THE ROLE OF INTERNATIONAL MIGRATION OR REMITTANCES IN INEQUALITY AND POVERTY ALLEVIATION, A PANEL DATA ANALYSIS OF DEVELOPING COUNTRIES

Submitted By: Wajeha Rani

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Supervised By: Dr. Faiz-ur-Rahim

International Institute of Islamic Economics

International Islamic University, Islamabad

September 2017

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A THESIS

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Dr. Faiz-ur-Rahim

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September 2017

Dedicated

To

My respectable

Parents

APPROVAL SHEET

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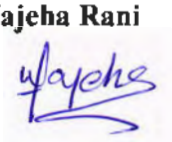
DECLARATION

This thesis is a presentation of my original research work neither as a whole nor as a part there of, been copied out from my other source. Wherever contributions of others are involved, every effort is made to indicate clearly, with due reference to the literature, and acknowledgement of collaborative research and discussions. The work was done under the guidance of my supervisor, Faiz-UR-Rahim, at the International Institute of Islamic University, Islamabad, as partial fulfillment of the requirements for the award of degree of MS in Economics. In my capacity as supervisor of the candidate's thesis, I certify that the above statements are true to the best of my knowledge.

Wajeha Rani



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In the name of Allah (SWT), the most Gracious and the Most Merciful, Peace and blessing of Allah (SWT) on his last Prophet Muhammad (SAW) who taught humanity to the human beings and guide them to the right path. Allah (SWT) gave me this precious opportunity with courage and patience to carry out this research work.

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ABSTRACT

The focus of this study is to analyze how international migration and remittances affect poverty in developing countries and to analyze the role of international migration and remittances in improvement of income distribution in developing countries. Several studies have analyzed the overall effect of remittances and international migration on poverty [Adams and Page (2005), Gupta et al (2009), Margolis et al (2013), Ratha, (2013)]. But there is no recent study to investigate the separate effect of remittances and migration on poverty in selected developing countries. To fill this gap, the present study described two models to investigate the separate impact of remittances and international migration on poverty. Furthermore, there is no recent study to examine the separate effect of remittances and migration on inequality in developing countries as well. To fill this lacuna the present study explained the effect of remittances and migration on inequality in developing countries. This work has not been done so far. The data is used for the period of 1990 to 2015 for 25 selected developing countries. For estimation of results Fixed Effect Model technique is used. The empirical analysis of our study indicates that international migration and remittances have a negative impact on poverty. Similarly, international migration has negative associations with income inequality, whereas remittances increase income inequality. The results support many previous empirical findings on the significant impact of migration and remittances on poverty and inequality. This study will be beneficial for developing countries and it has important policy implications. As an outcome of this study, government may lower the cost and risk of migration; provide information and take care of migrants at receiving countries to encourage migration. Furthermore, because of this study, the policy of reducing the cost of remittances

planned by the government to encourage the flow of remittances through formal financial channels.

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LIST OF ABRIVIATIONS

ARDL= Autoregressive Distributed Lag

FDI= Foreign Direct Investment

GDP= Gross Domestic Product

Govt Exp= Government Expenditure

HC= Human Capital

INEQ= Inequality

INF= Inflation

IOM = International Organization for Migration

LAC= Latin American and Caribbean

LSMS= Living Standard Measurement Survey

NELM= New Economic of Labor Migration

NLSS=Nepal Living Standard Survey

SSA= Sub Saharan Africa

OLS= Ordinary Least Square

OPEN= Trade Openness

POP Growth= Population growth

POV= Poverty

WDI= World Development Indicators

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CHAPTER:1

INTRODUCTION

1.1 BACKGROUND

In the 21st century, international migration has influenced the economic relations between developing and developed countries. It was analyzed at the beginning of the century that people who worked and lived outside of their home countries were approximately 3% of the world population (Adams and Page, 2005). Economic development of receiving and sending country has also been affected by international migration (Todaro and Smith, 2003).

The theory of remittances had been associated with the theory of migration. Remittances are the part of the migrant wages, sent home by migrant workers. Remittances are the consequences of the migration of individuals (Englama 2009). It is defined as the goods and money that are transferred by migrants to their households. In most of the cases, these resource transfers can have a larger effect on inequality, poverty and economic development in rural areas of Third World countries (Stark 1980; Cox and Jimenez, 1990). The term worker remittance means the inflows or money sent back to their families by overseas workers of any country. As indicated by International Organization for Migration remittances are the monetary flows related with migration i.e. personal cash transmitted by immigrant or migrated worker to his family in his home country (IOM, 2006).

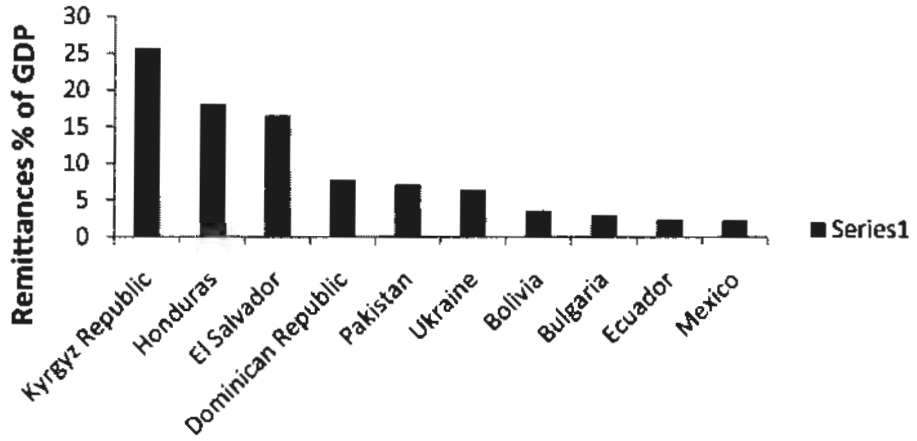
Remittances significantly affect the income of the migrants' household. Economics of migration shows that immigration can eventually result in social and economic development in sending countries, partially thanks to remittances sent back by migrant workers. Remittances have the potential to raise general income and perhaps even improve living standards (e.g., health care and better education) (De

Hass, 2007).

Migration has been recognized as a pathway beyond poverty for rural families in developing countries because it provides households with a source of income uncorrelated with agricultural income and reduces consumption pressure (World Bank, 2007). International remittances have been significantly improved since 1990s. Remittances were US$ 325 billion in 2010, increased from US$ 30 billion in 1990 and has appeared as an important source of private capital flows for most of the countries (Acharia, 2013). Migrants' remittances sent to their home countries play a vital role for the improvement of developing countries. According to World Bank statistics, Officially recorded remittances to developing countries amounted to $431.6 billion in 2015, an increase of 0.4 percent over $430 billion in 2014 (world bank, 2016).

Many workers are employed in the foreign countries and they send a huge amount of remittances to their origin countries as mentioned in the figure (1.1). In this study this contribution is the highest in the Kyrgyz republic where the share of foreign remittances in GDP is 25.68%. Likewise, Honduras, El Salvador, Dominican Republic, Pakistan, Ukraine, Bolivia, Bulgaria, Ecuador and Mexico that come after Kyrgyz republic receiving the highest shares in GDPs from international remittances. These remittances play an important role in decreasing the poverty rates in origin countries.

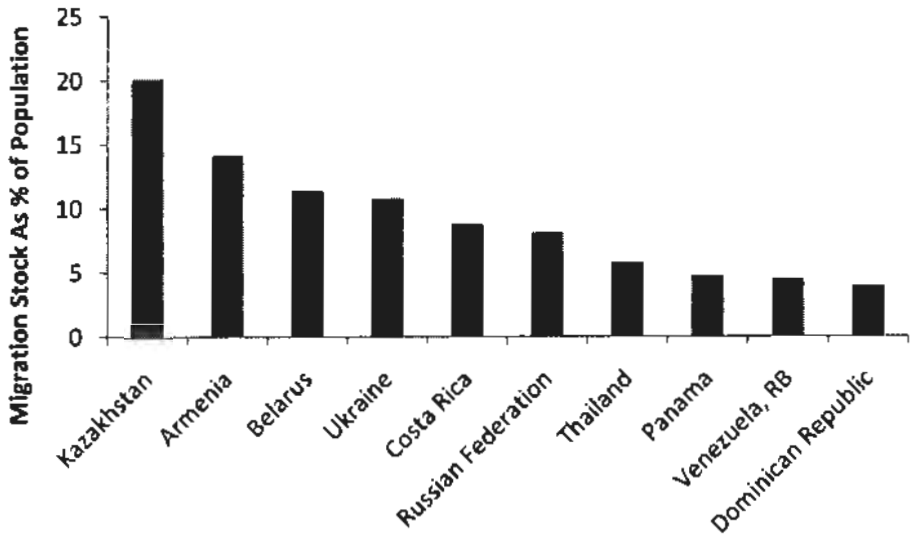
Fig 1.1: Top ten Remittances receiving developing countries in year 2015



There were likewise several other reasons for migration, for example, war, law and order, ethnic favoritism and political oppression in the origin country. Generally, most of the researchers have concentrated on explaining why individual move from one region to another. There were several theories to clarify international migration. One of the most essential economic considerations was to bring higher income through the process of migration. There were additionally different components that influence the decision to emigrate, for instance family and friendship networks (Ahmad et al, 2008). Economic, social, political and environmental problems are the main causes of migration (Du et al 2005). Remittances are one of the economic causes of migration. So, that's why both the impact of remittances and migration on poverty and income inequality has been checked in this study.

As mentioned in the following figure 1.2, many workers migrated to the foreign countries. In this study this share is the highest in the Kazakhstan, where the migration stock is 20.12%. Similarly, Armenia, Belarus, Ukraine, Costa Rica, Russian Federation, Thailand, Panama, Venezuela, RB and Dominican Republic that come after Kazakhstan sending the highest migration stock percentage of population. Migration plays an important role in decreasing the poverty rates in source countries.

Fig 1.2: Top ten developing Countries with highest Migration Stock % Population in years 2010-15



In developing countries, the effect of remittances on income inequality and poverty has been widely estimated since 1980s (Stark. et al. 1986, 1988; Adams, 1991). Remittances may decrease the poverty and boost economic development by decreasing credit constraints, increasing the income of the home countries, stimulating investment and improving human development through the investment in health and education (Javid et al 2012).

Some evidences explain that migration activities have no impact or even negative impact on poverty alleviation of the migrant-sending villages. There are two major causes in analyzing this function, one of which explains that the loss of the rural labor force is unfavorable to the sustainable development of rural nation. Another possible reason lying behind is that migrant workers will raise the average rural household income significantly, but the poorest house- holds could not gain from this (Wang, 2014).

The remittance income sent by migrant workers to their home countries has a significant effect on welfare and the distribution of income (Barham and Boucher, 1995). Some studies have tried to find out the impacts of remittances on inequality

(Adams et al 2008; Brown and Jimenez, 2008; Rivera, 2005; Devkota, 2014, Garip, F. 2014; Majeed, 2016; Howell, 2016). These studies provide contradictory results to show the impact of migrant remittances on inequality. The studies declare that migration from rural to urban areas like the acceptance of new technology, involves risks and costs. In addition, in case of international migration the risks and costs are expected to be particularly high. Based on this information, initial migrants may originate from the top of the sending- area's income distribution and from the upper-middle household and the income sent by these migrant workers is thus expected to broaden inequality in migrant origin areas (e.g., Lipton, 1980; Portes and Rumbaut, 1990; Adams et al 2008; Devkota, 2014; Howell, 2016), whereas in others remittances seems to narrow income inequalities (Brown and Jimenez, 2008; Majeed, 2016; Garip, F. 2014).

1.2 LITERATURE GAP

Several studies have analyzed the effect of remittances on poverty [Qayyum et al., (2008); Kalim and Shahbaz, 2008; Gyimah- Brempong and Asiedu (2009), Gupta et al (2009), Anyanwu and Erhijakpor (2010), Banga and Shahu (2010), Javid et al (2012)] and found that poverty decreased due to an increase in remittances. Similarly, some studies have examined the effect of international migration on poverty [Lokshin et al (2010), Schafft and Foulkes (2010), Ratha (2011)] and showed that poverty decreased as people migrated from home countries to destination countries and the money received by migrant workers contributes to income of family members in origin countries. And most of the studies have examined the overall effect of remittances and international migration on poverty [Adams and Page (2005), Gupta et al (2009), Margolis et al (2013), Ratha, (2013)]. In the present study, we have estimated two models to analyze the separate impact of remittances and international

migration on poverty. Siddique et al (2016) has conducted a study on South Asian countries to investigate the separate effect of remittances and migration on poverty. But there is no recent study to investigate the effect of remittances and migration on poverty in selected developing countries. So, the contributions of the study are given as follows. Firstly, we have estimated two models to analyze the separate impact of remittances and international migration on poverty in selected developing countries. Secondly, the main contribution of the study is that we have also estimated the effect of remittances and migration on inequality in developing countries as well. This work has not been done so far.

1.3 OBJECTIVES OF THE STUDY

The present study has the following specific objectives.

- To examine the effect of remittances and international migration on poverty in developing economies.
- To analyze the effect of remittances and international migration on income distribution in developing economies.

1.4 RESEARCH QUESTIONS

1. Do remittances and international migration affect poverty in developing countries?
2. What is the effect of remittances and international migration on income inequality?

1.5 SIGNIFICANCE OF THE STUDY

Economic problems like inflation, corruption, unemployment, poverty and income inequality are faced by developing countries. The present study analyzes the problem of inequality and poverty by considering that the remittances and international migration play a vital role. Many authors observed the overall effect of remittances and international migration on poverty. The current study defines four models to examine the separate impact of both remittances and international

migration on income inequality and poverty for developing economies. Two directional effects of remittances and international migration on income inequality and poverty in developing countries could be possible. First, it can improve income equality and can reduce poverty and on the other hand it can create problem to improve equality and poverty alleviation. So, the actual effect of remittances and international migration on income inequality and poverty alleviation has been evaluated in this study. The decision of migration from developing countries to developed countries to reduce their poverty may base upon the results of the study and poor may get economic benefits for households and for the entire society. As an outcome of this study, government may lower the cost and risk of migration; provide information and take care of migrants at receiving countries to encourage migration. Furthermore, because of this study, the policy of reducing the cost of remittances planned by the government to encourage the flow of remittances through formal financial channels.

1.6 ORGANIZATION OF THE STUDY

The rest of the thesis is divided into the five chapters. Chapter two presents theoretical and empirical literature on migration and remittance. Chapter three describes theoretical framework. Chapter four consists of models and methodology. Chapter five analyzes results and discussion. Lastly, chapter six provides the conclusion and policy recommendations.

CHAPTER: 2

LITERATURE REVIEW

Because of globalization and economic interrelationship, it has been simple to shift, individuals, innovations, goods and services all over the world. The world economy is dynamic, so presented an idea in economics or specific industries cannot clarify the general determinants for development and economic growth. Over the most recent two decades, the development of individuals and flow of remittance is expanding in scale, so researchers and policy makers are paying larger consideration to whether migrant remittance has a significant effect in development or not. In this chapter the theoretical literature on remittances and international migration and empirical findings associated with the impacts of remittances and international migration on income inequality and poverty will be examined.

2.1 THEORETICAL LITERATURE ON MIGRATION

The theories of international migration completely reviewed by Massey et al (1993). The Neoclassical macro-economic theory declares that communities with less capital and abundant labor have a small wage rate, whereas the countries with less labour and excess capital have a high wage rate. In this way, the income difference is the major cause of migration. After migration, a new equilibrium wage rate will be achieved since the destination countries' wage rates lessen because of immigrant inflow, whereas in the source country wages increase because of loss of international labour. Migration is also affected by geographical structure. Therefore, differences in wage, geographical structures and labour surplus or shortage are the major causes of international migration. Well skilled labour migration is not the same as the migration of low-skill workers.

Neo-classical microeconomic theory argues that migrants analyze costs (new

job search cost, travel cost, joining a new labour market cost, new language learning, cultural adjustment cost and other psychological costs) and benefits (high wages and other returns) of international migration depend on their ability. The employment rate in the destination country is an additional significant determinant of migration. Human capital characteristics, for example, experience, education, language skills and training also encourage international migration. If economic conditions or domestic social, for example capital and technical accessibility are low in the source country, then migration increases. Likewise, the level of migration based on the size of expected returns after migration. Migration does not depend on other markets. The government can get involved to influence the labour market. This implies laborers have absolute information about different countries' wage rates.

Taylor (1999) puts forward the theory of New Economics of Labor Migration (NELM) and propounded different views on the sources of international migration. The author declared that the individual worker as well as the family unit makes a migration decision. Research on migration is better performed at the household level as compared to individual units. The differences in wages are not merely the essential condition of migration as individuals migrate for risk variation. Each household's goal is to develop living standard within the given situation (amount of land, number of family members and others). Several family members work in the neighborhood area, whereas a few perform international migration, with the goal that total returns are increased and risk decreased. The household's unanticipated economic problems (for example, medical issues or diseases that influence agricultural products) in developed countries, are alleviated by governments through insurance. On the other hand, government benefits are nil and unimportant in developing countries. Thus, in times of emergency migrant workers send remittances to help other household individuals.

The phase of domestic development and international migration are mutually dependent instead of independent. An expansion in the rate of return in the origin country, additionally affects international migration. The worker's age and mobility costs also affect the migration decisions. The imperfections of other markets lead to migration. Governments can affect migration through capital markets, insurance markets, and so on. The benefits of unemployment and income distribution strategy also influence migration.

According to the Dual market theory, demand-based industrial growth in developed economies is the major cause of international migration. The employer's motivation is to employ new workers so that the current wage rate decrease and profit level increase. Due to institutional and policy difficulties immigrants are in lower conditions and cannot negotiate for higher wage rates. Societies' role is not so important in affecting labour supply and demand, and the government policy role is very small (Priore, 1979).

World systems theory also highlights that capitalism is the cause of international migration. Labour flows from developing to developed countries and capital and goods flow in the opposite direction. Most migrations are probably progressing between previous colonies and colonial forces as the economic systems match. Government plays a little role to affect international migration because it is the result of the market economy and the globalization (Wallerstein 1974).

Network theory supports that when somebody resettles in a foreign country, he/she gives information to relatives or other family members about the host countries after getting socioeconomic information. Migration costs and job risks are decreased and increased the expected net return by this procedure. This case is relevant in the Nepalese context. One a Nepalese worked in an Indian restaurant in Japan. Later, he

turned into a restaurant entrepreneur and invited his brothers to work. The other brothers also opened new restaurants and called other families as well. Most the Nepalese migrants in the restaurant business in Japan are from the *Baglung* area of Nepal. This tendency also remains true in other countries. The positive impacts from the network migration have affected the development aspects of the source country (Massey et al, 1993).

Classical theory advocates that migrants have full information about wage rates of the destination countries. In the real world, this assumption does not hold. In the current years, unnatural causes such as political volatility and wars, environmental issues, for example natural disaster and increase in the sea level are also important for migration. Expanding means of transportation, economic ups and downs and internet facility are likewise significant determinants of international migration. Furthermore, new generations want to visit new places and adapt new thoughts (knowledge migration) which are helpful after coming back to their country of origin. But, current international migration theories do not clarify these points.

2.2THEORATICAL LITERATURE ON REMITTANCE

In economics, there are several theories and models which clarify the factors and causes of international migration. These theories and models are the essential factor of the theory of migrant remittances. The procedure of remittances and migration are correlated. Lucas and Stark, (1985) divided the theories of remittances into three groups.

2.2.1 Pure Altruism

The Pure Altruism model demonstrates that; the migrant gets utility from the utility of the other households in the source country. The altruistic model leads to various hypothesis. In the first place, remittances rise as the migrant's wage level

increase. Second, remittances reduce with the income level of the household (i.e. remittances of poor households would be higher). And third remittances reduce after some time as the connection to the family steadily decline.

2.2.2 Pure Self-Interest

Stark studied three motivations to remit, depending on the lack of altruism and selfish motivation by the migrant worker to the household.

The first motive explains that the inheritance of the large portion of the family wealth is conditioned on his action of taking care of the family. The second motive of the migrant workers is to send money to origin countries or to spend on assets in the source area and make certain their careful repairs. Third motive is the plan to come back home, which might be sufficient to encourage remittances to spend on fixed capital, for instance livestock, house, land and public asset to increase status, and in associations with friends and family, what might be named as social assets.

2.2.3 Tempered Altruism

Enlightened self-interest or tempered altruism theory analyzes the remittances as an agreement between family members and migrants, intended to promote both groups. These contractual arrangements are depended on risk and investment. In case of the imperfection of the insurance and the capital markets remittances can be examined as a source of extending the risk. Remittance income can be examined as an investment when the family spends on the education of migrants because repayment is possible from those migrants. The expectation of this motive is that more educated workers get higher remittances and the head of household get more remittances from their children as compared to spouses and in-laws.

2.3 EMPIRICAL LITERATURE ON MIGRATION, REMITTANCES AND INEQUALITY

The study conducted by Adams and Mahmood (1992) examined the effect of international and internal remittances on income distribution of rural areas. Predicted income equation was used in the study as including and excluding remittance income situations to estimate the income of the household. Data was collected from 727 households from the year 1986-1987 to 1988-89 (three-year study) from rural areas of three provinces of Pakistan. The study concluded that in Pakistan international and internal remittances both have basically the neutral effect on rural areas' income distribution because remittances are allocated according to income order and second reason is the volume or size of remittances. The share in total income of international and internal remittances is comparatively less in rural areas of Pakistan.

A study conducted by Ahlburg (1996) to analyze the impact of remittance income getting from migration on the distribution of income of Tonga. Tonga Household Income and Expenditure Survey (1984) explains remittances and the income distribution in Tonga. The measures of inequality, Lorenz function and scalar measure more formally examined the effect of remittance income on inequality. The study found that income inequality decreased in Tonga through the remittances.

Inequality is increasing in the home countries as international migration is expensive and at the start only the middle class has the resources and motives for migration. However, the cost for future migrants lowered through the migration network, which can decrease income disparity. Mckenzie and Rapaport (2004) indicated both empirically and theoretically the non-linear impact of migration, and after that they observed evidence for an inverse U-shaped relationship between income disparity and immigration in rural sending areas in Mexico. The study

concluded after instrumenting that generally migration reduces income disparities across countries as compared to high levels of past migration.

Complete empirical evidence on the association between inequality and international remittances was showed by Koechlin and Leon (2006). Simply, dynamic panel data methods are used for cross-country regressions by applying instrumental variables approach and ordinary least squares (OLS). Non-monotonic association between international remittances and income disparity is concluded from this study. Present theoretical research supports the network theory that explains inequality increases at the first stage of migration. After that, due to these effects when there is a lower opportunity cost of migration; migrant remittances received by households have a negative impact on income inequality. Hence, U-shaped curve is proved by this research.

For income inequality and economic development, Xiaolu (2006) analyzed the presence of an inverse U-shaped curve (known as the Kuznets curve) in China, and tests for the effects of a series of hypothesized factors affecting income inequality. The study used the panel data from 1996 to 2002 across 30 provinces. The panel data model could not prove an alleviation of inequality in the long run, and predicted an increasing tendency of inequality in the future, thus is unable to prove the existence of the Kuznets curve in China. While short-run economic growth factors positively affect the income inequality. The employment opportunities that are created by economic development is important for decreasing inequality, especially in the rural areas.

Anyanwu (2011) estimated the relationship between Gini coefficient and remittances in African countries by using a panel data over the year 1960-2006. The results proposed that in African countries, international migrant remittances

significantly affect the income inequality. By using the instrumental variable approach to solve the problem of endogeneity, the study found that 10% increase in remittances leads to 0.013 percent decline in income inequality approximately.

By using a panel data set, Majeed (2016) explored the effect of international remittances from sixty-five developing countries during the period 1970 to 2015. The study concentrated on complementarity between financial development and remittances to analyze the inequality-effect of remittances using instrumental variable techniques of panel data for empirical analysis. The study found that the inequality-effect of remittances vary between developing economies relying on the power of the financial sector. Where financial markets are relatively developed; International remittances help to the poor by decreasing inequality in developing countries. However, in developing countries the remittances and income inequality are positively correlated, where financial markets are underdeveloped. The empirical findings are acquired by using OLS, 2SLS, LIML and GMM econometric techniques of panel data.

2.4 EMPIRICAL LITERATURE ON MIGRATION, REMITTANCES AND POVERTY

By using household surveys of seventy-one developing countries, Adams and Page (2005) analyzed the effect of migration on the alleviation of poverty from seventy-one developing countries. Counterfactual methodology and instrumental variable approach were used to deal with the problem of endogeneity. The results concluded that the share of the poor people decreases by 3.5%as the per capita international remittances increase by 10%.

The effect of reduction in remittances and free trade policies on poverty and welfare in Pakistan was analyzed by Siddique and Kemal (2006) in a CGE

framework. The results concluded that the advantages from trade liberalization reduced due to decline in remittances. In urban areas, the remittance increasing effect dominates the positive effect of free trade. On the other hand, the positive effect of free trade dominates the remittance increasing effect. Overall result showed the poverty increasing effect in Pakistan. The study found that the reduction in remittances was a significant casual factor to increase poverty in Pakistan during the nineties.

Jongwanich (2007) studied the effect of remittance inflow on poverty and growth. The study used the panel data from the period 1993 to 2003. Instrumental fixed effect transformation was used for human capital and poverty equations and Generalized Method of Moments (GMM) regression was used for investment and growth equations. The study suggested that remittances significantly affect the alleviation of poverty through reducing capital restrictions of the poor, smoothing consumption and increasing income. Remittances also positively affect the growth through human capital development and the development of domestic investment.

In developing countries, poor people receive potential benefits of international migration of labour. By using ARDL approach Qayyum et al (2008) explored the effect of remittance income on poverty and economic growth in Pakistan, spanning the period from1973 to 2007. It was analyzed by district wise analysis that international migration decreases poverty in the district of Baluchistan, Punjab, Sindh, yet NWFP did not depict a clear picture. This study also concluded that due to the transaction costs associated with emigration, remittances positively affect the poverty alleviation in the long run, while it has a negative impact on poverty in the short run.

By using time series data spanning the year 1973-2006, Kalim and Shahbaz (2008) explored the relationship between poverty and international remittances. The

long-run and the short-run correlation between poverty and its determinants estimated by using fully modified ordinary least square (FMOL) estimation technique. The study found that poverty decreases due to an increase in remittances.

The effect of international remittances on severity of poverty and poverty rate in Ghana was examined by Gyimah-Brempong and Asiedu (2009). International remittances and the possibility of household being poor are significantly negatively associated with each other is being analyzed by using cross-sectional data. The study also found that the flow of remittance expands the strength of school going children in a household, recommending the international remittances increase human capital formation. It is also explained that poverty reduced in the long run due to international remittances.

By using the poverty surveys starting in 1980, Gupta et al (2009) analyzed the impact of the gradually growing remittance flows to sub-Saharan Africa. The dataset comprises of 233 observations and 76 countries; the sample contains 24 countries from Sub-Saharan Africa. Three-stage least squares estimation technique is used to build the model that permits the simultaneous determination of remittances and poverty. The study found that remittances promote financial development and directly affect the alleviation of poverty.

The effect of remittances on alleviation of poverty was analyzed by Anyanwu and Erhijakpor (2010) in thirty-three African countries during the year 1990 to 2005. By using the panel data set the study found that international remittances decrease the severity, depth and level of poverty in Africa. The measurement of poverty determines the size of the alleviation of poverty. The study used the instrumental variable approach for endogeneity and concluded that 2.9% reduction in the proportion of people who lived in poverty due to 10% increase in remittances as a

percentage of GDP.

The role of remittances on poverty in developing countries was investigated by Banga and Sahu (2010) at two stages. At the first stage, the role of remittances on poverty is studied in seventy-seven developing countries. At the second stage, isolated studies were started in twenty-one Asian developing countries and twenty-nine developing countries. The results of the study persistently found that remittances significantly decrease the poverty in recipient countries, but those countries having remittances more than five percent of GDP have more stable results.

Lokshin *et al* (2010) analyzed the effect of remittances and migration in poverty alleviation in Nepal during the period of 1995 and 2003, by using two rounds of nationally representative household survey data. To cope with nonrandom selection of migrants and different scenarios for the various levels of migration, the study used an instrumental variables approach comparing the observed and the counterfactual household expenditure distribution. The results demonstrated that due to an increase in migration and remittances, poverty decrease by almost 20% between 1995 and 2004.

By using ARDL approach Javid *et al.* (2012) examined the effect of remittances on poverty and economic growth in Pakistan, spanning the period from 1973 to 2010. It was analyzed by district wise analysis that international migration decreases poverty in the district of Baluchistan, Punjab, Sindh, yet NWFP did not depict a clear picture. The study found that inflow of remittances significantly affects the poverty and economic growth and proposed that the poor people get prospective benefits through international migration of Labour in developing countries like Pakistan. The increasing and broaden effect of remittances can lead to promote poor households, sustainable growth and enhance the welfare in the long run.

Louise and Clovis (2012) examined the effect of remittances on economic growth and poverty in Sub Saharan African (SSA) countries during the year 1994-2009. For the estimation of poverty model, this study used the instrumental variable method and growth model is estimated through error correction method. The results concluded that worker remittances have insignificant impact in poverty alleviation. However, On the contrary, it has a significant impact on economic growth.

Olowa et al (2013) used a nationally-representative household survey in rural Nigeria to examine the effect of international remittances from African and other countries and internal remittances from Nigeria on poverty. Poverty analysis found that in rural Nigeria both international and internal remittances decrease the severity, level and depth of poverty. Yet the size of the alleviation of poverty relies on the estimation of poverty. This study concluded that poverty alleviated more when household income comprised on internal remittances as compare to international remittances, and when the poverty gap and squared poverty gap that are the more sensitive poverty measures measure the poverty.

The causal relationship between remittances and poverty alleviation for the year 1980-2012 was explored by Gaaliche and Zayati (2014) for fourteen developing and emerging countries. By using the non-stationary dynamic panel data method, co integration analysis is suggested by the study. The causal link of remittances and poverty is shown by the estimation results. The study concluded that the causal effect of reduction in poverty on the inflow of remittances is stable as compared to reverse effect.

The role of remittances in the alleviation of poverty in Pakistan was analyzed by Faridi and Mehmood (2014) spanning the year of 1972-2010. The study used OLS (Ordinary Least Square) estimation technique and concluded that generally Life

expectancy, Workers' remittances, Government expenditure, Foreign aid, Consumer price Index, Private investment, Gross domestic product and Education expenditure contribute to poverty alleviation. The crux of this research is to highlight the importance of all such variables to mitigate poverty pressures. The results illustrated that workers' remittances have had a strong effect on poverty alleviation.

The economic effect of international migration on household in Philippine was analyzed by Ducanes (2015) by using a panel of eight thousand households which is like the 2007 and 2008 Annual Poverty Indicators Surveys. The study found that in Philippine international migration is a critical motivating element for social mobility of household. In this study, Fixed Effect panel regression is used and proved that those households can send workers abroad have an increase in income transfers, however, in domestic wages they gain loss. This procedure increases their income; mitigates their raised expenditure, including expenditure on real property, expenditure on education, medical care, clothing, recreation, equipment and food; increase their inter- household's transfers and decrease their poverty.

The role of remittances in poverty alleviation significantly estimated by Wurku and Marangu (2015) in South Africa. The effect of remittances on alleviation of poverty evaluated by two approaches in South Africa. The comparison of the rate of poverty among remittance non-receiving families and remittance receiving families is analyzed in the first approach by using the FGT index. The decision about the possibility of falling into the condition of poverty is analyzed by using the logit regression model in the second approach. The results of this study showed that remittance receiving households have less headcount ratio as compared to remittance non-receiving households. The chance of poverty in remittance receiving households is less as compared to remittance non-receiving households. While remittance non-

receiving, households have a less poverty gap than remittance receiving households but severity level of poverty equal between both groups.

Remittances and international migration significantly affect the social and economic development as it helps in getting the benefits of globalization. Siddique et al (2016) investigated the relationship of international migration and international remittances on poverty alleviation by assessing and assembling a new data set in South Asian countries. The Random Effect estimation technique is used in this study. The findings of this study suggested that in South Asian countries 4.2 % share of international remittances of total income have a significant effect in the alleviation of poverty.

2.5 EMPIRICAL LITERATURE ON MIGRATION, REMITTANCES, POVERTY AND INEQUALITY

Adams (1989) analyzed the effect of international remittances on rural Egypt. The study used primary household data assembled in 1986/87 from a small area of rural Egypt. Using a counterfactual income situation, the study concluded that international remittances positively affect the poverty. International remittances have a positive impact on poverty, but it negatively associated with income distribution. Remittances expanded income inequality in rural Egypt since migrants came from elite classes and the money send by elite class is greater than the money send by poor class.

By using Gini and poverty decomposition techniques, Taylor *et al* (2005) analyzed the effect of remittances and migration on rural poverty and the distribution of rural income. The data collected from the survey (2003 Mexico National Rural Household Survey). The study found that remittances largely affect the poverty alleviation and have an additional equalizing effect in those areas where the greater

share of family members of households is in foreign countries.

Brown and Jimenez (2007) analyzed the role of remittances and international migration in measure of poverty and income distribution by using original 2005 household survey data from Tonga and Fiji. To control for potential endogeneity bias, the study used Instrumental variable techniques. Measures of inequality and poverty were compared to both, with-migration income and non-migration scenario. The estimation of counterfactual household income is done by considering that what are the earnings of migrants in the absence of migration. It is concluded from direct and indirect evidence that remittances and migration positively and strongly affect the income distribution and poverty alleviation in both countries (Fiji and Tonga).

The role of remittances on inequality and poverty beside numerous magnitudes was analyzed by Accosta et al (2008) for ten Latin American and Caribbean (Latin American hereafter) communities. The study used both nationally representative household surveys and aggregate country-level data. By using a large cross-country panel data set, for the period 1970–2000, this study concluded that the effect of migration and remittances on reducing inequality and poverty in Latin American and Caribbean countries (LAC) have statistically significant particularly through increases in per capita income of remittances-receiving countries. The study also found that generally inflow of remittances has an equal impact of income in Latin America, when the income goes to poor households.

The impact of remittances on the income distribution was investigated by Portes (2009). By using the panel of forty-six countries spanning the years 1970 and 2000 the study found that the effect of remittances on income is non-monotonic along the income distribution and very high in poor countries. The study found that remittances have decreasing and positive effect on poverty in income for the lower

seventy percent of the population and have an increasing and a negative effect in income for the upper twenty percent of the population. The results suggested that, inflow of remittance income, reduce poverty as well as inequality due to the improvement in the distribution of income at the bottom of the group, while the income at the top decrease; especially in low income countries.

By using micro and macro data the role of remittances on Gini coefficient and poverty was analyzed by Mughal and Diawara (2010). The micro economic estimations based on the period 2001-02 and 2005-06 household survey data while the macro-economic estimations used the data for the year 1963-2006. Remittance inflows to Pakistan were separated regarding major remitting regions, namely the Persian Gulf, North America and the European Union, and their effects on inequality and poverty were analyzed. The results found that in Pakistan remittances have a significantly negative effect on income inequality and poverty. The effect of remittances on poverty is greater compared to the impact on income inequality, whereas consumption inequality falls less compared to income inequality. The findings generally concluded that the remittances played an important role regarding inequality reduction and poverty alleviation.

The comparison of current poverty rates and inequality levels with counterfactual ones without migration and remittances was analyzed by the Gubert (2010). The study used nationally representative household survey that was conducted in Mali in 2006. With proper hypothesis on Heckman two step estimation and migrants to control for selection, the study assigned a counterfactual income for those households that were receiving remittances at that time. The study found that due to an increase in remittances the rate of poverty decrease around five percent to eleven percent and the income inequality around five percent approximately. Bottom

quintiles households are more dependent on remittances, which are less exchangeable by extra workers.

Acharyaa. P and Gonzalez.L (2012) simulated the effect of remittance on income inequality and poverty by using two rounds of LSMS (living standard measurement survey) of Nepal and analyzed the household consumption function. The study found that through remittances the poverty head count declined in the first round of the survey around 2.3% and 3.3%, and between 4.6% and 7.6% in the second round of the survey. The remittances additionally decreased the depth and severity of poverty. Even though remittances increase inequality. In addition, the remittance income received from India is lower compared to the income received from other countries and has greater impact on poverty alleviation and lead to decline in Gini coefficient. The regional estimation found that in the highly-migrated regions remittances greatly affect the poverty alleviation.

The role of remittances on income inequality and poverty in Pakistan was analyzed by Mughal and Anwar (2012). Household Integrated Economic Survey (2005-2006 and 2007-2008) used to collect data and conclude that international remittances have a significant effect on the severity of poverty, depth of poverty and poverty head count. International remittances positively affect the inequality in Pakistan. International remittances have a strong effect in inequality reduction and poverty alleviation as compared to internal remittances. The study used time series data from 1979-2007 and found that remittances receiving from North America have an equal impact in Pakistan among the three-major remittance sending countries.

By using a survey of twelve hundred households in 2011organized in Algeria, Margolis et al (2013) investigated the distributional effect of remittances between two regions (Idjeur and Nedroma) of Algerian emigration. International pensions and

remittances reduce the income inequality in two Algerian countries by around four percent and the effect of remittances is double in Idjeur than Nedroma. Remittances strongly affect the very poor households in Idjeur however, it has less effect in Nedroma because the poor households experienced a "double loss" due to the lack of the migrant workers and they do not send money in the home countries.

The role of remittances and migration in rural household income was investigated by Wang (2014) in China by using cross-sectional data, spanning the period 2007. The study used a Heckman selection model to calculate approximately the counterfactual income of migrant-sending household and to eliminate the selection bias in case of absence of migration. The conducted study compared the observed income with the counterfactual income and analyzed the migration effect on inequality and poverty in rural areas. The results found that migration and remittances have a positive effect on the average rural household per capita net income. The effect of remittances on per capita net income of the average rural household found to be positive. However, the middle and upper class more benefitted from migration rather than poor class and consequently income inequality increases.

Devkota (2014) studied the role of remittances on income inequality and FGT index by using the cross-sectional data of 2010 NLSS (Nepal Living Standard Survey). By using the Probit model the probability of getting remittances is estimated and by using a counterfactual scenario in equality and poverty are estimated. The results of the study found that the possibilities of getting remittances are in richer families is larger compared to the poorer families. The study found that due to an increase in remittances poverty decreased by 20 percent in Nepal. The international remittances played a vital role to reduce the squared poverty gap, poverty head count and poverty gap than that of internal remittances. On the other hand, remittances

increase inequality in Nepal. The role of international remittance is greater than that of internal remittance in decreasing the poverty headcount, the poverty gap and the squared poverty gap. However, remittances widen inequality in Nepal.

The economic prosperity of a lot of rural Kosovo families largely depends on migrants' remittances. Mollers and Meyr (2014) analyzed the role of international migration on income inequality and rural poverty in Kosovo. It formulated on the 2009 nationally representative Kosovo Remittance Study. Analyses were depending on a comparison with counterfactual migrant household incomes got from Propensity Score Matching. The study found that remittances have no effect on highly poor, but boost about 40% of migrant households above the vulnerability origin. Gini coefficients demonstrated a propensity to increase because of migration.

2.6 CONCLUSION

Literature generally found that remittances and migration have a negative and significant effect on poverty. The effect of remittances and migration on inequality showed different results than the results of remittances and migration on poverty. Some studies found inequality reducing effect of migration and remittances [Brown and Jimenez (2008), Majeed (2016), Garip. F (2014), Stark et al (1986), Taylor & Wyatt (1996), Taylor (1992)] while others found increased income inequality [Lipton (1980), Stahl (1982), Adams et al (2008), Devkota (2014), Howell (2016), Barham and Boucher (1998), Adams (2005)]. There is no recent study, which defines separate models to check the effect of remittances and migration on poverty and inequality for selected developing countries. The present work checks the impact of both migration and remittances on poverty and inequality in separate models.

Chapter 3

THEORETICAL FRAMEWORK

Two extreme (optimistic and pessimistic views) may describe the possible effects of migration and remittances on poverty. According to the optimistic scenario remittances positively affect the receiving household country. It could reduce poverty, boost economic development, and put less pressure on the government faced with a great external deficit to take part in difficult structural reforms (Kindleberger, 1965; Beijer, 1970; Penninx, 1982 and Englama, 2009). According to optimistic view, migration decreases poverty in origin countries by transferring the population from low income rural economy to the comparatively high income urban sector. Income sent by migrant workers contributes to the income of the household in migrants' home countries. Remittances may decrease poverty when migrant workers are from poor families (Taylor, 2008).

According to the pessimistic scenario, most of the constraint faced by poor people e.g. risk, liquidity and other constraints and these constraints decreases their entrance to migrant labour markets. This is especially expected to be the case for international migration as international migration generally involves high entry cost and transportation cost (e.g., smugglers' or recruiters' fees). Therefore, the rural poor may have excluded from the beneficiaries of migration. Initially migrants may not come from poor families, but may originate from upper or middle section of the origin countries because at the start the migration is risky and expensive. The poor people get benefit from migration as hurdles to their contribution of migration decreases (Taylor, 2008). Another view is that remittances should not be encouraged; these are not beneficial for the development and growth of the origin country. These are responsible for unnecessary consumption, useless investment in land and housing

(Englama, 2009). The pessimist's view of Migration declares that remittances are used for conspicuous consumption and that they construct a culture of dependency. Recipients tend to choose more spare time against more work. Several recipients stop working and merely wait for remittances to come (Tambama, 2011).

Yitzhaki (1982), suggest a social welfare function, as mentioned in Stark (1991). It is described in the following form:

$$W = Y(1 - G)$$

In this equation, W shows welfare, total income is denoted by Y and G is the income inequality variable.

The above function described two properties. First, welfare increase when the income of the societies' members increases. Pareto criteria and social welfare, both are reliable with this property. Secondly, welfare increases by transferring the income from rich people to poor people, satisfying the "Dalton principle of transfer". Initial distributions do not affect these two properties (Yitzhaki, 1982).

In this case, the post-migration distribution A will be preferred over the pre-migration distribution B if the following condition is met:

$$Y^A \geq Y^B \, and \, W^A = Y^A(1 - G^A) > W^B = Y^B(1 - G^B)$$

That is, after migration total income is greater than the total income of pre-migration meaning that $Y^A > Y^B$.

This explains that migration to the urban place facilitated because the total income of the urban village is higher. Due to the migration, proportion of people in the urban village increase. The income which transferred from migrant workers to their destination villages in the form of remittances lead to increase the income of the rural village. Transformation of income from modern village to traditional village will enhance social welfare.

Migration and social welfare are positively associated as explained by this theory. Furthermore, through migration the income transfers from modern to rural areas. Therefore, remittance income can be considered as the transfer of income. This theory also indicates that remittance flow increase in developing countries due to migration. Thus, social welfare enhances.

In this study, the empirical approach is based on the frameworks of Ravallion (1997) and Adams and Page (2005) to analyze the role of remittances and international migration on poverty.

The rate of poverty alleviation depends on the growth in mean income and income inequality in Ravallion (1997). This is specified in the following equation,

$$r = (1 - I)g \qquad (3.1)$$

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In this equation "r" shows the rate of reduction in poverty and $(1 - I)g$ represents the "distribution-corrected" growth rate. It is recommended by the empirical results that in poverty reduction, the distribution corrected growth is more appropriate as compared to simple mean income.

Adams and Page (2005) employed the basic growth poverty model recommended by Ravallion (1997) to investigate the impact of international migration and remittances in alleviation of poverty in developing countries. The empirical model is described as follows:

$$ln\, P_{it} = f\,(ln\, \mu_{it}, ln\, g_{it}, ln\, x_{it})$$

$$i = 1, \ldots\ldots N; t = 1, \ldots\ldots, T_i \qquad (3.2)$$

Where P_{it} shows poverty measure in region "i" at time "t" , μ_{it} represents mean per capita income, Gini coefficient is represented by g_{it} which is the measure of inequality, x_{it} shows remittances and international migration and an error term is shown by μ_{it} .

The models of Ravallion [1997] and Adams and Page [2005], are used to formulate our poverty equation as follows:

$$log\ P_{it} = \alpha_i + \beta_1\ log\ (\mu_{it}) + \beta_2 \log (g_{it}) + \beta_3 \log (mig_{it}) + \beta_4 \log (rem_{it}) + \beta_5 \log (X_{it}) + \varepsilon_{it}$$

$$(i = 1, \ldots., N; t = 1, \ldots., T_i) \qquad 3.3$$

It represents the Poverty head count as a dependent variable and GDP per capita, Gini index, Migration, Personal remittances and control variables such as Inflation, Trade openness, Human capital, Population growth and Government expenditure as independent variables. Where P_{it} shows poverty measure in country"i"at time"t", Fixed effect is shown by α_i which represents time differences between countries, β_1 shows the growth elasticity of poverty regarding mean per capita income given byμ_{it}, β_2 shows the elasticity of poverty regarding income inequality given by the Gini coefficient$g$. β_3 shows the elasticity of poverty relating to variable mig_{it} and β_4 shows the elasticity of poverty relating to variable rem_{it} and ε_{it} contain errors in the measurement of poverty. The control variables (X) consists of inflation (INF), human capital (HC), population growth (Pop Growth), openness (OPEN) and government expenditure (Govt Exp). As migration and remittances are highly correlated with each other so, the present work describes two models to check the separate impact of both migration and remittances on poverty to avoid the multi-collinearity problem.

Chapter 4

METHODOLOGY

The study uses the Panel Data Regression technique to deal with the objectives of the research. Empirical model is developed in this chapter and it also explains the dependent and independent variables used in this study. The latter part of the chapter explains the econometric technique used in the estimations.

4.1 MODELS FOR POVERTY

(i) Model 1

$$logP_{it} = \alpha_i + \beta_1 \log(\mu_{it}) + \beta_2 \log(g_{it}) + \beta_3 \log(mig_{it}) + \log(X_{it}) + \varepsilon_{it}$$

$$(i = 1, \ldots\ldots, N; t = 1, \ldots\ldots, T_i) \qquad (1)$$

Where

$logP_{it}$ shows the natural log of the poverty head count ratio.

$\log(\mu_{it})$ represents the natural log of the GDP per capita.

$log\ (g_{it})$ denotes the natural log of the Gini index.

$\log(mig_{it})$ describes the natural log of the international migration stock.

$\log(X_{it})$ shows control variables which affect poverty.

ε_{it} is a disturbance term.

(ii) Model 2

$$logP_{it} = \alpha_i + \beta_1 \log(\mu_{it}) + \beta_2 \log(g_{it}) + \beta_3 \log(rem_{it}) + \beta_4 \log(X_{it}) + \varepsilon_{it}$$

$$(i = 1, \ldots\ldots, N; t = 1, \ldots\ldots T_i) \qquad (2)$$

Where

$log\ P_{it}$ shows the natural log of the poverty headcount ratio.

$\log(\mu_{it})$ represents the natural log of GDP per capita.

$\log(g_{it})$ denotes the natural log of Gini index.

$\log(rem_{it})$ refers to the natural log of the personal remittances.

$\log(X_{it})$ shows control variables which affect poverty

ε_{it} is a disturbance term.

The inequality and poverty models of this study include variables which are frequently shown in the theoretical and empirical literature. Simplified specification of the baseline equation for inequality adopted from Jongwanich (2007) and Gupta *et al.* (2009) is:

$$log\ g_{it} = \alpha_i + \beta_1 \log(\mu_{it}) + \beta_2\ log\ (mig_{it}) + \beta_3 \log(rem_{it}) + \beta_4 \log(X_{it}) + \varepsilon_{it}$$

$$(i = 1, \ldots., N; t = 1, \ldots T_i) \qquad 3.4$$

By following Gupta *et al.* (2009) econometric specification, a simplified version is given in which inequality is replaced by poverty in each year. It represents that the inequality is a function of GDP per capita, Migration and Personal remittances and control variable such as Inflation, Trade openness, Human capital, Population growth and Government expenditure. Where g_{it} shows the inequality measure in country "i"at time "t", $\alpha_i$shows a fixed effect reflecting time differences between countries, β_1 represents the growth elasticity of income inequality regarding mean per capita income given by μ_{it}, β_2 represents the elasticity of income inequality relating to variable (mig_{it}) and β_3 is the elasticity of income inequality relating to variable (rem_{it}) and ε_{it} contains errors in measure of inequality. The control variables (X) contain openness (OPEN), human capital (HC), inflation (INF), population growth (Pop Growth) and government expenditure (Govt Exp). As migration and remittances are highly correlated with each other so, this study also defines two models for checking the separate effect of both migration and remittances on inequality.

4.2 MODELS FOR INEQUALITY

(i) Model 3

$$log\ g_{it} = \alpha_i + \beta_1 \log(\mu_{it}) + \beta_2 \log(mig_{it}) + \beta_3 \log(X_{it}) + \varepsilon_{it}$$

$$(i = 1, \ldots., N; t = 1, \ldots., T_i) \qquad (3)$$

$log\ g_{it}$ shows the natural log of the Gini index.

$\log(\mu_{it})$ represents the natural log of the GDP per capita.

$\log(mig_{it})$ refers the natural log of the international migration stock.

$\log(X_{it})$ shows control variables which affect poverty.

ε_{it} is a disturbance term.

(ii) Model 4

$$log\ g_{it} = \alpha_i + \beta_1 \log(\mu_{it}) + \beta_2 \log(rem_{it}) + \beta_3 \log(X_{it}) + \epsilon_{it}$$

$$(i = 1, \ldots, N; t = 1, \ldots., T_i) \qquad (4)$$

$log\ g_{it}$ shows the natural log of Gini index.

$\log(\mu_{it})$ refers the natural log of the GDP per capita.

$\log(rem_{it})$ is the natural log of the personal remittances.

$\log(X_{it})$ includes control variables which affect poverty.

ϵ_{it} is a disturbance term.

4.3 DESCRIPTION OF VARIABLES

4.3.1 Poverty Headcount

The poverty headcount measures the percentage of population living below the poverty line and determine at $2 per person per day. There are different criteria to define poverty, thus the reliable comparison across countries is difficult. The domestic poverty lines of the rich countries are likely to have higher purchasing power than in poor countries. The different purchasing power of currencies determines the prosperity of individuals of different countries. To define the criteria of poverty,

different basements e.g. 1$ per day, 1.25$ per day are used in the literature. The criteria of $2 per day is used in this study and below this criteria people regarded as being poor. The data on poverty indicator (poverty head count ratio at $1.90) a day has taken from World Development Indicators. The data is used for the period of 1990 to 2015 for 25 selected developing countries.

4.3.2 GDP per capita

GDP is "the sum of the gross value of goods and services added by all resident producers in the economy within a specific period". In this equation, the per capita GDP is used as a measure for the per capita income variable. The variable GDP per capita is "the ratio of GDP and population of the economy". The negative and significant relationship is thus expected among income variable and poverty. The rationale behind is that the income of the poor increase proportionately as the economy develops by an increase in per capita income, although contrasting results showed a negative relationship between poverty alleviation and economic growth. The data on GDP per capita (constant 2010 US$) for the period of 1990 to 2015 for 25 selected developing countries has been taken from World Development Indicators.

4.3.3 Inequality

Gini coefficient measures the income inequality. The Gini coefficient is "the ratio of the area between the Lorenz curve and the diagonal (the line of perfect equality) to the area below the diagonal". The range of Gini coefficient from zero to one and it measures the income inequality. The degree of inequality is greater in case of larger coefficient. So, in case of perfect equality the limit of the Gini coefficient is zero and for perfect inequality it approaches to one. The model predicts that the rate of poverty alleviation affected by the level of income inequality. It has shown in past work that in low-inequality countries, the rate of poverty reduction is larger than high-

inequality countries. Thus, the worse income distribution negatively affects the alleviation of poverty so that's why its coefficient is expected to be positive. The data on the Gini index for the period of 1990 to 2015 for 25 selected developing countries has been taken from World Development Indicators.

4.3.4 Personal Remittances

Personal remittances consist of "personal transfers of employees" and all current transfers between local and migrant members are included in this study. The two major factors of personal remittances that are items in the balance of payment framework are (i) "personal transfers" (ii) "compensation of employees" both are noted in the current account. The expected coefficient of poverty and inequality with respect to remittances is therefore to be negative. The rationale behind is that the demand for locally produced good raises as migrants' remittances increase, which leads to increase the supply so personal remittances create jobs and generate employment as well and help in poverty alleviation and inequality reduction. The data on personal remittances (measured as percentage of GDP) for the period of 1990 to 2015 for 25 selected developing countries has been taken from World Development Indicators.

4.3.5 International Migration

International migration measured as the international migration stock percentage of the population under the specified time scale. Data is available with five years' gap and has taken from World Development Indicators for the period of 1990 to 2015 for 25 selected developing countries. The expected coefficient related to migration is negative. This is based on the rationale that in origin countries population transfers from the rural poor economy to the urban, modern economy. The amount of money received by migrant workers contributes to income of household members in

origin countries which reduce poverty in rural areas.

The expected relationship between international migration and income inequality is expected to be negative. Because a community established by migrant workers keeps close relations with their origin countries. These networks have the impact of less information, settlement and opportunity cost because of the connection in the labour market. So, these network effects allow the migration for the households who have lower levels of income. Thus, income inequality is reduced by migration and remittances.

4.3.6 Trade Openness (OPEN)

Trade openness is defined as "sum of export and imports as a percentage of GDP". The data on the trade openness for the period of 1990 to 2015 for 25 selected developing countries has taken from World Development Indicators. An ambiguous correlation is expected between trade openness and the alleviation of poverty (Berg and Krueger, 2003). The poor people and average individual get benefit from free trade from one perspective. Free trade may perhaps decrease monopoly rents and the links of political and bureaucratic power and expand the relative income of low-skilled employees. On the contrary, due to increased foreign competition the acceptance of skill-biased technical change the income distribution became worse. Hence when free trade making the poor poorer then income distribution became worse and it has not a significant effect on poverty alleviation despite its positive overall growth effects. The empirical studies [(Dollar and Kraay (2004), Edwards (1997), Ghura et al (2002)] using cross sectional and panel data found that despite of higher average per capita income growth there is no relationship between well-being of the poor and trade openness.

4.3.7 Inflation (INF)

The rate at which the general level of price rise is known as inflation. It is measured as the percentage change in the consumer price indices. The data on the inflation for the period of 1990 to 2015 for 25 selected developing countries has taken from World Development Indicators. Literature provides ambiguous findings on the impact of inflation on inequality. According to a group of economist, in the existence of inflation the cost of holding money increases. Thus, individual wanted to go for saving it instead of holding money. Thus, investment increases due to increase in saving (savings always equal to investment). But another group considers that cost of borrowing capital and the price of everything increase due to inflation. While, an inverse relationship exists between investment and the cost of borrowing capital. So, the employment rate and investment decrease and economy lead to fall in poverty. Considering first approach, inflation leads to decrease poverty by generating jobs and increase economic growth when an investment goes up in response to increase in the saving rate. While in the view of the second approach, inflation rate negatively affects the poverty as is found by Fischer (1991), Grier and Tullock (1989), De Gregorio (1993).

Inflation has adverse effect on income distribution as the rising price levels hit the poor hard. However, in literature mixed evidence is found on the effect of inflation on inequality. According to one group of economists, the relationship between inflation and inequalities is positive as it negatively affects real income of individuals. But another group considers, inflation may negatively affect the inequality when the tax system is progressive. Inequality rising impact of inflation is probably arisen in developing economies because the wages of the poor remain behind rising price levels.

4.3.8 Human Capital (HC)

Human capital defined as abilities and skills of human resources of a country (Adamu 2002). Secondary school enrollment is used as a proxy for human capital. . The data on human capital for the period of 1990 to 2015 for 25 selected developing countries has taken from World Development Indicators. The expected coefficient related to the variable human capital is negative. The rationale behind is that the possibility of income generation and consequently poverty reduction increase due to an increase in human capital.

Mincer (1958) emphasized importance of the level of human capital for income distribution. Chiu (1998) emphasized that the income distribution improves between individuals through increase the level of human capital builds up in a society. As people invest in human capital more, it reduces the probability of falling into poverty and leads to narrow the gap between poor and rich.

4.3.9 Government Expenditure

Government expenditure, undoubtedly, is a main component of aggregate spending. Developed countries try hard to get rid of socio-economic problems like poverty instead of balancing their budget. When government spends in investment activities, it enhances the entrepreneurial activities, increase consumption level and help to reduce poverty. Thus, government spending adversely affects the poverty so that their coefficients are likely to be negative.

The government also plays an essential role in affecting the income distribution in the economy. However, in literature mixed evidence is found on the effect of government expenditure on inequality. According to one group of economists, by transforming the resources from the rich towards the poor, government can improve equality in the society. But, government expenditure is not

spent on poor, in the presence of rent seeking activities, corruption and kickbacks consequently, rich get further rich by controlling the government spending in their own favors. Papanek and Kyn (1986) claim that government spending frequently spent on elites for instance bureaucrats, politician and army instead of the poor. They empirically test the effect of government expenditure on inequality and their result found that government expenditure does not help to decrease inequality. On the other hand, negative relationship between inequality and government spending found in some other cross-country studies (Boyd, 1998; MacDonald and Majeed, 2010). The data on the government expenditure for the period of 1990 to 2015 for 25 selected developing countries has taken from World Development Indicators.

4.3.10 Population Growth

Chenery (1976) pointed at the statistical fact that poor families tend to have more children than rich ones. Consequently, the poor households get a smaller share of the income because the same income is divided on the higher number of individuals. Hence, each poor individual is becoming poorer and their number increases. But the rich family has less children and everyone gets higher share of the household income. On this basis, we conclude that inequality increases because of the overall higher birth rate in poor families. Deaton and Paxon (1997) claim that these are the poor level wherever population growth raises the family size. This causes to higher dependency burden which leads to increase poverty and inequality.

4.4 ESTIMATION TECHNIQUE

The widely used statistical method in social science research is ordinary least squares (OLS) regression. It does have a few disadvantages about modeling panel data. In panel data analysis, some of the regular assumptions of OLS are not fulfilled. (i) Error terms, with zero mean, are independent for all times and all units. (ii)The

error terms are homoskedastic that is, the variance of the error residuals remains constant across entities or across time. (iii) Error terms and the variability in error terms are not correlated with some of the explanatory variables.

The panel data does not satisfy all the above assumptions. (i) It is expected that there is a correlation between the error terms of different time periods for the same entity. (ii) There may be hetroskedasticity among the residuals for panel data. (iii) Due to the unobserved, time-invariant characteristics related to individual entities it is expected that residual terms may be correlated with any of the explanatory variables. By suing pooled OLS regression for panel data, the standard errors of the regression coefficients might be increased and the results might be biased. Fixed effects or random effects models can be used to solve this problem that permits for the heteroskedasticity of panel data without introducing bias. In addition, fixed-effects models allow for correlations between unit-specific and time-invariant errors, and independent variables as well.

Because of multidimensional characteristics, large number of observations that appear with panel data set is one of the major causes for using the panel, which permit it to incorporate various observations for numerous individuals over a long period. More information about "within variability" of subjects and time periods is provided by the panel data. Thus, panel data regression techniques permit us to get benefit from various kind of information.

We can use other regression techniques to analyze panel data rather than specific regression techniques build up for panel data. But due to omitted variable bias these other regression methods will not be best. The unobserved variables that may affect the dependent variable is not considered in common techniques, consequently the obtained results could be biased. The unobserved effects are described in two

types: (i) fixed effect (ii) random effect.

4.4.1 Hausman Test

The relationship between the independent variables of regression and individual specific-effects decides the basic difference between fixed and random effect method. The fixed effect considers this relationship, whereas the random effect methods do not allow the relationship between independent variables and individual-specific effects. The researcher choice between fixed and random effects is based on the difference of assumptions. Fixed effect considers the constant effect, so that's why several researchers used fixed effect as a more appropriate tool to estimate panel data. The random effect method is used in models where the main explanatory variable is constant over time. The manually selection between fixed and random effect method is difficult despite of the unique characteristics of these both panel data techniques. To choose between fixed effect and random effect model, Hausman (1978) developed a specific test to solve this problem. Hausman test is used to choose the random and fixed effect model and discovers the significant or insignificant variation between parameter predictors of random effect model and parameter predictors of fixed effect model. The two hypothesis are as follows:

- Null hypothesis shows that the random effect is probably best.
- Alternative hypothesis shows that the fixed effect is probably best.

If the probability value is statistically significant, the fixed effect model is probably best, if not, then the random effect model is probably best. Meaning that we do not accept null hypothesis in case of less than 5% probability value rather we accept alternative hypothesis, it means that the random effect model is probably best.

For all models, we found the probability value of Hausman test is less than five percent, so we do not accept the null hypothesis. It means that the fixed effect

model is applicable in this case. So, we used fixed effect model as an appropriate model.

4.4.2 Fixed Effect

Fixed effect regards as changes within subjects, but it remains constant under a specific time. The relationship between the dependent and the explanatory variables of different countries is analyzed by the fixed-effects regression analysis model. Some of the explanatory variables used in the analysis reflect fundamental differences exist between all countries. The fixed-effects model explains these differences by including the constant term such as the term α_i in models which display these time invariant characteristics. The key feature of the fixed effect model is that it permits the correlation between independent variables and unobserved individual impacts. The basic concept is that, there may be the chance of unconscious ignorance of several variables during the process of data collection. Therefore, unobserved effects covered these ignored variables. If there is correlation between omitted variable and the other independent variables in the model, then fixed effect model might give a source to control the biasness of omitted variables. The fixed effect analyzed unobserved time and country effects and permits the decline in omitted variables bias in the study. Omitted variables are "those variables that are not observed in the dataset but still influence the dependent variable" (Wooldridge, 2010).

4.4.3 Random Effect

Random effect is second well-liked technique used in the literature to estimate panel data. The estimation technique is more important which considers the time series information of the panel data. Random effect regards as changes over time, but remains constant within subjects. In case of absence of omitted variables or if the explanatory variables and omitted variables are uncorrelated then random effect

model might give a source to control the biasness of omitted variables. It will produce the smallest standard error and unbiased estimates of the coefficients. Probably, however, because of the omitted variable estimates will bias. Indeed, the assumptions of random effect and fixed effect are same with the only difference that unobserved effect and independent variables are not correlated in random effect in each period. In panel data techniques, these effects can be controlled even without observing them. So, the omitted variable bias from regression analysis can be reduced by the panel data specific techniques.

RESULTS AND DISCUSSION

To analyze the effect of international migration and remittances on poverty alleviation, the econometric models (model one and model two) are estimated by using fixed effect (FE), as suggested by Hausman test.

5.1 RESULTS OF HAUSMAN SPECIFICATION TEST

The Hausman Specification test is used to differentiate between fixed effect and random effect model for model one and model two.

Table 5.1 Hausman Specification Test (for model one)

	Coefficients			
	(b) Fixed	**(B) Random**	**(b-B) Differences**	**sqrt(diag(v_b-v_B)) S.E**
lnremittances	-0.20	-0.22	0.02	0.02
lngini	1.98	3.41	-1.43	0.42
lngdp	-2.66	-1.68	-0.97	0.27
lnopen	0.02	-0.10	0.12	0.11
lnhc	-0.13	-0.30	0.16	0.11
lninf	0.02	0.04	-0.02	-
lnpopgrowth	0.43	0.61	-0.17	0.05
lngovtexp	-0.49	-0.45	-0.04	0.04
Prob>chi2		0.0014		

Table 5.2 Hausman Specification Test (for model two)

	Coefficients			
	(b) Fixed	(B) Random	(b-B) Differences	sqrt(diag(v_b-v_B)) S.E
lninternational migration	-0.46	-0.27	-0.18	0.08
lngini	1.04	2.81	-1.76	0.37
lngdp	-2.86	-1.46	-1.40	0.28
lnopen	-0.33	-0.49	0.15	0.08
lnbc	0.05	-0.37	0.32	0.09
lninf	-0.03	-0.009	-0.02	-
lnpopgrowth	0.22	0.54	-0.31	0.04
lngovtexp	-0.75	-0.69	-0.06	-
Prob>cbi2			0.0000	

For both models probability values suggested by Hausman specification test is less than 0.05. So we do not accept the null hypothesis. It means that the fixed effect model is applicable in these models.

Following table shows the estimation results of both models in column two and column three. Model one explains the effect of remittances on poverty and the effect of international migration on poverty reported under model two. As migration and remittances are highly correlated with each other and there is the chance of multicollinearity problem so, that's why this study defines two models to check the separate impact of both remittances and international migration on poverty to avoid

the multicollinearity problem.

Table 5.3: Fixed effect estimation for the impact of migration and remittances on poverty

Variable	Model 1	Model 2
lnremittances	-0.20*	
	(0.054)	
lninternational migration		-0.47*
		(0.141)
lngini	1.98*	1.04***
	(0.645)	(0.635)
lngdp	-2.67*	-2.87*
	(0.342)	(0.345)
lnopen	0.02	-0.34***
	(0.235)	(0.206)
lnhc	-0.14	-0.05
	(0.313)	(0.317)
lninf	0.02	-0.03
	(0.042)	(0.042)
lnpopgrowth	0.44*	0.23
	(0.149)	(0.153)
lngovtexp	-0.49**	-0.76*
	(0.197)	(0.195)
Cons	17.526	24.520
	(4.506)	(4.315)
R^2	0.296	0.319
F	69.49	67.65
Prob (F)	(0.0000)	(0.0000)

Standard Errors are shown in brackets, whereas the *, **, *** denote significant at one, five and ten percent significance level

5.2 RESULTS OF MODEL 1

Remittances are negatively associated with poverty headcount. It is significant at 1% level of significance, meaning that remittances affect the poverty headcount.

The elasticity of headcount poverty relating to remittances is -0.20 meaning that 1% increase in remittances leads to on average decline in headcount poverty by 0.20%. It has been reported in existing work that poverty reduced due to an increase in workers' remittances. As the demand for the locally produced goods increases due to remittances, this leads to increase the supply. Therefore, personal remittances not only create jobs and generate employment, rather help in alleviating poverty. The result is followed by the findings of Adams (1991), Jongwanich (2007), Gupta et al (2007), Gaaliche and Zayati (2014).

The Gini coefficient is directly and positively associated with the poverty headcount. It is significant at the level of 1%, meaning that the alleviation of poverty affected by the level of income inequality. The elasticity of poverty headcount regarding income inequality is 1.98 which shows that when the income inequality increases by 1%, then on average the poverty headcount increases by 1.98%. It has been reported in existing work that in low-inequality countries, the rate of poverty reduction is larger than high-inequality countries through the given rate of economic development. Thus, the worse income distribution negatively affects the alleviation of poverty. This result is supported by the findings of Adams (2004), Ram (2007), Son (2007), Anyanwu and Erhijakpor (2010), Ncube, (2013), Gaaliche and Zayati (2014).

The variable associated with GDP per capita is significant at the level of 1%. The negative association is found between GDP per capita and Poverty headcount. The elasticity of headcount poverty regarding GDP per capita is -2.67 represents that when the GDP per capita increases by 1%, then on average the poverty headcount decrease by 2.67%, which is according to the past literature and has shown that due to an increase in mean per capita income the incomes of the poor grow proportionately. This result is supported by the findings of Chaudhry et.al (2006), Ncube (2013),

Gaaliche and Zayati (2014), Faridi and Mehmood (2014).

Population growth is positive and significantly affects the poverty headcount. The elasticity of headcount poverty relating to the variable population growth is 0.44 means that when the population growth increases by 1%, then on average the poverty headcount increases by 0.44%. As the poorer families tend to have more children than rich ones. Consequently, the poor households get a smaller share of the income because the same income is divided on the higher number of individuals. Hence, each poor individual is becoming poorer and their number increases. The results are in line with the results found by Ahlburg (1996), Ncube (2013), Hussain et al (2015).

The government expenditure is negatively and significantly affects the poverty headcount. The elasticity of poverty headcount regarding government expenditure is -0.49 means that when the government expenditure increases by 1%, then on average the poverty headcount decreases by 0.49%. Government expenditure, undoubtedly, is a main component of aggregate spending. When government spends in investment activities, it enhances the entrepreneurial activities, increase consumption level and help to reduce poverty. The results of this study are also consistent with the findings of Taylor (1992); Faini (2002) and Irfan (2011) that an increase in government expenditure reduces poverty.

While trade openness (OPEN), human capital (HC) and inflation (INF) are insignificant variables in this model.

The regression results of model one explain that the value of F-test is 69.49 and probability value is less than five percent that is 0.0000. It means overall model is nicely fitted and the coefficients are not equal to zero. The value of R^2 is 0.29; it shows that about 29% variations in the dependent variable are being explained by the independent variable.

5.3 RESULTS OF MODEL 2

The variable related to migration is significant at the 1% level of significance. The elasticity of poverty headcount relating to the variable international migration is -0.47 meaning that 1% increase in international migration leads to decline in poverty headcount by 0.47 on average. As the population of origin countries moves from the poor domestic (rural) area to the comparatively rich foreign (urban) area. And the amount of money received by migrant workers contributes to income of family members in origin countries which reduce rural poverty. These results are followed by Lokshin et al (2010), Siddique et al (2016), Ducanes (2015), Taylor et al (2005).

The Gini coefficient is directly and positively associated with the poverty headcount. It is significant at 10% level of significance, meaning that the alleviation of poverty affected by the level of income inequality. The elasticity of poverty headcount regarding income inequality is 1.04 means that when the income inequality increases by 1%, then on average the poverty headcount increases by 1.04 %. It has been reported in existing work that in low-inequality countries, the rate of poverty reduction is larger than high-inequality countries through the given rate of economic development. Thus, the worst income distribution negatively affects the alleviation of poverty. The result is in line with the findings of Adams (2004), Ram (2007), Son (2007), Anyanwu and Erhijakpor (2010), Ncube, (2013), Gaaliche and Zayati (2014).

The variable associated with GDP per capita is significant at the level of 1%. The study found the negative relationship between poverty headcount and GDP per capita. The elasticity of headcount poverty relating to the variable GDP per capita is -2.87 meaning that an increase in 1% GDP per capita leads to reduction in poverty head count by 2.87% on average, which is according to the past literature and has shown that the incomes of the poor grow proportionately as per capita income of the economy increase. This result is supported by the findings of Adams and Page (2005),

Chaudhry et.al (2006), Ncube (2013), Gaaliche and Zayati (2014), Faridi and Mehmood (2014).

In the line of Winter et al. (2004), Jongwanch (2007), Ncube (2013) this study found that trade openness is negatively associated with the poverty headcount. It is significant at 10% level of significance, meaning that trade openness affects the poverty headcount. The elasticity of poverty headcount regarding trade openness is -0.34 it means that when the trade openness rises by 1%, then on average the headcount poverty declines by 0.34%. It has shown in past work that poverty reduced as free trade decrease monopoly rents and the links of political and bureaucratic power and expands the relative income of low-skilled employees.

The government expenditure is negative and insignificantly affects the poverty headcount. The elasticity of headcount poverty regarding government expenditure is -0.76 means that, when the government expenditure increases by 1%, then on average the poverty headcount decreases by 0.76%. Government expenditure, undoubtedly, is a main component of aggregate spending. When government spends in investment activities, it enhances the entrepreneurial activities, increase consumption level and help to reduce poverty. Our results are consistent with the findings of Taylor (1992); Faini (2002), Irfan (2011); Faridi and Mehmood (2014) that increase in government expenditure leads to reduction in poverty.

In addition, variables such as human capital (HC), inflation (INF) and population growth are included in the model, but were not found to significantly explain the variations of poverty.

The regression results of model two show that 67.65 is the value of F- test and 0.0000 is the probability value that is less than five percent. It means overall model is significant and the coefficients are not equal to zero. The value of R^2 is 0.31; it shows

that about 31% variations in the dependent variable are being explained by the independent variables.

To analyze the effect of international migration and remittances on income inequality, the econometric models (model three and model four) are estimated by using fixed effect (FE), as suggested by Hausman test.

5.4 RESUKTS OF HAUSMAN SPECIFICATION TEST

The Hausman Specification test is used to differentiate between fixed effect and random effect model for model three and model four.

Table:5.4 Hausman Specification test (for model 3)

	Coefficients			
	(b) Fixed	**(B) Random**	**(b-B) Differences**	**sqrt(diag(v_bv_B)) S.E.**
lnremittances	0.02	0.01	0.004	-
lngdp	-0.28	-0.10	-0.18	0.01
lnopen	-0.09	-0.12	0.03	-
lnhc	0.10	0.04	0.05	-
lninf	0.01	-0.007	0.001	-
lnpopgrowth	0.01	0.03	-0.03	-
lngovtexp	-0.08	-0.09	0.01	-
Prob>chi2		0.0000		

Table:5.5 Hausman Specification test (for model 4)

	Coefficients			
	(b) Fixed	**(B) random**	**(b-B) differences**	**sqrt(diag(v_b- v_B)) S.E.**
lninternational migration	-0.03	-0.05	0.02	0.006
lngdp	-0.29	-0.13	-0.15	0.019
lnop	-0.04	-0.07	0.02	-
lnhc	0.11	0.06	0.04	-
lninf	-0.004	-0.006	0.002	-
lnpopgrowth	0.008	0.02	-0.017	-
lngovtexp	-0.07	-0.09	0.017	-
Prob>chi2		0.0000		

For both model probability values suggested by Hausman specification test is less than 0.05. So we do not accept the null hypothesis. It means that the fixed effect model is applicable in these models.

Table 5.6 represents the regression results of model three and model four in column two and column three. The Hausman test suggested fixed effect (FE) to analyze the effect of international migration and remittances on inequality. Model three shows the effect of remittances on income inequality and the effect of international migration on income inequality is explained by model four. As migration and remittances are highly correlated with each other and there may be the chance of multicollinearity problem so that's why this study defines two models to investigate the separate impact of both remittances and international migration on income inequality to avoid the multicollinearity problem.

Table 5.6: Fixed effect estimation for the impact of migration and remittances on inequality

Variable	Model 3	Model 4
lnremittances	0.02* (0.007)	
lninternational migration		-0.03*** (0.018)
lngdp	-0.28* (0.038)	-0.29* (0.038)
lnopen	-0.09* (0.297)	-0.04 (0.027)
lnhc	0.10* (0.039)	0.11* (0.040)
lninf	-0.01 (0.006)	-0.004 (0.005)
lnpopgrowth	0.01 (0.016)	0.01 (0.017)
lngovexp	-0.08* (0.024)	-0.07* (0.025)
Cons	6.262 (0.248)	6.046 (0.248)
R^2	0.161	0.122
F **Prob (F)**	23.72 (0.0000)	21.45 (0.0000)

Standard Errors are shown in brackets, whereas *,**,*** denote significant at one, five and ten percent significance level

5.5 RESULTS OF MODEL 3

Followed by the results Lipton (1980), Stahl (1982), Acharya (2012), Adams et al. (2008), Devkota (2014), Howell, (2017), Barham and Boucher (1998), the present study found that remittances are positively associated with the income inequality. It is significant at the 1% level of significance, shows that remittances affect the income inequality. The elasticity of income inequality relating to remittances is 0.02 meaning that when the remittances rises by 1%, then on average the income inequality increases by 0.02%. As the migration from rural to urban areas and acceptance of new technology, involves risks and costs. In addition, in case of international migration the risks and costs are expected to be particularly high. Based on this information, initial migrants may originate from the top of the sending- area's income distribution and from the upper-middle household and consequently richer households get more remittances at the first stage because they are able to finance family member' search for jobs in foreign countries or urban areas. The expenditure status of rich households gets better than the household having low income level, this leads to increase income inequality.

The variable GDP per capita is significant at 1% significance level. The relationship between GDP per capita and income inequality is negative as found by Koechlin and León (2006), Xiaolu (2006), Slyusarchuk (2008). The elasticity of income inequality relating to the variable GDP per capita is -0.28 represents that when the GDP per capita increases by 1%, then on average the income inequality decreases by 0.28. As employment opportunities increase due to rising economic growth, so the transformation of rural labour to the urban sector leads to reduce income inequality.

The variable income inequality and trade openness are negatively associated and statistically significant at1% level. The elasticity of income inequality with

respect to trade openness is -0.09 which shows that when the trade openness increases by 1%, then on average the income inequality decreases by 0.09%. As trade openness, can lead to increase the economy growth, decrease poverty and income distribution become equal. The negative relationship between trade openness and inequality is also found by several studies such as Jaumotte, et al. (2008), Chaudhry et al (2009).

The variable related to human capital is significant at the level of 1%. The elasticity of Gini coefficient regarding human capital is 0.10 which shows that if the human capital increases by 1%, then on average the income inequality will increase by 0.10%. The positive relationship exists between poverty and human capital as found by Xiaolu (2006). The reason behind is that unequal opportunities of education are one of the major factors to increase income inequality, and the poor group deprived regarding education. The highly-educated workers get a different wage rate than low qualified workers and thus inequality increases.

The government expenditure negatively and significantly affects the income inequality. The elasticity of income inequality regarding government expenditure is -0.08 shows that when the government expenditure increases by 1%, then on average the income inequality decreases by 0.08%. Because of transforming the resources from the rich towards the poor, government can improve equality in the society. The negative relationship between inequality and government spending is found in some other cross-country studies (Boyd, 1998; MacDonald and Majeed, 2010).

In addition, variables such as inflation (INF) and population growth are included in the model, but these variables not significantly explain the variations of poverty.

The results explain that the value of F-test is 23.72 and the probability value of F-statistics is 0.0000. It means overall model is statistically significant and the

coefficients are not equal to zero. The value of R^2 is 0.16; it shows that about 16% variations in the dependent variable are being explained by the independent variables.

5.6 RESULTS OF MODEL 4

The estimated results show 10% significance level of the variable related to migration. The elasticity of Gini coefficient relating to international migration is -0.03 meaning that 1% increase in migration leads to reduction in income inequality by 0.03% on average. The result is in line with the findings of McKenzie and Rapoport (2004), Koechlin and Leon (2006), Lokshin et al (2010), Margolis et al (2013). As a community established by migrant workers keeps close relations with their origin countries. Due to the network effect and connection in the labor market the information cost, settlement and opportunity cost are lowered. So, these network effects allow the migration for poor households. Thus, income inequality is reduced by migration.

The variable GDP per capita is significant at the level of 1%. There is negative relationship between GDP per capita and Gini coefficient. The elasticity of income inequality with respect to GDP per capita is -0.29 represents that when the GDP per capita increases by 1%, then on average the income inequality decreases by 0.29%. These findings are in conformity with the results of Koechlin and León (2006), Xiaolu (2006), Slyusarchuk (2008).

The variable related to human capital is significant at the level of 1%. The elasticity of income inequality with respect to human capital is 0.11 which shows that when the human capital increases by 1%, then on average the income inequality increases by 0.11%. The positive relationship exists between income inequality and human capital as found by Xiaolu (2006). The reason behind is that unequal opportunities of education are one of the major factors to increase income inequality.

Rich people have opportunities to get an education, but poor group deprived regarding education. The highly-educated workers get a different wage rate than low qualified workers and it leads to an increase in inequality in society.

The government expenditure negatively and significantly affects the income inequality. The elasticity of income inequality regarding government expenditure is -0.07 shows that when the government expenditure increases by 1%, then on average the income inequality decreases by 0.07%. Because of transforming the resources from the rich towards the poor, government can improve equality in the society. The negative relationship between inequality and government spending found in some other cross-country studies such as Boyd (1998); MacDonald and Majeed (2010).

In addition, variables such as trade openness (OPEN), inflation (INF) and population growth are included in the model, but these variables not significantly explain the variations of poverty.

The results of model four explain that the value of F-test is 21.45 and the probability value of F-statistics is 0.0000 that means overall model is statistically significant and nicely fitted and the coefficients are not equal to zero. The value of R^2 is 0.12; it shows that about 12% variations in the dependent variable are being explained by the independent variable.

Chapter 6

CONCLUSION AND RECOMMENDATIONS

The present study is an attempt to analyze the impact of remittances and international migration in income inequality and poverty alleviation by using Fixed Effect Model technique. The data is used for the period of 1990 to 2015 for 25 selected developing countries. As migration and remittances are highly correlated with each other so, the current study defines four models to examine the separate impact of both remittances and international migration on inequality and poverty alleviation to avoid the multicollinearity problem. Our estimation result are as follows:

- The study estimated a significant and negative impact of international migration on poverty. As the population of origin countries moves from the poor domestic (rural) area to the comparatively rich foreign (urban) area. And the amount of money received by migrant workers contributes to income of family members in origin countries which reduce rural poverty. These results are followed by Taylor et al (2005), Lokshin et al (2010), Ducanes (2015), Siddique et al (2016).
- It estimated the significant and negative impact of remittances on poverty head count. As the demand for the locally produced goods increases due to remittances, it leads to increase the supply. Therefore, personal remittances not only create jobs and generate employment, rather help in alleviating poverty. The result is in line with the findings of Adams (1991), Jongwanich (2007), Gupta et al (2007), Gaaliche and Zayati (2014).
- International migration has a significant and negative impact to reduce income inequality. The result is in line with the findings of Mckenzie and

Rapoport (2004), Koechlin and Leon (2006), Lokshin et al (2010), Margolis et al (2013). As a community established by migrant workers keeps close relations with their origin countries. Due to the network effect and connection in the labor market the information cost, settlement and opportunity cost are lowered. So, these network effects allow the migration for poor households. Thus, income inequality is reduced by international migration.

- The effect of remittances on Gini coefficient is found to be positive. As the richer households get more remittances because they can finance, family members' search for jobs in foreign countries or urban areas and thus income inequality increases. The result is in line with the findings of (Lipton (1980), Stahl (1982), Acharya (2012), Adams et al. (2008), Devkota (2014), Howell, (2017), Barham and Boucher (1998).

Our results support many previous empirical findings on the significant effect of international migration and remittances on inequality and poverty alleviation. The developing countries get advantages through the migration of poor people to developed countries.

The results suggest various policy recommendations.

- To encourage migration the government should lower the cost and risk of migration; provide information and take care of migrants at receiving countries.
- The policy of reducing the cost of remittances should be planned by the government to encourage the flow of remittances through formal financial channels.

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Appendix

Table A-1

List of countries			
1	Argentina	13	Kazakhstan
2	Armenia	14	Kyrgyz Republic
3	Belarus	15	Mexico
4	Bolivia	16	Pakistan
5	Brazil	17	Panama
6	Bulgaria	18	Paraguay
7	Colombia	19	Peru
8	Costa Rica	20	Romania
9	Dominican Republic	21	Russian Federation
10	Ecuador	22	Thailand
11	El Salvador	23	Turkey
12	Honduras	24	Ukraine
25	Venezuela, RB		

Table A-2

Description of variables	
Variable	**Source**
Poverty indicator (poverty headcount ratio at $1.90 a day	World Development Indicators
Gini index	World Development Indicators
International migration stock (percentage of population)	World Development Indicators
Personal remittances, received percentage of GDP	World Development Indicators
GDP per capita (constant 2010 US$)	World Development Indicators
Human capital (gross enrollment ratio, secondary both sexes, percentage)	World Development Indicators
Inflation (consumer prices annual percentage)	World Development Indicators
Trade (percentage of GDP)	World Development Indicators
Population growth (annual percentage)	World Development Indicators
Govt expenditure on education (total percentage of GDP)	World Development Indicators

Table A-3 Fixed effect estimation for remittances and poverty

lnpoverty	Coef.	Std. Err	T	P > |t|
lnremittances	-0.20	0.054	-3.76	0.000
lngini	1.98	0.645	3.07	0.003
lngdp	-2.67	0.342	-7.79	0.000
lnopen	0.02	0.235	0.09	0.928
lnhc	-0.14	0.313	-0.44	0.658
lninf	0.02	0.042	0.48	0.632
lnpopgrowth	0.44	0.149	2.95	0.004
lngovtexp	-0.49	0.197	-2.50	0.013
Cons	17.526	4.506	3.89	0.000

Table A-4 Fixed effect estimation for international migration and poverty

lnpoverty	Coef.	Std. Err	T	P > |t|
lninternational migration	-0.47	0.141	-3.31	0.001
lngini	1.04	0.635	1.65	0.101
lngdp	-2.87	0.345	-8.31	0.000
lnopen	-0.34	0.206	-1.62	0.107
lnhc	-0.05	0.317	-0.11	0.867
lninf	-0.03	0.042	-0.79	0.431
lnpopgrowth	0.23	0.153	1.48	0.140
lngovtexp	-0.76	0.195	-3.88	0.000
Cons	24.520	4.315	5.68	0.000

Table A-5 Fixed effect estimation for remittances and inequality

Lngini	Coef.	Std. Err	T	P > |t|
lnremittances	0.02	0.007	3.26	0.001
Lngdp	-0.28	0.038	-7.51	0.000
Lnopen	-0.09	0.297	-3.23	0.002
Lnhc	0.10	0.039	2.63	0.010
Lninf	-0.01	0.006	-1.10	0.275
lnpopgrowth	0.01	0.016	0.41	0.682
lngovexp	-0.08	0.024	-3.35	0.001
Cons	6.262	.248	25.21	0.000

Tahle A-6 Fixed effect estimation for international migration and inequality

lngini	Coef.	Std. Err	T	P > |t|
lninternational migration	0.03	0.018	-1.67	0.097
lngdp	-0.29	0.038	-7.50	0.000
lnopen	-0.04	0.027	-1.60	0.112
Lnhc	0.11	0.040	2.90	0.004
lninf	-0.004	0.005	-0.73	0.464
lnpopgrowth	0.01	0.017	0.50	0.621
lngovtexp	-0.07	0.025	-2.90	0.004
Cons	6.046	.248	24.13	0.000