IMPACT OF REMITTANCES ON ECONOMIC GROWTH AND POVERTY ALLEVIATION IN PAKISTAN

By

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Pakistan Institute of Development Economics

CERTIFICATE

This is to certify that this thesis entitled: **"Impact of Remittances on Economic Growth and Poverty Alleviation in Pakistan"** submitted by Mr. Saleem Dilawar is accepted in its present form by the Department of Economics, Pakistan Institute of Development Economics (PIDE), Islamabad as satisfying the requirements for partial fulfillment of the degree of **Master of Economics**.

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DECLARATION

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Saleem Dilawar

Dedicated to

My loving parents especially my mother (late)

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Abstract:

The direct and indirect impact of remittances on economic growth and poverty has earned a consensus the world over. There are conflicting views on the impact of remittances on economic growth and poverty alleviation, some studies supports the positive impact of remittances on economic growth and poverty alleviation mainly through the channel of enhancing the investment on Physical and Human capital while few studies supports the adverse impact of remittances on economic growth and poverty of the recipient economy primarily through reduction in labor supply and loss of skilled and efficient human capital, decreases investment as remittances are mainly use for consumption, causing Dutch disease which cause exchange rate appreciation and uplift inflation. Keeping in the view the contradictory literature about the impact of remittances on economic growth, this study aims to provide better and comprehensive understanding of how remittances impact economic growth and poverty. By applying time series data in case of Pakistan, analysis has been done over the period of 1980-2018. Autoregressive Distributed Lag (ARDL) is employed to examine the relationship of remittances with economic growth and poverty alleviation. The results show that remittances have positive and statically significant impact on economic growth and poverty alleviation in case of Pakistan. These results suggest that the government should take valuable steps to put in place an effective, improved and advance financial system to promote remittances through formal sector and policy aimed at promoting productive and valuable use of remittances like investment in education sector to promote human capital development.

CHAPTER NO 1

INTRODUCTION

1.1 Background

Foreign remittances are biggest monetary inflows to developing countries. These inflows are second important wellspring of foreign exchange after exports in emerging economies like Pakistan. Remittances have substantial contribution in economic growth of third world nations. Foreign capital flows are considered as main tool to decrease the depth of poverty. The increase in household's income because of remittances serves as essential cut on poverty levels.

Millions of people are moving from their country to another looking for better economic conditions. The facts and figures show that over 247 million people lives outside their countries of birth which is almost 3.4% of total population (world bank factbook, 2016). The theory of migration by Todaro (neoclassical) explained this behaviour by concluding that migrant workers move because of push factors in their domestic economies and pull factors in target economies. The push reasons are bad administration, high unemployment, low investment opportunities, low living standards. The pull reasons are a mixture of numerous aspects which include better job opportunities, good governance, quality education, better health care system and investment friendly climate.

From last two decades international remittances have appeared to be sufficient source of growth for emerging countries. It plays a crucial role in abating poverty, income redistribution, accelerating investment and economic growth. Remittances have grown in positive direction during last decades. According to World Bank Migration and remittances factbook (2016), Pakistan is stood at 7th position in top remittances receiving countries with $20.1 billion in 2015.The total remittances flows to the developing world are estimated to have increased to $432

billion. This figure only represents formal remittances flows and do not include informal remittances flows which could add additional 35 to 70% of these globally recorded flows (world bank, 2016).

A number of studies have been done on both micro and macro level to study the impact of remittances on different economic variables by Nishat And Bilgrami(1991), Malik *et al* (1993), Nishat *et al*(1993), Adams(1998), De Haas(2005), Taylor *et al* (2005), Pradhan *et al* (2008), Fayissa and Nsiah (2010) Javaid *et al* (2012).The general conclusion of these studies is that international remittances have significant contribution towards GNP of any country. Remittances are more stable than private capital inflows and ODA's flows in growth prospect. Remittances are also known as productive activities. Remittances are solidary and altruistic in nature which means it shows common object, interest and unselfish concern for an economy. So, these are non-volatile than private inflows and smoothen the consumption pattern over business cycle in an economy. Whatsoever the economic condition whether it is increasing or decreasing consumption is persistently increasing in trend because of smooth remittances.

In economic recessions, FDI and private inflows decline but remittances continue to increase. Remittances are steady in manner in case of volatile and unexpected economic events; all other resources i.e. FDI or ODA'S decreases during different shocks but remittances continue to increase. It is noticed that remittances have consistent positive trend during last decades. These are unique features that differentiate remittances from other capital flows. According to Jong Wanich (2007), remittances inflows have significant impact in reducing poverty gap, increasing domestic investment and human capital development, smoothing the consumption because of increase in income which eases constraints for poor to invest.

Besides positive impact of Remittances, there are some studies which shows adverse impact as well which comes after above stated potential benefits which are resulting in shape of consequences trough brain drain which means loss of skilled and efficient human capital for home country ,the labor supply within country decreases , over reliance on external economy ,greater voluntary unemployment within home country , inflation, exchange rate appreciation ,Chami et al (2003). Host country faces labor deficiency but developing countries have high population rate, which ultimately means excess supply of labor. Developing countries have low technology but through migration towards developed countries the migrants learn new techniques and use of new technology and innovative strategies, through this learning they become assets for their home countries

1.2   Flow of Worker Remittances

Since 1970's remittances are playing vital role in Pakistan economy. The flow of remittances starts increasing from 1970's when large number of Paistanis are getting jobs in GULF countries. Therefore, remittances inflows were gradually increased in 1980's it becomes a greater source of foreign capital but later due to oil prices shock remittances slowed down. Then in 1990's, decline in remittances due to GULF war and later because of sanctions when Pakistan does atomic explosions. In early 2000's, after the incident of 9/11, the remittances inflows increased dramatically more than 200% and Pakistan became one of top ten recipients countries. Since then remittances are gradually increasing in volume every year.

Figure 1.1: Flow of Workers' Remittances to Pakistan, 1980-2017
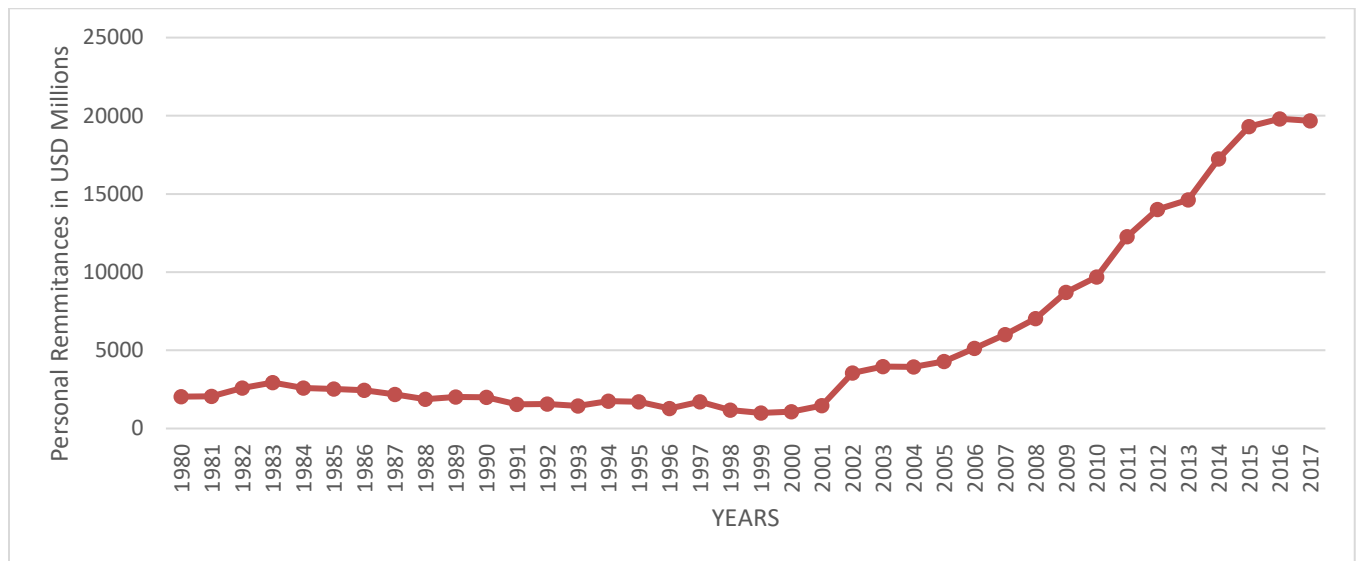
Source; World Development Indicator

1.3 Objective of Study

Given the size of international remittances to Pakistan and ongoing debate on the impact of remittances on economic growth and poverty alleviation. It is important to take this study. The purposes of this study are:

➢ Inspect the impact of remittances on economic growth and poverty alleviation.

➢ Study the short-run and long-run relationship among remittances and economic growth.

➢ Test the short-run and long-run relationship among remittances and poverty alleviation.

1.4 Statement of Problem

The literature on the impact of remittances on economic growth and poverty is not conclusive. Some studies discover positive effect of remittances on economic growth and poverty alleviation are De Haas (2005), Taylor *et al* (2005), Pradhan *et al* (2008), Fayissa and Nsiah (2010) and Javaid *et al* (2012), on other hand some studies observed that there is no such

relation exists among remittances and economic growth in recipient countries are Barajas *et al* (2009), Siddique *et al*(2012). In addition to these, some studies find adverse impact of remittances on economic growth like Chami *et al* (2003). These differences are may be due to different factors institutions, inflation, financial markets etc. The main theme is that remittances affect economic growth by means of different factors and channels and get affected by economic growth simultaneously.

Based on the theoretical and empirical studies , the impact of remittances can be categorized into two main categories , one who finds that remittance have positive impact on economic growth and poverty alleviation and other who finds negative impact between economic growth and remittances. Those find positive impact states that remittances affect by means of different factors like enhancing domestic investment, human capital development, smoothing the consumption and ease credit constraints [Adenutsi (2010) and Balde (2010)]. On the contrast, those who finds adverse effect, they argue that remittances reduces labor supply and loss of skilled and efficient human capital, decreases investment as remittances are mainly use for consumption, causing Dutch disease which cause exchange rate appreciation and uplift inflation [de Hass, (2007), Chami *et al* (2003), Dorantes and Pozo (2004)].

From the above discussion of literature about impact of remittances on economic growth and poverty alleviation it is difficult to make some conclusion. So, there is need to investigate the impact of remittances on economic growth and poverty alleviation by using latest data.

1.5   Significance of the study

A wide range of literature is available on the impact of remittances on economic growth and few on impact of remittances on poverty alleviation. These studies show mix results of remittances results on economic growth and poverty alleviation but most of the studies observe

positive impact of remittances on economic growth and also positive impact of remittances on poverty alleviation. This study tries to examine the impact of remittances on economic growth and poverty alleviation in short run and long run whether impact is positive or negative and significant or not, in Pakistan. This study uses ARDL technique to find the impact if remittances on economic growth and poverty using the latest available data covering the period of 1980 to 2017.

1.6   Hypotheses

The study tests the following hypotheses;

➢ Remittances have not any significant impact on economic growth and poverty alleviation in Pakistan.

➢ There is no short-run and long-run relationship among remittances and economic growth in Pakistan.

➢ There is no short-run and long-run relationship among remittances and poverty alleviation in Pakistan.

1.7   Organization of the Study

The remaining sections of the study are organized as follows: Chapter 2 provides the detailed overview of the existing literature . Chapter 3 explains about the data and descriptive analysis. Chapter 4 provides the theoretical framework and estimation methodology for our study Chapter 5 discusses the empirical results and Chapter 6summarizes the findings and concludes the study

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

In this chapter we discuss in detail the existing literature of different economies who are receiving a great portion of total international remittances. Most researcher studied the association among remittances and economic growth, correspondingly some researchers consider international remittance as a major tool to overcome poverty headache. However increasing trend of international remittances get attention of economists in last two decades and became a pinpoint. This chapter has three sections. The first section is detailed study on other countries, second describes the review in case of Pakistan and third is conclusion drawn from all reviewed studies.

2.2 Empirical literature

Puri and Ritzema (1999) considered inflow migrant worker remittances effect on Micro-finance and the informal economy: Prospects and Issue. They propose that the remittances have significant effect on labour sending countries but the value of officially recorded remittances is very much lower than actual remittances. The informal remittances have controversially significant impact on an economy however unpredictable. In case of Pakistan, Sudan and Egypt these informal inflows are at least double or triple of recorded remittances. These leakages occur if financial services like banking & exchange rate services are incompetent. These informal inflows result in increased inflation, causing hype in imports resulting in negative balance of payment. Formal remittances help to ease foreign exchange constraints, improve balance of

payment, raise the standard of living of recipients, are potential source of human capital development

Taylor *et al*. (2005) observed the impact of remittances on poverty reduction and income inequality in Mexico using data from the Mexico National Household Survey composed with inequality and poverty decomposition techniques. Remittances have significantly positive effect on poverty alleviation. Foreign remittances lessen rural poverty by a greater volume than domestic remittances. International remittances increase rural inequality, where as domestic remittances are income equalizer.

Amjad (2006) examined remittances and development in south Asia. The empirical findings confirm that remittances have statically significant impact on economic growth and poverty alleviation in south Asian economies. These inflows are considered as one of important source to decline poverty in the region. Remittances had drastically increased after 9/11 in Pakistan, Bangladesh, and India. The increase of such inflows In Pakistan is almost triple, for Bangladesh it is 75% and for India 25% increase within 2-3 year, which significantly help to lessen the poverty gap especially for Pakistan and Bangladesh. In Srilanka the impact of remittances is positive but marginal in nature. Remittances increase the standard of living for the families of unskilled people who migrated are mainly from poor families. Such inflows increase consumption pattern and use to generate economic activities and considered as multipliers. Poverty level declines because of remittances inflows within the region.

Gupta *et al*. (2007) empirically deduced the Impact of remittances on poverty and financial expansion in Sub-Saharan Africa (SSA) using panel of 44 countries & data from 1975-2004 on 5 year averages. They considered remittances as stable private transfer which directly

ameliorates the depth of poverty. Sub-Saharan African shares of total remittances are very small proportionally 4% (4% of what) and related to GDP 2.5% but still it has positive and increasing trend over the time. The foreign aid inflows are greater than remittances inflow in SSA but aid influx fluctuates which is not case with remittances' influx. During cyclical changes remittances continue to increase in SSA than official foreign aid. Through remittances the human capital development activities increases within SSA. In 2004, 20% of tertiary educated youth migrated to OECD countries. Such inflows encourage others towards better education which ultimately results in better living standard, poverty reduction, contribution to gross national income, high per capita income and poverty reduction.

Sayan *et al*. (2007) examined impact of remittances on business cycles and poverty in Turkey using time series data from 1987 to 2003. The observation shows that remittances move Pro-cyclical with real output which means remittances are associated with cyclical movement, fall in remittances because of cyclical contraction resulting in further crises in an economy. In pro-cyclical, remittances influx is dependent upon the investment motive which must be stronger than consumption smoothing pattern which is in case of counter cyclical flow of remittances. The results show that Remittances have significantly positive effect for poverty alleviation on overall economic growth.

Lokshin *et al*. (2007) found out relationship among remittances and poverty through Work-Related Migration And Poverty Reduction in Nepal by using data of two rounds of Nepal Living Standard Survey (NLSS. It showed that remittances to Nepal grew by 30% per year and contribution to GDP was less than 3% in 1995 which grew to about 15% in 2003, which is noticeably higher than tourism, foreign aid and exports, resulting in 20% decrease in poverty and raising per capita income to 14000 Nepali rupee. The effect of remittances on poverty reduction

is significant which influences through economy-wide resource allocation. Inflation, Interest and exchange rates are determined by amount of remittances inflows. Remittances have very intense effect on socioeconomic, demo-graphical and political issues. In 2004, 40% of capital expenditure was increased by remittances inflows.

Ahortor and Adenutsi (2008) scrutinized the impact of remittances on economic development in developing economies for the period of 1996-2006, using Generalized Method of Moments (GMM) framework, using panel data of 31 small open economies. Remittances transfer to developing countries increase dramatically during last two decades. Remittances had positive impact on growth in long run but marginal in nature, likewise significant and positive effect on GDP per capita. The country where financial system is underdeveloped, economic growth is boosted by remittances. The empirical findings show that dynamic impact of remittances is negative while contemporaneous impact is positive and overall impact is positive and diminishing. There are numerous ways through which the increase in remittances have positive influence on growth and of developing countries which can be channelized by means of inflows impact on diversification of economic activities, domestic investment, technological progress, balance of payment, employment level, wages and human capital development. On the contrary, there are a few adverse effects as well, the major one is infection of Dutch disease which means that appreciation of currency and reduction of international competitiveness through which exports decreases and import increases ultimately worsen Balance of payment.

Silva *et al*. (2009) studied remittances effect against poverty reduction and the pursuit of economic growth in Asia using annual data for years 1988–2007 for more than 20 Asian countries. They showed that Remittances have significant and positive effect on economic growth but diminishing in nature. Therefore, remittances can be used as a weapon for abating

poverty. Their empirical findings show that 10% rise in remittances reduces the poverty gap by 0.9 to 1.2% and increase the GDP per capita of an economy. Remittances are used to tackle short run fluctuation and can be us as an effective tool in cyclical policy because of their counter-cyclical and altruistic nature. Remittances area also known as a new development mantra, manna from heaven, and even a present-day miracle.

Anyanwu & Erhijakpor (2010) observed effect of international remittances on Poverty in Africa, using panel data from 1990 to 2005 for 33 African countries. International remittances have positive and statically significant effect on poverty alleviation. For instance, 10 % in foreign remittances as a share of GDP will lead to 2.9% decline in poverty gap. The assessment shows that 1 unit rise in remittances will cause change in poverty headcount of 0.08 unit, . This may contribute a higher proportion if the transaction cost of remittances can be reduced by proper policy implementing and banking sector rivalry.

Azam & Khan (2011) explored worker's remittances and economic growth in case of Azerbaijan and Armenia using the log linear regression model with least square. The findings showed the positive effect of worker's remittances on economic growth in both countries. Remittances have become very influential source of increase socioeconomic condition and help to strength economic growth. Remittances are considered as insurance agents and as shock absorber. The result shows that 1 unit change in remittances cause 0.4 unit change in economic growth in case of Azerbaijan and inn case of Armenia, 1 unit change in worker remittances will cause 0.46 unit change in economic growth.

Serino & Kim (2011) examined the impact of international remittances on poverty in developing countries using panel data for 66 developing countries for the period 1981 to 2005.

They use headcount ratio, poverty gap and squared poverty gap as measures of poverty. The findings show the negative correlation of remittances and poverty. Poverty is the most challenging issue the world is facing and set at priority level in SDGs (Sustainable Development Goals) as well. The result shows that 1% rise in remittances will cause reduction of 0.012 in headcount ratio and 0.008 in poverty gap. If the remittances are sent through banking channel, 1% rise in remittances will reduce 0.005 squared poverty gap.

Soto & Brown (2012) examined impacts of migrants' remittances on poverty reduction in Tonga using household survey data. Remittances contribute substantially in income to reduce poverty and increase the consumption pattern of recipient families and boost other economic activities. Such inflows are steady in nature and helpful at time of shocks and emergencies. Over 90% of Tonga residents are receiving remittances. The findings show 31% decline in PI (Poverty Incidence) and 49% in depth of poverty because of international remittances inflows.

Ratha (2013) explored remittances effect on economic growth and poverty drop for the period from 1991 to 2015. He mentioned the impact of remittances on human development other than monetary gains. Research has shown notable correspondence via positive health and education, such as school dropout rates becomes lower and those children who are born in recipients' families have higher average birth weight ratio and very low infant mortality rate. Through remittances inflows the country's credit rating and external debt sustainability increases. In 2009, IMF and World Bank debt sustainability framework has been changed and amended , which stated that any country whose remittances are equal to 10% of GDP or 20% of exported goods and services can obtain higher level of debt. His study displays that 10% rise in remittances will cause alleviation of 3.5% in poverty.

Olowa *et al*. (2013) examined effects of remittances on poverty reduction among Rural Households in Nigeria using the data of 2004 collected by NLSS (National Living Standard Survey) and analysed by using FGT (Foster, Greer and Thorbecke) poverty measure. The observation shows that domestic and international remittances helps to reduce depth and level of poverty. However, domestic remittances play a crucial role in case of Nigeria and had significant impact in reducing depth of poverty than international remittances. If domestic remittances increased by 10%, PI (Poverty Incidence) is decreased by 1.8%, PG (Poverty Gap) by 1.6% and SPG (Squared Poverty Gap) by 1.6%. However 10% increase in foreign remittances reduced PI by 0.86%, PG by 0.62% and SPG by 0.62%.

Kamuleta *et al*. (2014) studied the effect of remittances on emerging countries. The findings suggest that the remittances have significant positive effect on both sides bank deposit and bank credit of private sector. These inflows act as a substitute for other financial means like insurance and credit. Remittances help to boost economy in the period of recession, allow households to engage in high risk and profitable activities. Some studies suggest that remittances effect on GDP growth is positive if the financial market is underdeveloped and negative if inflows are considered as permanent income, Dutch disease & labour force participation

Ferdaous (2016) studied Remittances and FDI impact on economic growth by using static and dynamic panel data approach for the period of 2003-2014 for 33 developing countries. The results demonstrate that remittances & FDI have statically significant positive effect on economic growth than other capital inflows component like portfolio equity investment, portfolio debt investment and international aid. The empirical findings show negative impact of remittances on growth; it shows that 10% rise in remittances will decrease real GDP by 0.22%.

Though remittances are widely used as an operative instrument for poverty alleviation using additional income for consumption and investment.

Azam *et al*. (2016) examined the impact of international remittances on poverty alleviation by using global evidence for the period 1990 to 2014 for 39 countries using the method fully modified OLS (FMOLS). The result discovered that remittances have positive effect to alleviate the burden of poverty. Remittances had significant impact in upper middle-income countries. The estimates show that 1% increase in GDP per capita will cause poverty alleviation of 1.01% lower-middle income, 1.102% in upper-middle, 0.007% in high income countries. This study acknowledged the remittances as anti-poverty device. Remittances can be used for productive activities and channelized to generate economic activities in addition to consumption purpose.

Okoro *et al*. (2019) argued on the Effect of international capital influx on economic growth of Nigeria by using data for interval of 1986 to 2016 using OLS techniques & Harrod-Domar model. International capital inflows have four major channels which includes personal remittances, ODA, external debt stock and FDI. They found that ODA and external debt had no significant impact on economic growth therefore should be discouraged. Findings show that significant and positive effect of Remittances and FDI son economic growth. Remittances' share to the GDP of Nigeria is 5.78%. The inferences display that the effect of remittances on economic growth is significant and positive because coefficient of remittances was positive 0.518247 and significant.

Haouas *et al*. (2019) observed the relationship between remittances and financial development in MENA Countries by means of the bootstrap rolling Granger Non-Causality

approach for the period 1980 to 2015. The findings show that Remittance inflows are steady in nature having positive impact on financial development which ultimately boosts economic growth. Remittances are second best source of financing across MENA countries, inward remittances can increase the flow of credit and loans among financial sector.

2.3   Empirical Literature in Pakistan:

Iqbal and sattar (2005) explored the involvement of remittances in GDP growth in Pakistan using multiple regression method for the period 1972-73 to 2002-03. They found that 1% rise in remittances will effect 0.4% rise in GDP growth. The quantitative evidence shows the highly significant positive relation between economic growth and remittances. Their empirical findings results considered the remittances as third cheap source of capital for growth after private and public investment. The results show that 1% change in private investment will cause growth to boost by 0.9% while not in case of public investment.

Suleri & Savage (2006) considered, the inflow remittances in crisis in case of Pakistan showed that remittance inflows are constant in nature. Therefore, remittance inflows are reliable source to absorb unexpected events, emergencies, shocks and are used to reduce risk and considered as insurance mechanism. Remittances are the primary source of income in KPK and AZAD KSHMIR, in case of natural disaster a better relief source than aid to recover silently. Remittances are critically significant which have multiplied impact to upsurge economic activities and are widely used to rebuild homes, provide shelters, reopening markets and for humanitarian assistance (helping each other i.e relatives).

Javid *et al*. (2012) evaluated the impact of remittances on economic growth and poverty using ADRL approach for the period of 1973-2010. They observed that remittances influence on

economic growth is significantly positive in Pakistan which will help to achieve improved living standards of poor, reducing current deficit, removing liquidity constraints, improving balance of payment, human development and sustainable growth. Remittances have grown sharply during last few decades. The study shows significant reduction in poverty gap and growth enhancement in Pakistan due to remittances. Remittances share to GDP in 2007 was 4.2%. Remittance inflows are substantially helpful for stabilizing exchange rate, increasing foreign exchange reserves and accelerating investment. These inflows are considered as important source for foreign exchange which ultimately reduces its dependency on external financing.

Ali (2014) examined international remittances influx and economic growth in Pakistan An Empirical Analysis for the period of 1972-2013 using Johansen Co-Integration Technique and Granger Causality Test which demonstrates negative impact of workers remittances on growth, external debt and FDI also have negative effect. The negative impact of remittances is perceived in those economies where such inflows are large and sustained. This effect of remittances is because of reduction in exports and increase in imports, appreciation of exchange rate also called infection of Dutch Disease, brain drain (if skilled and efficient labour migrated, ultimately the investor will be discouraged because the remaining labour supply is insufficient to perform activities accordingly). These inflows cause decline in labour force participation because voluntary unemployment increases or willing to work at high wages.

2.3   Conclusion

The study of literature shows, international remittances have statically significant and positive impact on economic growth and poverty alleviation in evolving countries. In evolving countries, unemployment ratio is very high, skilled youth migrate to developed countries for

better employment opportunities and send back a portion of their income to balance the lifestyle of their families. International remittances are reliable source than official development assistance and FDI. Remittances are altruistic in nature which means it works in interest of whole economy. it increases in volume at times of hurdles of an economy unlike ODA'S and FDI which decreases, migrants sent more remittances to their families in hard times. These inflows are creating multiplier effect by increase in demand for products which encourages local industry which promotes employment and starts a cycle to help an economy to grow. These inflows have significant impact through different channels some of them are, these help to strengthen the BOP position, raise foreign exchange, increase domestic consumption, helps financial sector to grow further. it encourages for better education and health sector which in results of increase in human capital investment, improves standard of living and alleviate poverty.

CHAPTER 3

DATA AND DESCRIPTIVE ANALYSIS

3.1 Introduction

In our study we are interested in examining the empirical, graphical and statistical analysis of remittances on economic growth and poverty. This chapter contains two main sections; first covers collection of data and second covers statistical, descriptive and graphical analysis. In our analysis we have used time series data set for Pakistan.

3.2 Data Collection and Justification of Variables

This section explained the source of data, collection of data, definitions and economic theory of variables used in the analysis. We used data for an empirical analysis and it is playing very supportive role for justification of our arguments. In present study we have incorporated time series data for sample of Pakistan. To estimate the model secondary data is used for Pakistan from 1980 to 2017. Statistics of all variable is composed from World development indicator (WDI), United Nation Development Programme (UNDP), International Financial Statistics (IFS). In study we used two models one to examine the impact of remittances on economic growth and second is to explore the impact of remittances on poverty alleviation. For f model one GDP growth is used as response variable as a function of other explanatory variables; remittances, investment, trade openness, inflation, HDI, similarly for second model poverty is used as response variable as a function of other explanatory variables remittances, income inequality, GDP growth and level of education. . The variables used for analysis are real GDP as a proxy of economic growth, gross capital information as percentage of GDP as a proxy of

investment, trade openness as percentage of GDP is used as proxy of trade openness, HDI index as proxy of HDI, inflation is taken in percentage, personal remittances as a proxy of worker remittances inflow, poverty national headcount ratio is used as proxy of poverty, gini index as proxy for income inequality, youth literacy rate as proxy of education level.

Table 3.1: Description of Variables

S.NO	Variables	Notation	Data source	Description
1	Economic Growth	RGDP	WDI	RGDP is the sum of gross value added by all resident producers in the economy .It measures in US Dollars.
2	Worker remittances	REM	IFS	Personal remittances include personal transferals and compensation of employees. Data collected in US dollars.
3	Trade Openness	OP	WDI	Sum of exports and imports relative to GDP. Trade openness as percentage of GDP is used as proxy.
4	Investment	INV	WDI	Gross capital formation consists of outlays on additions to the fixed assets of the economy plus net changes in the level of inventories. Gross capital formation as percentage of GDP is used in studies..
5	Inflation	INF	WDI	Inflation is measured by CPI reflects the persistent change in basket of goods and services consumed by consumer. The Laspyer formula is used to measure.
6	Human Development	HDI	UNDP	Human Development Index composed of three dimensions __ a long and healthy life, better education and a decent standard of living.
7	Poverty	P	UNDP	National poverty headcount ratio is the percentage of the population living below the national poverty lines.
8	Income inequality	GINI	WDI	Gini index measures the degree to which the distribution of income among individuals within an economy diverges from a perfectly equal distribution. It measures by Lorenz curve.
9	Level of Education	EDU	WDI	Youth literacy rate is the percentage of people ages 15-24 that can both read and write.

3.4   Statistical Analysis

In this section we have provided the statistical and graphical analysis of all variables uses in the study. Furthermore, in this segment we have analyzed the features of variables, trends of variables and correlation among the variables.

3.5   Descriptive Statistics

Table provides the descriptive data of all variables used in model to estimate the results. The table 3.2 conveys the general setting of all variables. Descriptive analysis comprises the mean and median value, the standard deviation, minimum and maximum values of all variables are tabulated in table. The data on all variables are from 1980 to 2017 collected WDI, UNDP and IFS.

Table 3.2: Descriptive Statistics for Model 1

	RGDP	REM	OP	INV	INFLATION	HDI
Mean	26.98432	21.97816	33.54199	17.79365	9.158095	0.479774
Median	27.00208	21.66283	33.85413	18.21600	8.132383	0.478167
Maximum	27.78925	23.70935	38.90949	20.81826	24.89115	0.576000
Minimum	26.03697	20.71926	25.30623	14.12063	0.400237	0.345500
Std. Dev.	0.510513	0.924469	3.269385	1.667409	5.245876	0.062889

Source: Author's Own estimation (2019)

The mean value of RGDP is 26.98432 and standard deviation is 0.510513. The minimum value of RGDP is 26.03697 and the maximum value is 27.78925. Standard deviation of remittances is 0.924469 and means value is 21.97816. The 20.71926 and 23.70935 are respective minimum and maximum values. Standard deviation of OP is 3.269385 and its mean value is33.54199. The respective minimum and maximum values are 25.30623 and 38.90949. The mean value of INV is 17.79365 and standard deviation is 1.667409, the 14.12063 is minimum and 20.81826 is maximum value. As well, standard deviation of inflation is 5.245876 and means value is 9.158095. The 0.400237 and 24.89115 are respective minimum and maximum values. The mean value of HDI is 0.479774 and standard deviation is 0.062889. The minimum value of HDI is 0.345500 and the maximum value is 0.576000.

Table 3.3: Descriptive Statistics for Model 2

	POV	REM	RGDP	GINI	EDU
Mean	3.078427	21.97816	26.98432	3.697141	56.31582
Median	3.054466	21.66283	27.00208	3.698546	56.05876
Maximum	3.489819	23.70935	27.78925	3.856235	74.31528
Minimum	2.717745	20.71926	26.03697	3.518462	32.67000
Std. Dev.	0.197112	0.924469	0.510513	0.099259	13.66443

Source: Author's Own estimation (2019)

The mean value of RGDP is 26.98432 and standard deviation is 0.510513. The minimum value of RGDP is 26.03697 and the maximum value is 27.78925. Standard deviation of remittances is 0.924469 and means value is 21.97816. The 20.71926 and 23.70935 are respective minimum and maximum values. Standard deviation of poverty variable is 0.197112 and means value is 3.078427. The 2.717745 and 3.489819 are respective minimum and maximum values. Standard deviation of GINI is 0.099259 and its mean value is 3.697141. The respective minimum and maximum values are 3.518462 and 3.856235. The mean value of EDU is 56.31582 and standard deviation is 13.66443, the 32.67000 is minimum and 74.31528is maximum value.

3.6   Correlation Matrix

In this section we have observed the relationship among response variable and explanatory variable for the period of 1980 to 2017. Correlation is numerical technique to measure linear relationship among two variables. Our dependent variable GDP growth and poverty in respective model 1 and model 2, and there correlation with other variables is shown in the table. This information is necessary to address the issue of multi-collinearity. The results confirmed positive correlation among RGDP and REM however negative correlation exist among POV and REM.

Table 3.4: Correlation Matrix for Model 1

	RGDP	REM	INV	HDI	OP	INFLATION
RGDP	1	0.776611	-0.662458	0.756269	-0.665566	-0.504287
REM	0.776611	1	-0.634539	0.732328	-0.555981	-0.162694
INV	-0.662458	-0.634539	1	-0.610391	0.689819	0.215765
HDI	0.756269	0.732328	-0.610391	1	-0.508115	0.051206
OP	-0.665566	-0.555981	0.689819	-0.508115	1	0.178116
INFLATION	-0.504287	-0.162694	0.215765	0.051206	0.178116	1

Table 3.5: Correlation Matrix for Model 2

	P	REM	GDP	GINI	EDU
POV	1	-0.7326514	-0.6534835	-0.6570570	-0.6212513
REM	-0.7326514	1	0.7328071	0.7502379	0.7072505
GDP	-0.6534835	0.7328071	1	0.9990336	0.9935738
GINI	-0.6570570	0.7502379	0.9990336	1	0.9909069
EDU	-0.6212513	0.7072505	0.9935738	0.9909069	1

Source: Author's Own estimation (2019)

3.7 Conclusion:

In chapter we analyzed the empirical, graphical and numerical analysis of remittances on economic growth and poverty. We discussed collection, statistical, descriptive and graphical analysis for both models. This chapter clarified which variables are used, what are the   sources of data, collection of data, definitions and economic theory of variables used in the study. In this chapter we have also observed the relationship among response variable and explanatory variable using correlation matrix.

CHAPTER NO 4

THEORETICAL FRAMEWORK &

ESTIMATION METHODOLOGY

4.1 Introduction

In this section we have discussed the relevant theories which have contributed to explain remittances and its effect on poverty alleviation and economic growth. In addition to this, we have explained the basic relationship among variables and developed a methodology for our study to analysis the impact of remittances on economic growth and poverty alleviation.

Remittances have great impact to change the economic variables of any country through many elements and channels. Remittances impact economic growth and alleviate poverty via many channels .as remittances is a major source of capital to boost the economic activities of any country. Remittances helpful to boost those countries where there is no strong financial system via diverse source to finance investment. Recipients' families who receive remittances have positive effect on economic growth by increasing demand and which support to level consumption pattern through channel of human development index by increasing expenditure on health, education and nutrition. Similarly, remittances upsurge economic growth through increases entrepreneur activities and labor efficiency because of increasing consumption and investment by recipient sector. Remittances are chief factor to increase GDP by reducing poverty and income inequality in developing countries. At macro level recipient countries receive foreign exchange which is helpful in stability of any country.

Figure 4.1: Impact of Remittances
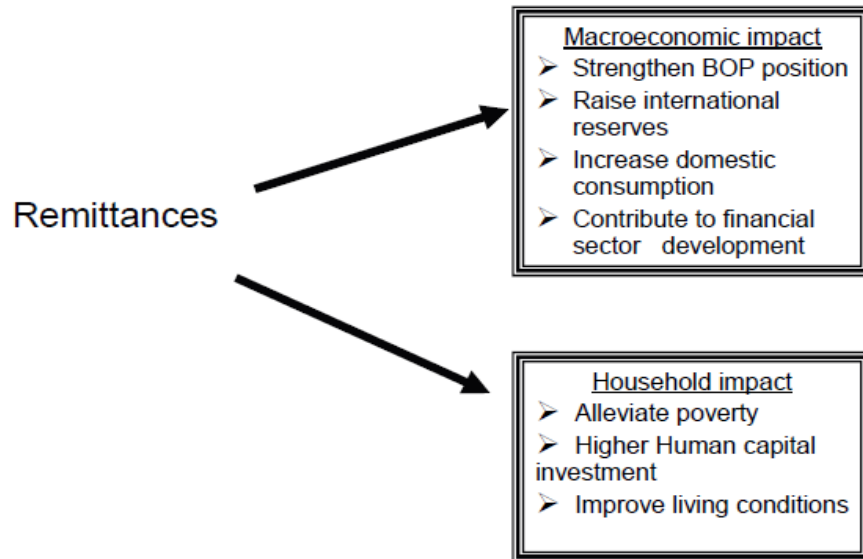
Source: Adapted from Guinigundo (2007)

One of the major positive effects of remittances to developing countries is that as recipients use remittances in small businesses to generate more revenue. Poor or middle-class families need basic capital and financial support to start small businesses or source of earning which they from remittances. This channel is mostly work for those developing countries where credit markets do not work properly. However on consumption hand, demand for domestic and foreign goods generates economic activities through multiplier effect.

Another key factor in any country's development is through building a high human development index, which is possible through high inward remittances. First, remittances help improve the health of poorer families, especially children, as well as lowering childbirth rates and pursuing health care practices in ways that have a greater impact on health. Second, it increases the school enrollment rate in the recipient countries. So, receiving remittances sector started investing more in education than in a non-remittance sector.

4.1.1   Remittances and Economic Growth:

The remittances facilitate high investment which benefits overall national economy. The consumption soothing effect of remittances have allowed recipients to engage in economic activities which have high risk but more profitable which ultimately help to reduce poverty in an economy which is difficult to achieve in absence of remittances. In SSA, remittances are used to upgrade financial intermediation of higher levels like computers and internet access. Thus such mutual relationship between remittances and improve financial intermediation can improve growth prospects of overall economy where as in Philips and Mexico remittances are associated with accumulation of farming equipment's, higher level of self-employments and increased in number of small scale businesses.

Research findings in SSA shows that remittances are considered as private welfare system and increase purchasing power of low income groups relatively than higher ones. These inflows have multiplier effect through increased household spending, smoothing consumption pattern, investment in education and health, affecting labor supply, providing working capital and reducing poverty in an economy.

The purpose of identifying a long-run relationship among remittances and economic growth is to promote overall economic growth and development in recipients countries. The stimulus for attracting increased remittances is to evaluate how such inflows impact on domestic investment, BOP, exports, diversification of economic activities, ease domestic constraints, employment level , wages, human capital development and technological process.

4.1.2 Remittances and poverty :

Remittances are mainly use for financing family consumptions which ultimately helps to increase in purchasing power of poor families to spend more on both durable and non durable prodcuts, health and education. These inflows help to improve standard of living by contributing to family consumption. It help recipient families in improving health especially for children , reducing child infant mortality rates for poor families. Remittances are helpful in promoting better education , school enrollment ratio in remittances receiving sectors are comparatively high which results in decreasing the depth of povery gap.

International remittances promotes community development through spillover mechanisim. First, increase in consumption pattern will generate multiplier effects by increasing in demand for local goods and services which encourages local industry , promote employment and local development. Second, Remiitances support formation of small scale industry .the results will be job creation and increase in development of reciepient country (Woodruff and Zenteno, 2001).

Figure 4.2: Effect of Family and Productive Remittances
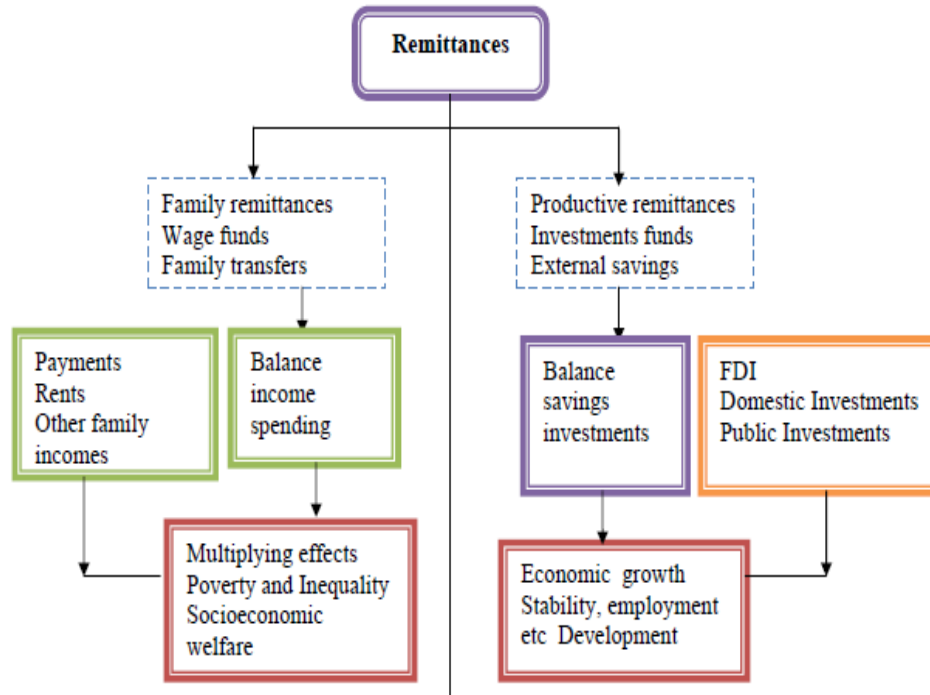
Source: Chami, R., C. Fullenkamp and S. Jahjah [28]

As shown in graph remittances are broadly categories in to two which are wage remittances and productive remittances. Wage remittances are sent directly for family use whether to use for consumption or savings for future consumption and for emergencies. These are also use to maintain a balance between income and expenditures for family and cultural traditions and ceremonial rituals. Whereas productive remittances are use in various forms consumption pattern creates multiplier affects, they contribute to the investment sector as capital. In a nutshell, remittances have significant and positive impact on economic growth and poverty alleviation increasing domestic investment and human capital development, smoothing the consumption because of increase in income which ease constraints for poor to invest.

4.2 Model Specification:

Based on these explanations the general form of our model is as follow in equation 4.1 and 4.2:

RGDP= f (remittances, trade openness, HDI, investment, inflation) $\qquad$ **(4.1)**

Poverty =f(RGDP, income inequality, remittances, education) $\qquad$ **(4.2)**

This model can be written empirically as in equation 4.3 and 4.4:

RGDP= α_0+ α_1REM+ α_2OP+ α_3HDI+ α_4INV+ α_5INF +ε_t $\qquad$ **(4.3)**

Poverty= β_0+ β_1RGDP+ β_2IEQ+ β_3REM+ β_4EDU + μ_t $\qquad$ **(4.4)**

The present study uses following regression model of Javid *et al.*(2012).By taking log equation re-written as in equation 4.5 and 4.6

lnRGDP = α_0 + $\alpha_1 ln$REM +$\alpha 2$OP+α_3HDI+ α_4INV + α_5INF+ ε_t $\qquad$ **(4.5)**

lnP= β_0+ $\beta_1 ln$RGDP+ $\beta_2 ln$IEQ+ $\beta_3 ln$REM+ β_4EDU+ μ_t $\qquad$ **(4.6)**

Where,

ln = Natural logarithm;

RGDP= Real GDP

REM= Remittances

OP = trade openess

HDI = Human development index

INV = Investment

INF= Inflation

P= Poverty

IEQ= income inequality

EDU= Education

α_0, β_0 = Intercept

$\alpha_{1,} \alpha_{2,} \alpha_{3,} \alpha_{4,} \alpha_5, \beta_1, \beta_2, \beta_3, \beta_4$ = coefficients of variables.

ε_t, μ_t = error term

The present study uses the log form to variables eliminate outliers and larger coefficients. After log form specification interpretation of coefficients also gives us elasticity's of variable. Elasticity's is best measure to analyze the degree of responsiveness by change in any of independent variable at any time. As OP, HDI, INV, INF and EDU variables are already in percentage form and index form, so we will not take log of these variables, because it doesn't make any sense to take log of percentages, growth rates and index.

4.3 Econometric Methodology

In our present analysis, we are interested to study the long run relationship of remittances on poverty alleviation and GDP growth in presence of other control variables. In this chapter the relevant technique, methods and estimation procedure for time series data are discussed. To examine the relationship among these variables the ARDL o-integration is applied. In co-integration analysis our aim is to

i.   Identify the underlying long run relationship.

ii.   Trace out the short-run dynamics.

iii.   Reconcile the short-run and long-run analysis, in particular to determine whether short run variation contributes to create the long-run relationship.

In co-integration for long-run relationship variables must have integrated at level or order one. So firstly we conclude the integration order of variables by using unit root tests. After this we have applied the co-integration approach and the procedure is given in the following sections

4.4 Stationarity Test

The first step involved in the co-integration approach is to check stationarity of the data by applying different unit root tests. For co-integration, all the variables must have integrated at same order. In this study we have discussed and used two unit root tests i.e. Augmented Dickey Fuller and Philips Perron test. The time series variables mostly follow upward and downward trend, so there is need to examine the stationarity of data.

4.4.1 Augmented Dickey Fuller

ADF is improved form of Dickey Fuller, DF test is based on assumption that error term should not be correlated and ADF assumed that in economics mostly variables follow some upward and downward trend and error term may correlated. ADF is better version because it includes extra lagged term of dependent variable and by using this autocorrelation problem may avoid. A simple ADF stationarity test may be specified as in equation 4.7:

$$\Delta Y_t = \beta_1 + \beta_2 t + \beta_3 \Delta Y_{t-1} + \sum_{i=1}^{P} \alpha_i \Delta Y_{t-i} + \varepsilon_t \tag{4.7}$$

Where Y symbolizes the time series variable, t is the time variable, $\beta 1$, $\beta 2$ and $\beta 3$ are the expected parameters, Δ represents first difference, α_i denotes estimated parameters of lagged variables and ε_t is the white noise term. The null-hypothesis is that each time series variable has unit root and alternative-hypothesis is that series has no unit root.

$$H_0: \rho = 0$$

$$H_1: \rho < 0$$

If null-hypothesis is accepted, it means that the series is non-stationary and if the null-hypothesis is rejected this confirms that series is stationary or unit root is not present.

4.4.2 Philips Peron Test

The PP test is adjusted version of ADF test and more robust measure to test stationarity in time series data. It adjusts ADF test by such that it ensures that there will be no auto correlation and heteroscedasticity in ε_t . A simple PP test may be expressed in equation 4.8:

$$\Delta Y_t = \beta_0 + \alpha Y_{t-i} + \varepsilon_t \tag{4.8}$$

The study test the null-hypothesis is that each time series variable has unit root and alternative-hypothesis is that each time series variable has no unit root.

$$\textbf{H}_0 \colon \boldsymbol{\rho} = \textbf{0}$$

$$\textbf{H}_1 \colon \boldsymbol{\rho} < \textbf{0}$$

If null-hypothesis is accepted, it means that the series is non-stationary and if the null-hypothesis is rejected this means the series is stationary or unit root is not present.

4.5 Lag Length Criteria

Lag selection is important as it determines the results of the model, there are many methods to find the optimal lag for each variable. However the SIC criteria provides better estimates than the AIC criteria in small samples in the ARDL framework (Pesaran & Shin 1998). Sometimes AIC criteria inclines to overestimate the number of lags to be included, which is not desirable in small samples as more lags involve there will be less number of observation for estimation. Thus in order to estimate lag length SIC criteria will be used to for the ARDL model. However as noted by Pesaran *et al*. (2001) serial correlation as well as heteroscedasticity, misspecification and non-normality should not be present, hence the lag length should be adjusted for the possible biases

4.6 Autoregressive Distributed Lag (ARDL) Model

To accomplish the objective ARDL estimation technique is used to estimate the long run and short run parameters of model which was developed by Pesaran and Shin (1998). ARDL is a single equation approach. It is simple and concise approach .The most important point in ARDL model is that we do not stick to the conventional definition of co-integration in which all co-integrating variables are required to be integrated of same order. ARDL approach has some benefit over the Engle –Granger (1987) test, Johansen (1998), and Philips and Hansen (1990). As ARDL approach is based on the flexible definition of co-integration that run estimation on series integrated at I(0), and I(1). However all other co-integration estimation techniques follow and run series integrated at level (1) which gives biased result of estimators. ARDL methodology for co-integration allows us to get the result of long-term and short-term at the same time. This approach of co-integration has resulted after many progress over the time and desired above the other approaches since it is well-organized in directing the dynamic causes of bias and small sample size. In addition, the ARDL strategy for co-integration also allows controlling or avoiding the endogenity problem.

The ARDL model for study is shown in below equation 4.9 and 4.10:

$$\Delta lnRGDP = \alpha_\circ + \alpha_1 lnREM_{t-1} + \alpha_2 OP_{t-1} + \alpha_3 HDI_{t-1} + \alpha_4 INV_{t-1} + \alpha_5\ INF_{t-1}$$

$$+ \sum_{i=1}^{p} \omega_i \Delta ln\ RGDP_{t-i} + \sum_{i=0}^{p} \rho_i\ \Delta lnREM_{t-i} + \sum_{i=0}^{p} \delta_i\ \Delta OP_{t-i}$$

$$+ \sum_{i-0}^{p} \theta_i\ \Delta HDI_{t-i} + \sum_{i=1}^{p} \pi_i\ \Delta INV_{t-i} + \sum_{i=0}^{p} \sigma_i\ \Delta lnINF_{t-i} + \varepsilon_t \qquad (4.9)$$

$$\Delta lnP = \beta_\circ + \beta_1 lnRGDP_{t-1} + \beta_2 lnIEQ_{t-1} + \beta_3 lnREM_{t-1} + \beta_4 EDU_{t-1} + \sum_{i=1}^{p} \beth_i \Delta ln\, P_{t-i}$$

$$+ \sum_{i=0}^{p} \tau_i \Delta lnRGDP_{t-i} + \sum_{i=0}^{p} \varphi_i \Delta lnIEQ_{t-i} + \sum_{i=0}^{p} \vartheta_i \Delta lnREM_{t-i}$$

$$+ \sum_{i=1}^{p} \cap_i \Delta EDU_{t-i} + \mu_t \qquad\qquad (4.10)$$

In above equation α_0, α_1, α_2, α_3, α_4, α_5, ω_i, ρ_i, θ_i, δ_i, π_i, σ_i are long run and short run coefficients of equation 4.9.

In above equation β_0, β_1, β_2, β_3, β_4, $\beth_i$, τ_i, φ_i, ϑ_i, $\cap_i$ are long-run and short- run coefficients of equation 4.10.

4.6.1 ARDL Bound Test Approach

The ARDL bound test is employed to check overall significance that whether there exists a long run relationship or not amongst variables, for significance ARDL include all lag variable in their level form. The test follows the F-statistics value to check the long run relationship .The study test null-hypothesis that there is no long-run relationship compared to alternative-hypothesis of presence of long run relationship amongst variables.

$H_\circ : \alpha_\circ = \alpha_1 = \alpha_2 = \alpha_3 = \alpha_4$

$H_1 : \alpha_\circ \neq \alpha_1 \neq \alpha_2 \neq \alpha_3 \neq \alpha_4$

In study we compare F-statistics with upper and lower critical value, the lower critical limit presumed that all variables are integrated at order zero; I(0) and upper critical limit presumed that all series are integrated at order one; I(1). If F-statistics value lies above the upper critical value reject the null-hypothesis of no long-run relationship in other case if F-statistics lies below the low critical bound accept the null-hypothesis of no long run relationship.

4.6.2 Short run and Long Run Estimators

As ARDL co-integration is employed to study both short –term and log-term relationship among variables. In specification equation there is both short-term and long-term estimators. The long run estimators are given below in equation 4.11 and 4.12:

$$\Delta lnRGDP = \alpha_\circ + \alpha_1 lnREM_{t-1} + \alpha_2 OP_{t-1} + \alpha_3 HDI_{t-1} + \alpha_4 INV_{t-1} + \alpha_5\ INF_{t-1} + \varepsilon_t \quad (4.11)$$

$$\Delta lnP = \beta_\circ + \beta_1 lnRGDP_{t-1} + \beta_2 lnIEQ_{t-1} + \beta_3 lnREM_{t-1} + \beta_4 EDU_{t-1} + \mu_t \quad\quad (4.12)$$

In above equation $\alpha_0, \alpha_1, \alpha_2, \alpha_3, \alpha_5, \alpha_4, \beta_\circ, \beta_1, \beta_2, \beta_3, \beta_4$ are long-run coefficients of model.

Similarly, the short run dynamics coefficients from the model may be stated by result the error Correction model related with the long run estimates. Short run expressed as below in equation 4.13 and 4.14

$$\Delta lnRGDP = \sum_{i=1}^{p} \omega_i \Delta ln\,RGDP_{t-i} + \sum_{i=0}^{p} \rho_i \Delta lnREM_{t-i} + \sum_{i=0}^{p} \delta_i \Delta OP_{t-i} + \sum_{i-0}^{p} \theta_i \Delta HDI_{t-i}$$

$$+ \sum_{i=1}^{p} \pi_i \Delta INV_{t-i} + \sum_{i=0}^{p} \sigma_i \Delta lnINF_{t-i} + \zeta E_{t-1} + \varepsilon_t \quad\quad (4.13)$$

$$\Delta lnP = \sum_{i=1}^{p} \beth_i \Delta ln\,P_{t-i} + \sum_{i=0}^{p} \tau_i \Delta lnRGDP_{t-i} + \sum_{i=0}^{p} \varphi_i \Delta lnIEQ_{t-i} + \sum_{i-0}^{p} \vartheta_i \Delta lnREM_{t-i}$$

$$+ \sum_{i=1}^{p} \cap_i \Delta EDU_{t-i} + \zeta E_{t-1} + \mu_t \quad\quad (4.14)$$

Where E_{t-1} characterizes error correction factor and ζ denote speed of adjustments. Likewise $\omega_i, \rho_i, \delta_i, \theta_i, \pi_i, \sigma_i, \beth_i, \tau_i, \varphi_i, \vartheta_i, \cap_i$ are short run co-efficients. The error correction factor must be negative and significant. The negative error correction term propose that with any

deviation from the long run, the variables would converge toward equilibrium. In contrast, a positive error correction term specifies that variable would not converge toward equilibrium.

4.8   Conclusion:

In this section we have discussed the appropriate theories which have contributed to explain the impact of remittances on two major economic indicators on poverty alleviation and economic growth. In addition we have developed a methodology for our study to analysis theimpact of remittances on economic growth and poverty alleviation. Our empirical results and discussion will be based on methodology and test we have mentioned in this chapter.

CHAPTER 5

EMPIRICAL RESULTS AND DISCUSSION

5.1   Introduction

In this chapter, we have discussed the relevant estimation results of our area of study. We have empirically examined the correlation between two models firstly the impact of remittances on economic growth and secondly the impact of remittances on poverty .The estimation strategy which we have exploited is as follows: firstly, by employing ADF and PP unit root tests we have confirmed that all the variables have same order of integration. Secondly, to inspect the short run and long run dynamics the ARDL Co-integration technique is applied. Thirdly, we checked diagnostic test and stability test. Finally run Granger Causality to trace causality between variables. For estimation of our results we have used E-views software.

5.2   Results of Unit Root Tests:

Earlier we have discussed the importance of unit root test for panel co-integration in chapter 4 and test procedure is also explained. The value of t-statistics along with their corresponding probability values are shown in table 5.1, 5.2 &5.3. The null-hypothesis for all the unit root tests which we have applied is that there is unit root which mean variable is non-stationary. The alternative-hypothesis for all the unit root tests is that there is no unit root means that variable is stationary.

If P- Value is < 0.10, we accept the null hypothesis which indicates absence of unit root in the series. We have use two unit root test ADF, PP test. Results demonstrated that null hypothesis for all variables are not rejected at I (0), while taking first difference alternative

hypothesis is accepted which directs that all variables are stationery. The result indicates that all variables are integrated of order-level while the level of order they are tied at zero in the first difference. Hence, our variables are co-integrated and have long-term association.

Table 5.1: Augmented Dickey Fuller test results

Variables	Level		First difference	
	T-statistics	p-value	T-statistics	p-value
RDGP	0.689319	0.9902	-7.146816	0.0000
REM	0.511359	0.9849	-4.708145	0.0005
OP	-1.712467	0.4169	-7.736099	0.0000
HDI	-0.790023	0.8092	-5.336986	0.0001
INV	-1.907825	0.3252	-6.349592	0.0000
INF	-5.069687	0.0002	-7.578582	0.0000
POV	-1.133293	0.6922	-5.574687	0.0000
IEQ	-2.215623	0.2045	-8.771048	0.0000
EDU	-1.603680	0.4707	-5.524890	0.0001

Source: Author's Own estimation (2019)

Table 5.2: Phillips perron test results

Variables	Level		First difference	
	T-statistics	p-value	T-statistics	p-value
RDGP	-1.751431	0.3979	-9.160385	0.0000
REM	0.347549	0.9777	-4.711159	0.0005
OP	-1.766913	0.3905	-7.761268	0.0000
HDI	-2.180373	0.2165	-7.683223	0.0000
INV	-1.995531	0.2874	-6.345627	0.0000
INF	-5.149483	0.0001	-10.64895	0.0000
POV	-1.246348	0.6438	-5.574687	0.0000
IEQ	-2.407843	0.1466	-8.767840	0.0000
EDU	-1.589874	0.4776	-5.579960	0.0000

Source: Author's Own estimation (2019)

Table 5.3: Summary of unit root test

Variable	Augmented Dickey Fuller (ADF) test	Phillips-Perron (PP) test	Decision
RDGP	I(1)	I(1)	I(1)
REM	I(1)	I(1)	I(1)
OP	I(1)	I(1)	I(1)
HDI	I(1)	I(1)	I(1)
INV	I(1)	I(1)	I(1)
INF	I(0)	I(0)	I(0)
POV	I(1)	I(1)	I(1)
IEQ	I(1)	I(1)	I(1)
EDU	I(1)	I(1)	I(1)

5.3 Impact of Remittances on Economic Growth:

5.3.1 ARDL Bound Test:

The test of the existence of a long-run equilibrium relationship among variables was conducted using the ARDL bound analysis. Results from a bound test showed that in this model there is a long-run equilibrium relationship between variables at the 1% significance level. Specifically, the F statistic calculated for the model (6.251301) is greater than the critical upper

limit values of 2.93, 3.34, 3.71 and 4.21 at significance levels of 10%, 5%, 2.5% and 1%

respectively. The result of first model is shown in table 5.4.

Table 5.4: ARDL Bound Test

Test Statistic	Value	k
F-statistic	6.251301***	5
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
10%	1.81	2.93
5%	2.14	3.34
2.5%	2.44	3.71
1%	2.82	4.21

Note: *** implies rejection of the null hypothesis at 1% level of significance.

5.3.2 Results of Long-Run Estimation:

The results of first model show that 1% rise in remittances causes 0.4% increase in GDP

growth at 1% significance level. Positive and significant results show that increases in flow of

inward remittances is one of reason to stimulate economic activities in country. On the other

hand, results have shown negative and insignificant long-run relationship among trade

liberalization and GDP growth which determines that trade openness in Pakistan does not

contribute in GDP growth as Pakistan spent a large share in importing goods than exporting. The

investment co-efficient shows that an increases in investment (gross capital formation) of 1-unit

increases GDP growth by 0.5% with 5% significance level. The positive and significant result of

investment and GDP growth shows that high investment leads to generate more economic activities. The co-efficient of HDI shows that 1-unit increases in HDI index causes 21.5% increases in GDP growth at significance level of 5%. The positive and significant results show that advancement in three dimensions; education, health and decent standard of living is one of very main reason for generating economic activities. The negative and significant results observed between inflation and GDP growth, 1-unit rises in inflation causes 0.5% decreases in GDP growth. Results show in table 5.5.

Table 5.5: ARDL Long Run Result

Variable	Coefficient	Std. Error	t-Statistic	Prob.
lnREM	0.453200***	0.125797	3.602632	0.0057
OP	-0.022349	0.119884	-0.186424	0.8562
INV	0.500712**	0.177220	2.825375	0.0199
HDI	21.590380***	4.909996	4.397230	0.0017
INFLATION	-0.514217***	0.118013	-4.357308	0.0018

***, **, * represents 1%, 5% and 10% significance level.

Source: Own estimation (2019)

5.3.3 Results of Short Run With ECM:

The dynamic of short run is considered by deriving the results from the ECM technique. According to ECM theory, the sign of ECM coefficient should be negative and statistically significant. From the result in Table 5.6 show that coefficient of the ECM is negative and significant and thus approves the presence of the long run equilibrium association amongst the variables in the co-integration test and also indicates the estimated model is steady. It expresses

how the variables in the model converge to long run equilibrium after a shock in the short run. The end result tells that the equilibrium in the long term will be matched by approximately 57% after a shock short run, reflecting the very high rate of correction in the long term. This rapid speed of adjustments can be suggested that it took a very short time to adjust the model when there will be shocks.

In short run remittances are positively but insignificantly related with GDP growth but its lag is positive and significantly co-integrated with GDP growth. However trade openness is negative associated with GDP growth but its co-efficient is insignificant. Investment is positive but insignificant co-integrated with GDP growth in short-run. HDI index is negative but insignificant associated with GDP growth, but it is positive and significant associated with GDP growth in its third lag. However, inflation is negative but significant co-integrated with GDP growth in its short run. Results display in table 5.6.

Table 5.6: ARDL Short Run Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(RGDP(-1))	-1.190989***	0.304396	-3.912628	0.0036
D(RGDP(-2))	-0.842525*	0.390170	-2.159379	0.0591
D(RGDP(-3))	-1.646495***	0.437336	-3.764831	0.0045
D(REM)	0.626004	0.475172	1.317425	0.2202
D(REM(-1))	0.937966*	0.453237	2.069481	0.0684
D(OP)	-0.035967	0.037786	-0.951864	0.3660
D(OP(-1))	-0.068132*	0.039429	-1.727980	0.1181
D(OP(-2))	-0.093452**	0.034356	-2.720151	0.0236
D(INV)	0.028552	0.078709	0.362756	0.7252
D(INV(-1))	-0.033811	0.087605	-0.385942	0.7085
D(INV(-2))	-0.279003***	0.079505	-3.509278	0.0066
D(HDI)	-13.771202	12.347442	-1.115308	0.2936
D(HDI(-1))	-18.704228*	9.760130	-1.916391	0.0876
D(HDI(-2))	-32.762014**	14.303374	-2.290510	0.0477
D(HDI(-3))	21.304552**	8.682789	2.453653	0.0365
D(INFLATION)	-0.143577***	0.013698	-10.481796	0.0000
D(INFLATION(-1))	0.021886	0.036337	0.602298	0.5618
D(INFLATION(-2))	0.081124*	0.040476	2.004268	0.0760
D(INFLATION(-3))	-0.072897*	0.037939	-1.921451	0.0869
CointEq(-1)	-0.576591**	0.182559	-3.158376	0.0116

***, **, * represents 1%, 5% and 10% significance level.

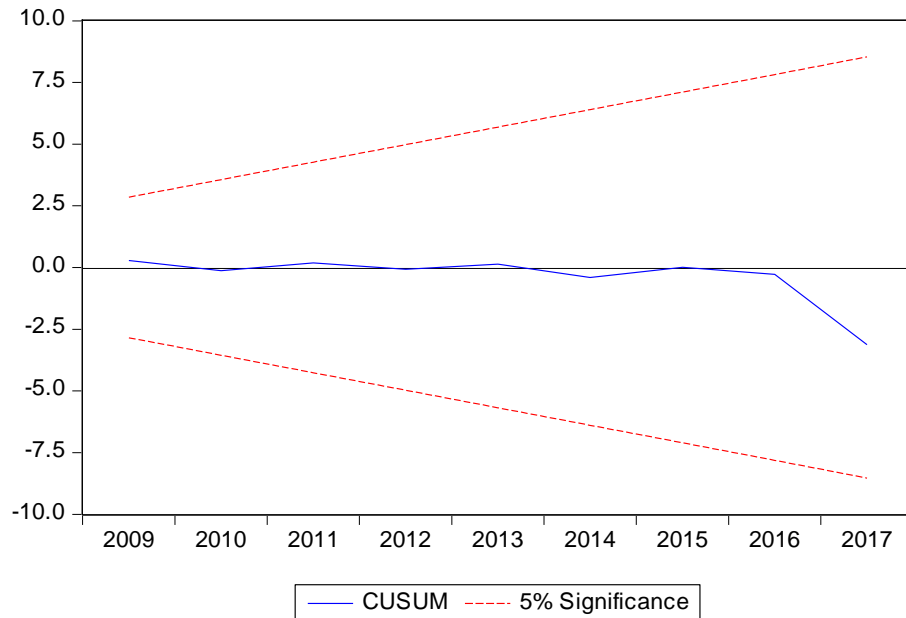Source : Author's Own estimation (2019)

5.3.4   Stability and Diagnostic Test

The test of serial correlation based on the Godfrey Serial correlation LM test among the residuals confirms the absence of serial correlation since the p-value is 0.8 >0.05   proves statistically insignificant specifies that there is no serial correlation. Hetroskedasitcity test also reported a statistically insignificant as its F-statistics value is 0.1>0.05 which indicates that there is no hetroskedasticity, thus signifying the nonexistence of heteroskedasticity among the error terms. The Ramsey-reset stability test results also shows that the models have no issues with the functional form and thus a correct model has been specified. The Ramsey-reset test F-statistics value is 0.6728>0.05 proves that there is correct misspecification and accept the null hypothesis of correct functional form.   Also the normality test based on the Jacque-Bera test indicates the variables are normally distributed as p-value 0.8 is greater than 0.05, so reject the alternative hypothesis that variables are not normally distributed. The results of diagnostic tests indicate that model has no auto-correlation and ensure stable parameters of the model. Moreover, the graph of CUSUM test also confirms that structural parameters are stable as the recursive residuals lie within the two critical lines. Results display in table 5.7.

Table 5.7: Diagnostic and Stability test result

Test	F- statistic	Prob. Values
Serial Correlation	0.339893	0.8379
Heteroskedasticity	2.070519	0.1619
Normality	0.225965(JB –value)	0.893166
Functional Form	0.192079	0.6728
CUSUM	Stable	

Figure 5.1: CUSUM Test

Source : Author's Own estimation (2019)

5.4 Impact of Remittances on Poverty:

4.4.1   ARDL Bound Test:

In this model results from a bound test showed that there is a long-run equilibrium relationship between variables at the 1% significance level. Specifically, the F statistic calculated for the model (10.89243) is greater than the critical upper bounds of 3.01, 3.48, 3.9, 4.44 at significance levels of 10%, 5%, 2.5% and 1% respectively. The F-statistic was greater than the critical upper limit values in the model and approves stable long-term relationship between the variables. The end result of second model is shown in table 5.8.

Table 5.8: ARDL Bound Test

Test Statistic	Value	k
F-statistic	10.89243***	4
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
10%	1.9	3.01
5%	2.26	3.48
2.5%	2.62	3.9
1%	3.07	4.44

Note: *** implies rejection of the null hypothesis at 1% level of significance.

5.4.2 Results of Long Run Estimation:

The results of the second model show that an increase in remittances by 1% causes poverty to drop to 0.3% at a significance level of 1%, showing that inward remittances in Pakistan are one of the reasons for reducing the burden of poverty. Correspondingly, a 1% rise in real GDP cause a 0.8% drop in poverty at 10% significance level, which describes real GDP growth as one of the causes in poverty reduction. Similarly co-efficient of GINI index shows the 1% reduction in income inequality causes 10% poverty alleviations at 5% significance level. Positive and significant results between gini-coefficient and poverty demonstrate that poverty decreases more in those areas where there is low income inequality. Lastly results show that 1 unit increase in education level causes 0.04% decrease in poverty at 1% significance level. Negative and significant results among education level and poverty depicts that high level of education are one of reasons for poverty alleviation. Results show in table 5.9.

Table 5.9: ARDL Long Run Result

Variable	Coefficient	Std. Error	t-Statistic	Prob.
lnREM	-0.348463***	0.062383	-5.585834	0.0000
lnRGDP	-0.888295*	0.565131	-1.571838	0.1317
lnGINI	10.186961**	4.575671	2.226332	0.0376
EDU	-0.041124***	0.010904	-3.771324	0.0012

***, **, * represents 1%, 5% and 10% significance level.

Source: Author's Own estimation (2019)

5.4.3 Results of Short Run With ECM :

In second model coefficient of the ECM is negative and significant and thus approves the presence of the long run equilibrium association amongst the variables in the co-integration test and also indicates the estimated model is steady. The end result tells that the equilibrium in the long term will be matched by approximately 47% after a shock short run, reflecting the rate of correction and convergence in the long term.

In short-run poverty remittances in positively but insignificantly co-related with poverty. It shows that in short-run remittances influx does not help to reduce the poverty burden in Pakistan. However real GDP growth is negative and significantly co-integrated with poverty variable which determines that in GDP can be useful in poverty alleviation. Gini co-efficient is negative and significant co-integrated with poverty in short run. Though education is negative and significant impact on poverty, it shows that high level of education in Pakistan is one of important factor in poverty reduction. Results shown in table 5.10.

Table 5.10: ARDL Short Run Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(POV(-1))	-0.325089*	0.167317	-1.942953	0.0662
D(POV(-2))	-0.487342**	0.177656	-2.743176	0.0125
D(POV(-3))	-0.290260*	0.146954	-1.975172	0.0622
D(REM)	0.025972	0.051076	0.508495	0.6167
D(REM(-1))	0.290195***	0.062017	4.679274	0.0001
D(RGDP)	-0.422505*	0.254272	-1.661622	0.1122
D(GINI)	-6.358250*	3.817132	-1.665714	0.1114
D(GINI(-1))	4.210130	3.874161	1.086720	0.2901
D(GINI(-2))	-6.691034*	3.494981	-1.914470	0.0700
D(GINI(-3))	-6.563297*	3.844716	-1.707096	0.1033
D(EDU)	-0.019560***	0.004488	-4.358005	0.0003
CointEq(-1)	-0.475635***	0.095054	-5.003839	0.0001

***, **, * represents 1%, 5% and 10% significance level.

Source : Author's Own estimation (2019)

### 5.4.4 Diagnostic and Stability test Result:

The test of serial correlation based on the Godfrey Serial correlation LM test among the residuals confirms the absence of serial correlation since the p-value is 0.8 >0.05 proves statistically insignificant shows that there is no serial correlation. Hetroskedasitcity test also reported a statistically insignificant as its p-statistics is 0.9>0.05 which indicates that there is no hetroskedasticity, thus signifying the nonexistence of heteroskedasticity among the error terms.

The Ramsey-reset stability test results also shows that the models have no issues with the functional form and thus a correct model has been specified. The Ramsey-reset test p-value is 0.07 >0.05 proves that there is correct misspecification and accept the null hypothesis of correct functional form.   Also the normality test based on the Jacque-Bera test indicates the variables are normally distributed as p-value 0.5 is greater than 0.05, so reject the hypothesis that variables are not normally distributed. The results of diagnostic tests indicate that model has no auto-correlation and the ensure stable parameters of the model. Moreover, the graph of CUSUM test also confirms that structural parameters are stable as the recursive residuals lie within the two critical lines. Results display in table 5.11.

Table 5.11: Diagnostic and Stability test result

Test	F- statistic	Prob. Values
Serial Correlation	0.446154	0.8095
Heteroskedasticity	0.276613	0.9212
Normality	1.119198(JB –value)	0.571438
Functional Form	3.471575	0.07
CUSUM	Stable	

Figure 5.2: CUSUM Test
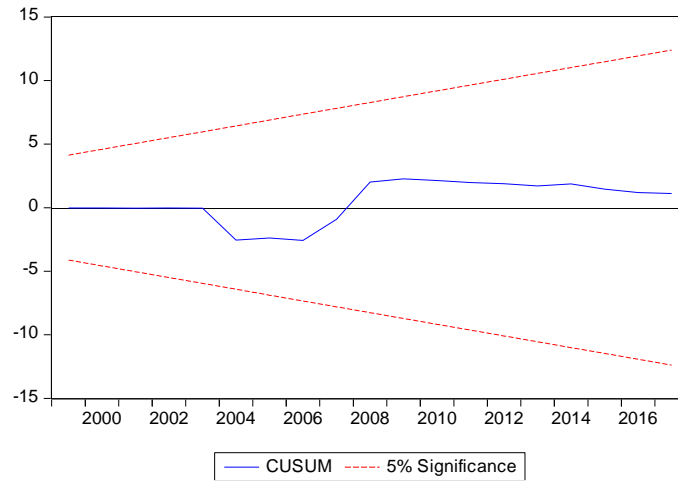
Source : Author's Own estimation (2019)

5.5   Conclusion:

In this section, we have discussed the appropriate empirical findings of our area of study. We observed the correlation among remittances and poverty alleviation similarly between remittances and poverty alleviation. Results of the short run and long run dynamics have been estimated by using ARDL Co-integration technique. Empirical results will be very considerable to explain the main objective of study and for policy recommendation.

CHAPTER 6

CONCLUSION & POLICY RECOMMENDATION

6.1   Conclusion

This study gauges the impact of remittances on economic growth and poverty alleviation in Pakistan for the period of 1980 to 2017. We use ARDL to examine the impact of remittances on two models; one is remittances impact on economic growth and second is remittances impact on poverty alleviation in short run and long run. The findings confirms that remittances have statically significant and positive impact on both economic growth and poverty alleviation .The results of first model show that 1% rise in remittances causes 0.4% increase in GDP growth. Positive and significant results show that increases in flow of inward remittances is one of reason to stimulate economic activities in country. The results of the second model show that an increase in remittances by 1% causes poverty to drop by 0.3% showing that inward remittances in Pakistan are one of the reasons for reducing the burden of poverty. This study argues that remittances inflows are acting as substitute to financial sectors and encourage small scale businesses and generating economic activities which ultimately helps an economic to decrease the depth of poverty. Therefore, we can conclude that remittances are not only productive towards economic growth but also providing income to households to get out of poverty. This study proves significant and positive impact of remittances on economic growth and poverty alleviation.

6.2   Limitations and Future Prospects

In this study, we have made every effort to conduct the research in the best possible way on the occasion, methods and time. There are, however, some aspects of research that can be

improved. Although the indictors used in the study covered many important aspects but still there is need to study more indicators to study remittances and its impact of macroeconomic variables. Our analysis suggest general findings, future work might analyze the alternative indictors and channels which can crucial for remittances and its impact on economic growth.

6.3   Policy Recommendation

The empirical findings of this study are supportive in drawing some key policy recommendations as follows:

➢ There should be such policy to encourage domestic savings and investment. Effective investment opportunities must be provided by government to enhance the use of remittances towards investment activities rather than consumption activities.

➢ Specific policy aimed at promoting productive and valuable use of remittances like investment in education sector to promote human capital development. Policies to arrange more credit facilities, instruction and skills which enables poor households to send their skilled labour abroad generating high earning and remitting back high inflows.

➢ The government should take valuable steps to put in place an effective, improved and advance financial system to promote remittances through formal sector for the purpose of monitoring and discouraging illegal means of sending remittances.

➢ Efforts should be directed to decrease the cost of transaction of remitting funds to promote formal flow of remittances.

➢ Further, engaging international organization to alleviate the market deficiencies. For instance, financial institute may steer these remittances for credit purpose in agriculture sector to support formers and to encourage small scale businesses.

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