 of the Table 4.10 provide positive association of the interaction of foreign aid and institutional quality, with income inequality in aid

receiving countries. Significance level of the coefficient of interaction term implies that impact of foreign aid on income inequality depends upon the quality of institution. The coefficient of interaction term is significant and positively related with income inequality; it indicates that income inequality increases in the countries of Asia, Africa, Latin America and Europe either due to weak institutional quality or due to decrease in the inflow of foreign aid. The result shows that institutional quality of aid receiving countries is an important predictor of aid effectiveness.

The coefficient of the interaction term of foreign aid and corruption has positive and significant impact on income inequality. Significance of the coefficient of interaction term of foreign aid and corruption reflect that for measuring the impact of foreign aid on income inequality, corruption is conditional for this measurement. This study reflects that foreign aid receipts in corrupt countries bear higher income inequality. The result of the interaction term of foreign aid and corruption rate can be concluded as corruption rate is very important factor/ predictor of aid effectiveness.

The results of Table 4.10 demonstrate positive and insignificant coefficient of interaction term of trade openness and foreign aid. The coefficient shows that combination of foreign aid and trade openness has no impact on income inequality. It can be concluded that neither foreign aid is conditional for measuring the impact of trade policy on income inequality nor trade policy is conditional for measuring the impact of foreign aid on income inequality. This result can be interpreted in the way that trade policy is not a probable predictor of foreign aid effectiveness in Latin America, Asia, Africa and Europe.

The last interaction term of the current study is government policy and foreign aid. The result of the coefficient of this interaction term is negative and insignificant. The result demonstrate that neither government expenditure affect the relationship of

foreign aid and income inequality, nor foreign aid is conditional for presenting the impact of government expenditure on income inequality. These results reveal that government policies of recipient countries of Asia, Africa, Latin America and Europe do not play any role for the effectiveness of foreign aid.

The results of the Table 4.10 reveal that foreign aid inflow in Asia, Africa, Latin America and Europe put reducing impact on income inequality. However reducing impact of foreign aid on income inequality is very little in the aid receiving countries of Asia, Africa, Latin America and Europe. The Model-2 of this study shows, the predictor of aid effectiveness in the aid receiving countries. The findings of the current study illustrate that institutional quality and corruption rate in the aid receiving countries of Asia, Africa, Latin America and Europe are the potential predictor of aid effectiveness. However government policy and trade policy do not demonstrate their role for effectiveness of foreign aid.

CHAPTER 5

CONCLUSION AND POLICY RECOMMENDATION

5.1 Conclusion

This study promote the existing literature of influence of foreign aid on income inequality, the main contribution of this study is to observe the impact of interaction term on income inequality.

The current study develops on the basis of the two objectives:

1. To find out the impact of foreign aid on income inequality in recipient countries of Asia, Africa, Latin America and Europe, and further to analyze the impact of control variables on income inequality.
2. To examine the impact of interaction term of foreign aid and corruption, interaction of foreign aid and institutional quality, interaction of foreign aid and trade openness, and interaction of foreign aid and government size on income inequality.

In order to achieve these two objectives this study develops two dynamic panel models for each objective, Gini index is a dependent variable. First model considers foreign aid as a main variable of this study and the remaining are control variables which are corruption, economic growth, institutional quality, economic freedom, education, unemployment rate, trade openness, government size, and foreign direct investment. The control variables are selected in accordance with previous literature of the studies of determinant of income inequality. Second model examine the influence of interaction term on income inequality.

In order to reduce the problem of endogenity and overcome the problem of autocorrelation due to dynamic nature of data, and to overwhelm the problem of

heteroscedasticity, this study employs two-steep system GMM. We consider unbalanced panel data set for 43 countries of Asia, Africa, Latin America and Europe over the time period of 1990-2014.

The finding of this study illustrate that foreign aid has significant impact on income inequality and this impact goes in to the negative direction, this analysis is consistent with the theoretical framework that foreign aid reduces income inequality. The empirical analysis suggests that after controlling all other variables of our model, there is a negative association between income inequality and foreign aid. However the coefficient of foreign aid reflects that foreign aid has little impact on the income inequality of the recipient countries of Asia, Africa, Latin America and Europe.

On the other hand, the interaction between corruption and foreign aid modify the relationship between aid and income inequality. This result suggests that effectiveness of aid is conditional with corruption and the regions under the study bear higher income inequality with the inflow of foreign aid due to higher corruption rate in these regions. This result can be concluded in opposite direction, higher rate of corruption due to larger inflow of foreign aid in these recipient countries leads to higher income inequality. The result of the interaction term of foreign aid and corruption rate can be concluded as corruption rate is very important factor/ predictor of aid effectiveness in Latin America, Asia, Africa and Europe.

The interaction term between trade openness and foreign aid display the insignificant impact on income inequality. The result indicates that relationship between foreign aid and income inequality is not influenced by trade openness. In the same way relationship between trade openness and income inequality is not influenced by foreign aid in recipient countries. This result can be concluded in the

way that trade policy is not a probable predictor of foreign aid effectiveness in Latin America, Asia, Africa and Europe.

The result of interaction term between foreign aid and institutional quality put the positive stimulus on income inequality. In the aid receiving countries if there is a weak institutional quality then higher inflow of aid causes higher income inequality because weak institutions allocate foreign aid inefficiently and leads to higher income inequality. This study implies that in order to reduce the income inequality through the larger inflow of aid it is necessary for the recipient countries to have good quality of institution. This result can be concluded in the way that institutional quality is potential predictor of foreign aid effectiveness in Latin America, Asia, Africa and Europe.

The empirical result of the interaction between foreign aid and government size implies that neither government expenditure affect the relationship among foreign aid and income inequality, nor foreign aid is conditional for presenting the impact of government expenditure on income inequality. These results reveal that government policies of recipient countries of Asia, Africa, Latin America, and Europe do not play any role for the effectiveness of foreign aid.

5.2 Policy Recommendation

In this section we suggest some good points in the light of empirical findings of the current study, which are considerable for the aid recipient countries of Asia, Africa, Latin America and Europe. The quantity analysis of this study although designate the negative impact of foreign aid on income inequality but, the coefficient of foreign aid is very low which display that aid plays very little role for reducing income inequality in recipient countries. It is recommended that in order to reduce

income inequality through foreign aid recipient countries of Asia, Africa, Latin America and Europe should improve the quality of their institutions.

In the light of empirical findings of this study, it is suggested that in order to make foreign aid effectiveness for reducing income inequality recipients should reduce the level of corruption; they should consider effective measures for the control of corruption by improving the quality of their institutions.

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