Remittances, Inflation and Economic Growth:

A Case Study of Pakistan

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Abstract

There are different and conflicting views about the growth effect of remittances. Migrant's optimist supports the positive impact of remittances on economic growth mainly through the channel of enhancing the investment on Physical and Human capital while on the other hand, migrants pessimists supports the adverse impact of remittances on economic growth of the recipient economy primarily through the channel of creating moral hazard problem, putting inflationary pressure and reduction of labor supply in the recipient economy. Keeping in the view the contradictory literature about the impact of remittances on economic growth, this study tries to contribute in the existing literature by investigating the impact of worker remittances on economic growth that is mediated by inflation. The mediation effect of remittances is examined by using Structural Equation Model (SEM). The empirical analysis is based on the time series data of Pakistan for the time period ranging from 1973 to 2014.The overall result shows that there exist a partial mediation and moreover remittances have adverse impact on the economic growth of Pakistan that is mediated by inflation and our result supports the migrant's pessimist's views. These results suggest that Government should take some valuable steps to encourage the use of these remittances inflow toward the Productive investment instead of consumption.

Chapter 1

Introduction

Foreign remittances are one of the largest financial inflows to developing countries. The inflows of foreign remittances are the second most important source of foreign exchange after exports in developing countries like Pakistan[1]. Remittances are playing an important role in the economies of many countries and also there is the sizeable contribution of remittances on economic growth of many developing countries.

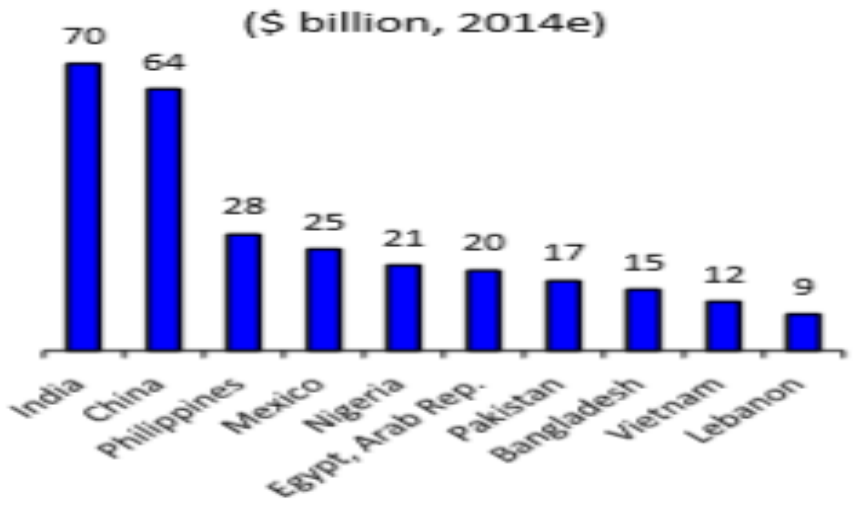
Workers remittances serve as a source to enhance the economic growth as it is an important mean of foreign exchange and also in balance of payment (BOP) account workers remittances is consider being an important element. By reducing current account deficit and external borrowing, and by improving the BOP position foreign remittances has impact on economic growth (Iqbal and Sattar, 2005). Beside these, remittances inflow has also inflationary impact on the recipient economy as due to remittances personal income and living standard of the recipient improves and as a result demand for money and consumption of goods increases. Remittances have positive impact on inflation as due to remittances consumption increases without an improvement on the real economic growth [Irfan (1983), and Zarate and Hoyos (2004)].

Developing countries are the major recipients of foreign remittances [World Bank, 2011]. Out of overall global remittances totaling $542 billion, $404 billion went

[1] Pakistan & Gulf Economist March (2015)

to Developing countries in 2013.Remittances flow to different developing countries differ, since last 30 years. In 2013, an estimated $70 billion received by India whereas estimated $60 billion received by China as remittances. From African countries Nigeria is the top remittance recipient country whereas from South Asia majority of the remittances have been directed to Pakistan, Bangladesh and India [World Bank, 2011].The most recent figures shows that in developing countries remittances inflow reached to about $436 billion out of $583 in 2014. Moreover, China, India, Mexico and, Philippines remains the largest remittances recipient countries in 2014 [World Bank, 2015].

Figure1.1: Top 10 Remittance recipient countries



Data Sources: International Monetary Fund (IMF) and World Development Indicator (WDI)

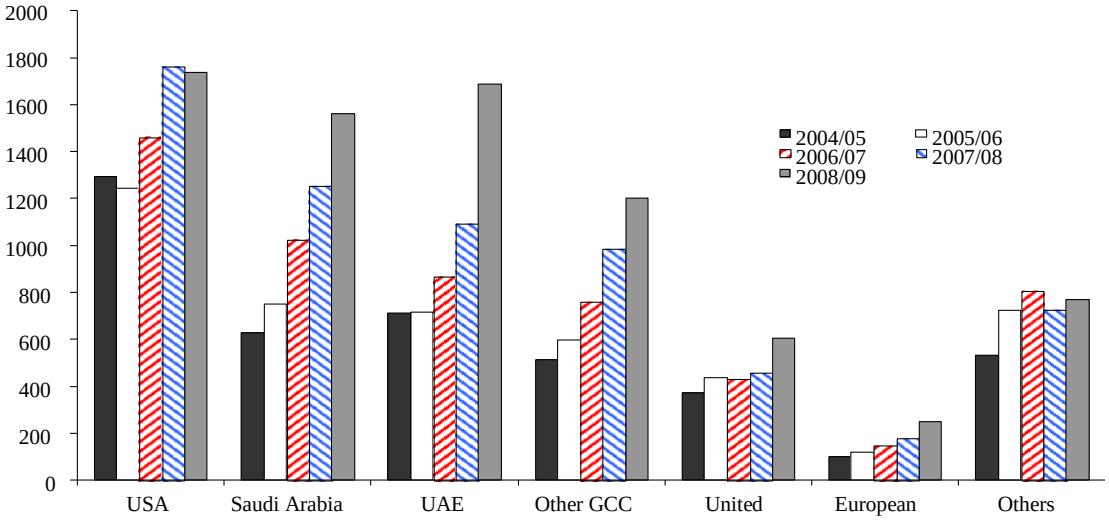
The economy of Pakistan is mainly based on agricultural sector. In Pakistan, large number of migrations has occurred during late 1970s due to which remittances inflow raises during this period and these remittance inflows became the largest mean

of foreign capital inflow at that time. The reasons behind this large amount of migration were the decreasing share of agricultural sector and inaccessibility of appropriate employment opportunities. In order to get better employment opportunities and better working conditions many Pakistani workers migrated (Ahmed et al. 2011).

1.1 Remittances inflow in Pakistan from different countries

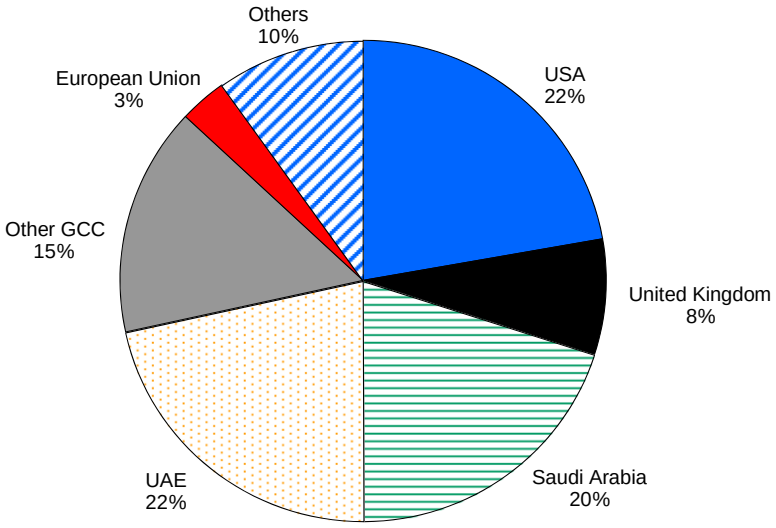
In Pakistan worker remittances are considered to be an important mean of foreign exchange. Most of the Pakistanis migrated toward different countries so remittances inflow comes to Pakistan from different countries of the world. During 2000s, a remittances inflow to Pakistan from the Gulf countries increases. Remittances inflow to Pakistan from United Arab Emirates (U.A.E) has been double especially in early 2000s while remittances inflow from Saudi Arabia and other GCC countries toward Pakistan has been triple during the same period. Moreover moderate increase in these remittances inflow has been observed to Pakistan from United State, United Kingdom and other European countries [International Monetary Fund, 2011].

Figure1.2 Remittances inflow to Pakistan from host countries in 2000s



Data source: IMF, IMF staff calculation and, State Bank of Pakistan

Figure1.3 Remittances inflow to Pakistan from host countries in 2000s in term of percentage



Data Source: State Bank of Pakistan, IMF

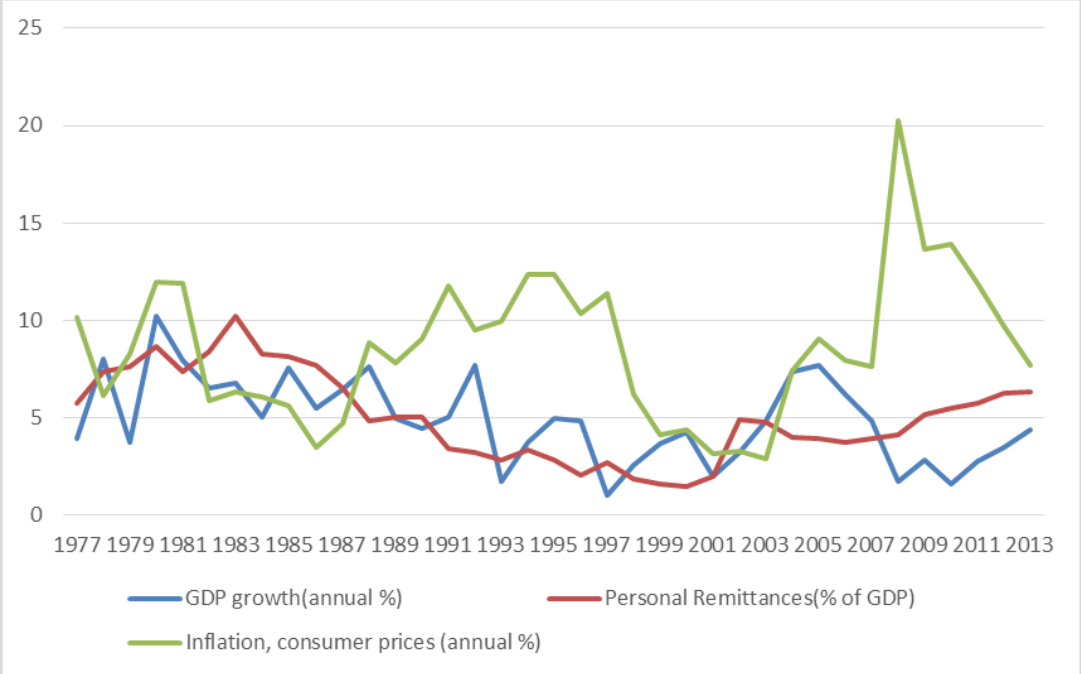
1.2 An Overview of worker remittances, inflation, and economic growth in Pakistan

In Pakistan the inflow of remittances increased since 1970s when large numbers of jobs were provided to the Pakistani workers in the Middle East. Consequently, the inflows of remittances from these workers are gradually increased. In 1970s GDP growth rate was 5.2 percent while inflation rate was 7.9 percent. In early 1980s remittances became the biggest source of foreign capital, comprising of 10% of the country's GDP (Mughal, 2012). Then because of the oil prices shock, remittance inflow slowed down. The decline in the remittances in the 1990s is also attributed to the Gulf War and economic sanctions on Pakistan because of the atomic explosions in 1998 (Ashraf and Asghar, 2004). During 1980s, GDP growth was 7.3 percent but because of the above reasons i.e. Gulf war, oil price shock etc., a decline in GDP growth rate occur and it became 4.3 percent in 1990s. In contrast, general price level increases from 1980s to 1990s i.e. from 8.4 percent to 10.6 percent.

In early 2000s, after the incidence of September 11, the inflows of foreign capital in term of workers remittances improved in Pakistan. The inflows of worker's remittances from the U.S have risen from approximately $73.3 million on 2000 to over $1.7 billion in 2008, when U.S became Pakistan's biggest source of remittances taking over the top remitting economy i.e. Saudi Arabia (Farid and Mazhar,2011). Improvement in GDP growth rate occurs during 2000s i.e. from 4.6 percent to 4.7 percent while decrease in the inflation rate occurs from 10.6 percent to 8.0 percent during early 2000s. It was also noticed that beside increase in the inflow of

remittances general price level also in entered in double digits in mid-2000s i.e. 20.3 percent in 2008 to 2009 and vice versa (Khathlan, 2012)[2].

Figure1.4 Remittances, Inflation, and Economic Growth



Data source: World Development Indicator (WDI)

1.3 Research Question

The literature on the impact of worker remittances on economic growth is not conclusive. Some studies find positive interaction between remittances and economic growth [Pradhan et al. (2008), Fayissa and Nsiah (2010) and de Haas (2005)], while some studies find negative impact of remittances on economic growth (Chami et al. 2003) in the receiving country. In addition to these, some studies find no significant relationship between remittances and economic growth (Barajas et al. 2009). These differences in findings may be due to different factors like institutions, inflation etc.

[2] See appendix

Based on the available empirical and theoretical literature the growth impact of remittances is divided into two main categories named as “migration optimist” and “migration pessimist” (Muchemwa, 2012). According to migration optimist there is positive impact of remittances on economic growth through different way like by enhancing savings, investment etc. [Adenutusi, (2010) and Balde, (2010)]. In contrast according to migration pessimist view there is adverse or no impact of remittances on economic growth. They argue that remittances decreases labor supply, reduces investment as mostly remittances are used for consumption, and also remittances uplift inflation in the recipient economy [de Hass, (2007); Chami et al. (2003); Dorantes and Pozo (2004)].

From the above discussion about the inconclusive literature about the impact of remittances on economic growth it is difficult to make some conclusion. So, there is a need to investigate the impact of remittances on economic growth by including the important factors like institution, inflation etc. An important researchable question arises here is: *What is the impact of remittances on economic growth that is mediated by inflation in Pakistan*?

Table 1.1 Migrant optimists Vs Migrants pessimists

Related Literature		
Channels	**Migrant optimists**	**Migrants pessimists**
Consumption vs Investment	According to migrants optimist's large part of the remittances are save and these savings are use on productive investment (Catrinescu *et al.*, 2009). Even if these remittances inflow are spent largely on consumption, these still have positive affect on economic growth of the receiving country by effecting the domestic demand and output level [Pradhan et al., (2008); Gupta et al., (2008)].	As large portion of remittances inflow are spent on consumption while Small portion of worker's remittances are spent on productive investment. By increasing the consumption remittances uplift the inflation in the recipient economy which has adverse impact on economic growth [Irfan (1983);de Haas, (2007)]
Improvement of human capital	Remittances positively affect economic growth of the recipient economy by improving the investment on education and health sector (Barajas *et*	Remittances adversely affect economic growth of the recipient economy as these inflows discourage the migrants household to

	al.,2009)	enroll their children's toward education (Chami *et al.*, 2003)
Labor Supply	By enhancing the investment toward the educational sector remittances inflow increases the skill labor in the receiving country (Barajas *et al.*,2009)	According to migrant's pessimists, remittances inflow creates the moral hazard problem and encourage the migrants household to decrease their labor supply because of the income effect (Chami *et al.*, 2003).

1.4 Significance of study

A large number of literatures are available on the direct impact of remittances on economic growth and also few of the literature are available about the impact of remittances on inflation in case of Pakistan. These studies shows the mix results about the impact of remittances on economic growth but most of these studies observe the positive impact of remittances on economic growth and also the impact of remittances on inflation is found to be positive. However, there are many factors like institutions, inflation etc. that also affect economic growth through worker remittances. Several studies have been conducted about the impact of remittances on economic growth by including institutional factors in their studies but still to the best of our knowledge no

study has been made about the impact of remittances on economic growth by including the inflation factor.

This study fills this gap and tries to make valuable addition in the existing literature in the following way:

a) This study tries to find the effect of remittances on economic growth that is mediated by inflation.
b) This study uses the most recent available data of Pakistan covering the 1973-2014 period.

1.5 Objectives of study

The main objectives of this study are:

- To investigate the impact of remittances on economic growth that is mediated by inflation in Pakistan.
- To come up with certain conclusions about the impact of remittances on economic growth in order to provide some directions to policy makers for making relevant policies in Pakistan.

1.6 Hypothesis

Null and alternative hypothesis of this study are given below:

$H_{0:}$ There is no impact of remittances on economic growth that is mediated by inflation

$H_{1:}$ There is impact of remittances on economic growth that is mediated by inflation.

1.7 Structure of the study

After introduction, the other chapters are organized in the following way. Chapter 2 includes both theoretical and empirical literature, Chapter 3 is related to Data and Methodology, Chapter 4 includes Estimation results and discussion and lastly, Chapter 5 provides the conclusion and certain policy recommendations.

Chapter 2

Review of Literature

A wide range of theoretical as well as empirical literature is available about the impact of remittances on economic growth but there are few studies about the impact of remittances on inflation and also no study have been found about the impact of remittances on economic growth that is mediated by inflation. In this chapter we go through the available literature about the focused variables in order to get some idea about the interaction between the focused variable. This chapter is divided into two parts. The first part reviews the theoretical literature about the focused variables whereas the part two reviews the empirical literature about the variables focused in this study.

2.1 Theoretical literature

The Theoretical review of literature is further divided in to three section i.e. 2.1.1, 2.1.2 and 2.1.3. Section 2.1.1 includes the theoretical literature related to the relationship between remittances and inflation, section 2.1.2 includes the theoretical literature related to relationship between inflation and economic growth while section 2.1.3 includes the theoretical literature related to remittances and economic growth.

2.1.1 Remittances and Inflation

Worker's remittances may cause inflation in the recipient economy if the economic ability is not enough to fulfill the demand which is generated by remittance inflows. There are several studies on the different macro-economic impact of

remittances which have strong theory behind them but indirect interaction with inflation. For example, Irfan (1983) examine the relationship between remittances and consumption and finds that there is an inflationary impact of remittances. He finds positive impact of remittances on consumption level which increase the aggregate demand by increasing the money supply and the result will be demand pull inflation. Moreover with the increase in the household income due to remittances, household expenditure (like consumption, medical care etc.) or investment on the profitable activities (like education, farming etc.) rises. This will lead to increase in the demand for that item as compare to the other items. Due to this, disproportionate variation occurs in the relative prices and the result will be the inflation (Zarate and Hoyos 2004).

Remittances effect inflation through different channels. According to Balderas and Hiranya (2005), there is a positive relationship between remittances and inflation as remittances increases the consumption level which increases the aggregate demand and as a result prices of consumer goods and services increases. Further worker remittances are considered being an important variable on the demand side. Remittances increase the domestic demand for goods and services due to an increase in the household income and if this demand is greater than the domestic production which will leads toward output gap and thus inflation (Khan *et al.* 2007).

Remittances inflow raises the supply of foreign currency in the recipient economy due to which central bank's reserves increase. The increase in the reserves brings an increase in the money supply as money supply is function of reserves and

domestic credit. Due to increase in the money supply prices also rises and as a result inflation rate also increases.

Worker's remittances also have inflationary pressure on the recipient economy through the channel of labor supply as due to remittances labor supply decrease and this will result in uplifting the prices because of shortage of supply (Iqbal and Sattar, 2005). A study by Ball *et al.,* (2008) supports this argument and concluded that under fixed exchange rate regime money supply increases due to remittances. This shows positive effect of remittances on inflation. Remittances decreases labor supply as a result the production cost of non-tradable goods which is comparatively more labor intensive rises. This leads to rise in the prices of non-tradable goods and services (Acosta *et al*., 2009).

Appreciation of domestic currency is another channel through which remittances effect inflation (Silva, 2009). Appreciation of domestic currency occurs due to the increase in the supply of foreign currency without an increase in the demand of foreign currency. The appreciation of domestic currency improves the purchasing power of the domestic consumer which shows lower prices for domestic consumer. So, foreign remittances cause an appreciation in the exchange rate due to which there is a decrease in the inflation rate. The final way through which foreign remittances effect inflation is that there is an inflow of capital and saving due to remittance inflows. There is an increase in the output if these saving are invested in productive investment as a result there is an increase in goods and services due to which inflation rate decreases (Iqbal *et al., 2013*).

From the above literature it is observed that most of the studies supports the positive impact of remittances on inflation through different channels, however, few of the studies also find negative impact of remittances on inflation

2.1.2 Inflation and Economic growth

The theoretical literature about the relationship between inflation and economic growth is controversial. Some studies find positive impact of inflation on economic growth, some find negative impact of inflation on economic growth whereas some studies find inconclusive relationship between inflation and economic growth. According to some researchers like Malik and Chowdary (2001) there is a positive relationship between inflation and economic growth. Because of inflation people will consume more and save less since they believe that the value of money decreases in near future and this will lead to an increase in GDP in short run. Positive impact of inflation on economic growth is also reported by Azariadas and Smith, (1996) and Choi *et al.,* (1996). Due to an increase in inflation rate, substitution occurs from cash toward investment in physical and human capital as a result motivation in the long term economic growth occurs.

High and medium inflation rate is harmful to economic growth. Because of inflation relative prices change, which has negative effect on adequate distribution of resources (Fisher, 1993) Moreover low inflation rate is beneficial for economic growth because low inflation rate brings more flexibility in prices and wages (Lucas, 1973). Although during rapid modernization period, inflation readjusts relative prices because of structural changes that occur in production process. That is the case when inflation is little bit essential for economic growth but by discouraging long term investment

and by distorting tax system, high inflation rate also negatively affect economic growth. Inflation decreases the rate of return to savings and this has negative impact on financial system. Because of this credit rationing occurs and this also makes the availability of investment capital limited and, moreover, reduction in the efficient allocation of savings to investment programs occurs. All these have negative impact on economic growth (Nelson, 1976; Fama and Schwert, 1977; Gultekin, 1983; Boyd *et al*., 2001).

From the demand side inflation rate affect economic growth through the channel of real interest rate and on the supply side inflation rate has impact on economic growth through expectation in prices [Clarida, Gali and Gertler (1999) and Gali and Gertler (2007)]. According to Barro (1995) by decreasing a tendency toward investment, inflation adversely affects economic growth. The negative impact of inflation on economic growth is also supported by Fischer (1993) and Barro (1996), Burno and Easterly (1998) as due to inflation investment and productivity growth decreases. According to Huybens and Smith (1998, 1999), inflation rate negatively affect economic growth by decreasing the capability of efficient allocation of resources by financial sector even if the increase in the rate of inflation is predictable. A study by Friedman (1973) finds inconclusive relationship between inflation and economic growth.

From the above literature it is noticed that most of the studies supports the negative impact of inflation on economic growth but there are also some studies which supports the positive impact of inflation on economic growth while there are also few studies which observed inconclusive linkage between inflation and economic growth.

2.1.3 Remittances and Economic Growth

Foreign remittances effect economic growth through different ways. Firstly due to remittance inflows the consumption level of domestic consumer increases which induces the investment and as a result economic growth increases (Stahl and Arnold, 1986). Secondly, there is an inflow of capital and saving due to the remittances. If these savings are invested then there is an increase in the economic growth Iqbal *et al.* (2013). Another channel through which remittances inflow affect economic growth is current account surplus. The current account surplus created by remittances puts upward pressure on the production function and as a result there is an increase in the economic growth (Qayyum and Nawaz, 2014).Remittances affect economic growth through different ways. By decreasing current account deficiency, enhancing condition of balance of payment and by lessening the external borrowing remittances has impact on economic growth and moreover because of remittances , domestic demand increases due to the increase in consumption, saving and investment raises and labor skill improves and all that helps in boosting economic growth (Iqbal and Sattar, 2005).

Workers remittances enlarge the size of domestic investment in reception countries (M cCormick and Wahba, 2002). Institutional elements like political instability, accountability, political freedom etc. are playing important role in checking the impact of workers remittances on economic growth and development (Owens, 1987 and Kaufmann and Mastruzzi, 2006). This argument is also supported by Catriescu *et al.* (2006). Another economist Faini (2002) finds that possibility of growth and investment atmosphere are important factors in determining the impact of

remittances on economic growth. He further concluded that remittances help in smoothing consumption level and also it is a source that helps to overcome any financial shock like crops failure and adverse trading. It is noticed by Stark and Bloom (1985) that workers use remittances to expand their wealth, enlarge their income and to secure against obligation in future.

Worker's remittances have multiple impacts in the home country, for example, on the one hand these inflows increase the productive ability of the economy and, on the other hand, they also increase the domestic demand. Adams (1998) noticed that remittance inflows enhance saving and investment in the recipient countries. According to Adams and Page (2003), at the micro level it is expected that worker's remittances increase the income and reduce the poverty. This argument that worker's remittances reduce the poverty is also supported by Lucas and Stark (1985) and Adams (1991). According to Jongwanich (2007), besides reducing the poverty remittance inflows also improve the living standard of the recipient. Giuilano and Arranz (2005) noticed that, by providing help in the development of the financial sector and by providing credit access facility among the poor, economic growth is positively affected by worker's remittances.

Although remittance inflows provide benefit to the recipient countries, there are also negative impacts of these inflows like loss of skillful educated labor which decreases the government income by adversely affecting the output. According to Cahmi and Jahjal (2003), there is an adverse impact of remittances on economic growth because mostly these remittance inflows are spent on the consumption of goods, for the construction of houses and on purchasing land or on acquiring jewelry.

Remittances may affect economic growth through labor supply [Amuedo-Dorante and Pozo (2006); Bussolo and Medveder (2007); and Gorlich *et al.,* (2007)]. Due to income effect of remittances people will prefer to work less and decrease the labor supply. The decrease in the labor supply adversely affects the productivity and as a result economic growth decreases.

It is theoretically as well as empirically proven that worker's remittances boost economic growth through different ways like improving the condition of financial market, by serving as a mean for financing business activities, by serving as an insurance against future shocks, by bridging the saving and investment gap and also by serving as a source of finance for household expenditure (Ramirez, 2013, Lartey, 2011, Pradhan *et al*., 2008 and Adenutsi, 2011). On the other side worker remittances also have adverse impact on economic growth if these remittance inflows decrease the labor supply in the recipient economy and when this occurs the recipient of remittances who are considered to be an effective component of the labor force, will only depend on the migrant remittances for their survival (Chami *et al*, 2005). Remittance inflows also adversely affect recipient countries by appreciating the local currency which will lead to the decrease in exports and it also decreases the competition among the entrepreneurs in the recipient economy (Lopez *et al*, 2007).

According to (Barajas *et al*., 2009), remittances affect economic growth through three channels. Firstly, by raising the percentage of capital accumulation, worker remittance besides enhancing the percentage of physical and human capital also reduces the cost of capital in the receiving country. This may lead to sustain the economy and decreasing the volatility. Secondly, worker remittances have adverse

effect on the labor supply because of substitution effect. Thirdly, by influencing the growth of total factor of production (TFP), worker remittances affect the effectiveness of the investment.

From the above literature it is concluded that most of the studies support the argument that remittances positively affect economic growth but there are also some studies which are in the support of negative impact of remittances on economic growth. It is noticed from the above theoretical literature that the impact of remittances on economic growth depends on the channel through which remittances affect economic growth. These channels are given in Table 2.1.

Table 2.1 Channels through which remittances effect economic growth of the recipient country

Channels	**References of related studies**
Consumption, Saving and Investment in recipient country.	Stahl and Arnold, (1986); Iqbal et al. (2013); M cCormick and Wahba (2002); Adams (1998)
Human capital	Zarate and Hoyos (2004); de Hass (2007); Barajas *et al* (2009)
Supply of labor / Labor force Participation	Chami *et al.* (2003); Barajas *et al* (2009); Pradhan *et al.* (2008)
Exchange rate and exports	Gupta et al (2008); Lopez *et al* (2007); Catrinescu *et al*. (2009); Barajas *et al.* (2009); Silva (2009)

Excess demand	Catrinescu *et al*. (2009)
Financial development	Guiliano and Ruiz Arranz (2009); Gupta *et al* (2008); Rao and Hassan (2011); Ramirez,(2013), Lartey (2011), Pradhan *et al*. (2008) and Adenutsi (2011)
Borrowing, Current account deficit, and Balance of Payment	Iqbal and Sattar (2005); Qayyum and Nawaz (2014);
Inflation and Institutions	Irfan (1983); Zarate and Hoyos 2004; Owens (1987); Catriescu *et al.* (2006)

2.2 Empirical literature

Empirical literature is also divided into three sections i.e. 2.2.1, 2.2.2, and 2.2.3. Section 2.2.1 includes the empirical literature related to the linkage between worker remittances and inflation, section 2.2.2 includes the empirical literature related to the interaction between inflation and economic growth while the last section i.e. section 2.2.3 includes the empirical literature related to the relationship between remittances and economic growth.

2.2.1 Worker's Remittances and Inflation

A large amount of literature is available about relationship between worker's remittances and inflation. There are different studies having different views about the impact of remittances on inflation, like, remittances temporarily increase inflation and domestic money supply under a fixed regime and under flexible regime remittances temporarily decrease inflation and have no impact on money supply (Ball *et al*.,2008).The study by Balderas and Nath (2008) on Mexico for the period ranging from 1995-2005 shows that remittances have significantly positive impact on inflation and relative price variability. Using monthly data from the time period 1995 to 2005 for Mexico and by applying the Vector Auto Regressive (VAR) model ,Balderas and Nath (2007) concludes that remittances has significant positive impact on inflation and relative price variability (RPV). Moreover through the channel of money supply foreign remittances cause inflation (Hung and Minh, 2014).

Nazir *et al*., (2012) conclude that there is a significant positive long run impact of foreign capital inflow including remittances on inflation. In developing countries inflation is caused by remittances (Narayan *et al.* 2011). The study by Nisar, and Tufail (2013) finds that there is a positive impact of remittances, money supply and real per capita income on inflation and its different categories and moreover remittances have more impact on food inflation whereas housing and construction inflation is less effected by inflation. Roy and Rahman (2014) reported that remittances inflow puts inflationary pressure in Bangladesh and food inflation is two and half time more responsive than general inflation.

Rashid and Husain (2010) have concluded that during last seven years capital inflows has significantly inflationary effect. A study by Khan, Islam (2013) reveals that a 1 percent increase in remittances inflow increases inflation rate by 2.48 percent in long run, but find no significant relationship between these two in short run. Satti *et al.* (2013) by using quarterly data of Bangladesh for period 1976Q1-2012Q4 and by applying newly developed cointegration approach by Bayer and Hanck (2013),finds that foreign remittances increase inflation. Iqbal *et al.* (2013) investigate that foreign remittances have significant positive impact on inflation in long run as well as in short run. Adhikari (2014) using ordinary least square method, concludes that there is a positive but insignificant impact of foreign remittances on Indian domestic price level.

A study by Nath and Silva (2012) using Mexican data finds that due to remittances shock the relative prices of number of no tradable service items raises whereas the relative price of several durable items falls and moreover for most food items the response of relative price are more volatile than nonfood items. It is noticed from the above review of literature that most of the empirical studies supports the argument that there is a positive impact of remittances on inflation however there are some studies that finds that the impact of remittances on inflation is insignificant.

2.2.2 Remittances and Economic Growth

Different studies have different views about the relationship between worker's remittances and economic growth. A study by Catrinescu (2006) using Dynamic data panel estimates finds weakly positive impact of remittances on long run economic growth. Remittances are one of the important sources of economic growth (Iqbal and Sattar, 2005). Fayissa (2008) using unbalanced panel data of 37 African countries for

period 1980-2004 examines that remittances raises economic growth. Qayyum and Nawaz (2014), and Fayissa and Nsiah (2010) conclude that remittances increase the consumption level which in turn increases the economic growth by promoting the investment. By taking data of Azerbaijan and Armenia for the time period 1995-2010 and by applying ordinary least square method on simple log linear regression model, Azam and Khan (2011) finds positive and significant effect of remittances on economic growth and development. Das and Chowdery (2011) by using data of 11 remittance receiving developing countries for the time period 1985 to 2009 and by applying panel cointegration and pooled mean group technique finds positive impact of remittance on economic growth. Nazir *et al.* (2012), empirically estimate the effect of capital inflows like exports, foreign direct investment and remittances on domestic inflation. Using data of Pakistan for the time period ranging from 1980 to 2010 and by applying cointegration technique and Error Correction Model the results shows that there is positive impact of these capital inflows on economic growth.

Using data of 37 African countries for the time span 1980 to 2004, Fayissa and Nsiah (2008) empirically estimate the impact of remittances on economic growth and finds that remittances help in uplifting the economic growth where financial system is not very much developed. They further concluded that in overcoming liquidity constraints remittances are one of the useful source. Mundaca (2009) supports the positive impact of remittances on economic growth. Salahuddin and Gow (2015), using panel data from 1977 to 2012 of Pakistan, India, Bangladesh and, Philippines find positive and significant impact of remittances on economic growth. Ramirez and Sharma (2008), using Fully Modified OLS technique finds that there is significant

positive impact of remittances on economic growth in Latin America and Caribbean. Using the data from time period 1975 to 2006 of 7 MENA labor exporting countries, Mohamed (2008) concludes that through the interrelation with financial and institutional channels remittances has both direct and indirect positive impact on economic growth.

Using time series data of Bangladesh for 35 years Kundu *et al*., (2014) investigate that there is a boost in economic growth due to the growth in worker's remittance. A study by Yaseen (2012) using panel data of MENA countries finds that remittances are positively correlated with economic growth. Using VAR technique and the time period ranging from 1976 to 2011 Rahman (2014) finds significant and positive relationship between remittances and economic growth. Using newly constructed dataset for remittances for 100 developing countries Giuliano and Arranz (2006) reported that in the countries with less developed financial system remittances raises economic growth by providing different ways to finance investment and also by helping to control the liquidity constraints. According to Giuliano (2009), investment channel is one of the ways through which remittances raises economic growth in case when failure of financial sector occurs in meeting the credit need of the population. The positive impact of remittances on economic growth is also supported by Javid *et al.* (2012), and Pradhan *et al.* (2008). By using multiple regression analysis for the period 1978 to 2011, Ahmad *et al* (2013), Khathlan (2012), and Ahmad and Chaudhary (2008) also find positive and significant impact of remittances on economic growth of Pakistan.

Ahmed et al (2011) using data of Pakistan from the time period 1976 to 2009 and by applying bounds testing method finds positive relationship between remittances and economic growth in short run as well as in long run. Shahbaz *et al.* (2008) supports the positive impact of remittances on economic growth. The countries where the quality of political, economic policies and institutions are high, there will be the contribution of remittances in the long run economic growth (Catrinescu, 2009). Ukeje and Obiechina (2013), finds that there is a positive effect of remittances on economic growth. Taking annual data ranging from 1973 to 2011 and by applying GMM method Hussain and Anjum (2014) finds significant and positive impact of remittances on economic growth. Mwangi and Mwenda (2015) using annual data ranging from 1993 to 2013 of Kenya and by applying OLS estimation technique finds that remittances and economic growth have positive relationship. The positive affect of remittances on economic growth is supported by ArefAssaf (2015).

Imai *et al.* (2014), using the panel data for 24 Asia and Pacific countries also finds that there is positive relationship between remittances and economic growth and they further concludes that capital inflows like remittances and foreign direct investment have negative impact on economic growth if there is volatility in these capital inflows. Chami et al. (2005) examines that remittances are compensatory transfers and these have negative effect on economic growth. Jawaid and Raza (2012) using time series data of five South Asian countries i.e. Pakistan, India, Bangladesh, Sir Lanka and Nepal from 1975 to 2009,finds that in India, Sir Lanka , Bangladesh and Nepal there is significant positive impact of remittances on economic growth while in case of Pakistan there is significant negative impact of remittances on

economic growth. Ali (2014) using annual data for the time period 1972 to 2013 and by applying granger causality test concludes that there is negative effect of foreign capital inflows including remittances on economic growth. Le (2008) supports the negative impact of remittances on economic growth. Using the data of Turkey for time period 1970 to 2005, Karagoz (2009) finds negative effect of remittances on economic growth. Using time series data of China and Korea from 1980 to 2009, Jawaid and Raza (2012) concludes that there is significant positive impact of remittances on economic growth in Korea while in case of China remittances has significant but negative impact on economic growth.

Siddique *et al.* (2010), using time series data of Bangladesh, India and Sri Lanka, finds that there is positive relationship between remittances and economic growth, In India there is no causal link between remittances and economic growth while in case of Sir Lanka there is bidirectional between remittances and economic growth. Mallick (2008) and Barajas *et al.* (2009) finds that worker's remittances have no effect on economic growth. Another study by Rao and Hassan (2009) finds that there is no long run growth effect of remittances but there is short to medium term transitory growth effect of remittances. Furthermore Datta and Sarkar (2014) find no causal relationship between remittances and economic growth in short run as well as in long run.

It is observed from the above empirical literature that most of the studies are in support of positive impact of remittances on economic growth but there are also some studies which support the negative impact of remittances on economic growth while few studies finds no causal interaction between remittances and economic growth.

2.2.3 Inflation and Economic Growth

A wide range of literature is available about the relationship between inflation and economic growth. There are different views about the inflation and economic growth relationship. Iqbal and Nawaz (2009) by using annual data of Pakistan for Period 1961-2008 and two threshold levels i.e. 6% and 11% finds that there is significantly positive effect of inflation on economic growth below the first threshold level, between the two threshold levels and above the second threshold level the effect of inflation on economic growth is significantly negative. Mubarik (2005) investigate that inflation rate below 9% have positive impact on economic growth but above 9% inflation is harmful for economic growth. Using the panel data model for 138 countries over the period 1950-2000, Drukker *et al*., (2005) finds that rise in the inflation rate have no significant effect on economic growth if inflation rate is below 19.16% at the beginning and inflation have negative impact on growth if the inflation rate at the beginning is above 19.16. According to Bruno and Easterly (1998), when inflation rate is above threshold i.e. 40% annually, there is a rapid decline in the economic growth while it increases when rate of inflation decreases. Hussain and Malik (2011), using yearly data of Pakistan from the time span 1960 to 2006 finds that there is one way causality between inflation and economic growth i.e. inflation is caused by economic growth and concludes that inflation rate above 9 percent is harmful for economic growth in Pakistan. Mubarak (2005) supports the finding of Hussain and Malik (2011).Using the yearly data of Pakistan from the time span 1973 to 2000, Mubarak (2005) finds that above 9 percent inflation is harmful to economic growth.

A study by Mallik and Chowdhury (2001) for four south Asian countries i.e. Bangladesh, India, Pakistan and Sri Lanka find long run positive relationship between inflation and economic growth. Sarel (1995) concludes that inflation rate below 8% have no effect or somewhat positive effect on economic growth. By applying ARDL cointegration technique and annual data of Pakistan ranging from 1970-71 to 2008-09, Afzal *et al.* (2013) finds positive relationship between inflation and economic growth. Umaru and Zubairu (2012), using data of Nigeria for the time period 1970 to 2010 and by applying Granger causality test concluded that Inflation is caused by GDP but GDP is not caused by inflation and moreover by uplifting the productivity and level of output, inflation has positive influence on economic growth. By taking annual data of Malaysia for the time period 1971 to 2007 and using ADF, PP Unit Root Test, Vector Error Correction, Vector Auto Regression (VAR), Impulse response function and Variance Decomposition techniques, Datta *et al.* (2011) finds that in short run causality is from inflation toward economic growth whereas inflation is Granger Caused by economic growth in long run. Khathlan (2012), using error correction and model and Autoregressive Distributed Lag technique and by taking the data of Pakistan for the time period 1976 to 2010 finds that there is significant positive impact of remittances on economic growth both in long run as well as in short run. According to Raza *et al.* (2013) there is significant positive link between inflation and economic growth. . Munir *et al.* (2014), using Threshold autoregressive (TAR) models suggested by Hansen (2000) and taking data of Malaysia for the time period 1970 to 2005 finds that below the threshold level of 3.89 percent inflation has significant positive impact on economic growth.

Barro (1999) concludes that there is significantly negative impact of inflation on economic growth and investment. Hanif (2004) concludes that there exists a negative but weak correlation between inflation and economic growth and also there exists uni-directional causality between inflation and economic growth i.e. from GDP growth toward inflation. The negative relationship between inflation and economic growth is also supported by Shahbaz *et al.* (2008). Arshad et al. (2014) using annual data ranging from 1980 to 2013 by applying the correlation coefficient, regression analysis and granger causality test finds that inflation and interest rate have negative impact on economic growth. This point of view i.e. inflation rate have significant negative impact is supported by Ghosh and Phillips (1998), Rahman (2014), Ahmad and Chaudhary (2008), and Andres and Hernando (1999). By applying cointegration and Granger causality test for the time period 1970 to 2005 of Nigeria, Chimobi (2010) concludes that inflation is harmful to economic growth. According to Jha and Dang (2011) inflation rate above 10% have significant negative effect on economic growth for developing countries while changes in the inflation rate is not harmful to economic growth of developed countries. Gylfason and Herbertsson (2001) find that the inflation rate above 10-20% per year is harmful to economic growth. Osama (2004) using the data of Sweidan for the time period 1970 to 2000, empirically estimate the impact of inflation on economic growth and finds that after the threshold level of 2 percent inflation has negative impact on economic growth.

According to Fischer (1993) inflation, large budget deficit and distorted foreign exchange rate have negative impact on economic growth. Yeh (2009), taking cross sectional data of 140 countries ranging from 1970 to 2005 and by applying novel

heteroscedasticity based method finds that there is a bilateral causal link between inflation and economic growth i.e. inflation negatively affect economic growth but the impact of growth on inflation is positive. According to Hanif (2004), the correlation between inflation and economic growth is weak but negative. A.J. (2007), taking yearly data of Kuwait for the time period from 1985 to 2005 and using co-integration and error correction model finds significant negative relationship between inflation and economic growth. By taking data of Nigeria ranging from 1981 to 2006 and using econometric model with OLS method, Muritala (2011) finds negative link between inflation and economic growth. Aurangzeb and Haq (2012), empirically estimate the factor that determines inflation in Pakistan. Taking data for the time period ranging from 1981 to 2010 and by using multiple regression analysis technique, they find that inflation and economic growth have negative relationship while exchange rate, interest rate, fiscal deficit and unemployment have positive interaction with inflation. Chaudhry *et al.* (2012), applying cointegration and causality analysis on the data of Pakistan ranging from 1972 to 2010, concludes that there is negative correlation between inflation and economic growth. Rahman (2014) using VAR technique and the data ranging from the 1976 to 2011 finds significant and negative link between inflation and economic growth. Makuria (2013), taking quarterly data of Ethiopia from the time period 1992Q1 to 2010Q4 and using Engle Granger and Johansen co integration technique concludes that below 10 percent inflation rate has positive affect on economic growth and above 10 percent threshold level inflation negatively affected economic growth. Philip (2010), taking data of Nigeria for the time period ranging from 1970 to 2005 and by applying Granger Causality test, find no long run

relationship between inflation and economic growth and further there exist one way causality between inflation and economic growth i.e. from inflation toward economic growth. Ahmed (2010) uses the data of Bangladesh ranging from 1988 to 2008 and two tests i.e. Pesaran *et al.* (2001) cointegration test and Toda Yamamoto (1995) causality test. The results shows that in short run there exists a significant negative impact of inflation on economic growth while long run relationship between these two variables is insignificant and moreover there exist a unidirectional causality between inflation and economic growth i.e. from inflation toward economic growth. Faria and Carneiro (2001), find that there is no significant impact of inflation on output in long run whereas in short run there is significant negative impact of inflation on output.

The empirical literature shows the mix result about the impact of inflation on economic growth. Some studies support the argument that there is positive relationship between inflation and economic growth while most of the studies are in the support of negative relationship between inflation and economic growth and also there are some studies that finds insignificant linkage between inflation and economic growth.

Conclusion

This chapter provides some idea about the relationship between the focused variables i.e. remittances, inflation and economic growth. Both theoretical and empirical literature show the mixed results about the relationship between remittances and inflation, inflation and economic growth and, remittances and economic growth from which it is observed that a lot of work has been done on this side but no study has been found in which the impact of remittances on economic growth is examined that is mediated by inflation. So there is a need to do some research on this side to draw some useful conclusions which may be helpful for policy maker while making important decisions about the economy.

Chapter 3

Data and Methodology

This chapter provides the details about specification of model, estimation technique and data sources.

3.1 Model Specification

In order to examine the relationship between foreign remittances and economic growth most of the studies include worker's remittances, gross fixed capital formation, foreign direct investment and exports in their analysis[3], but in our analysis we include only focused variable in our model. The objective of the current study is to investigate the impact of worker's remittances on economic growth that is mediated by inflation in Pakistan for the period ranging from 1973 to 2014. We start our analysis by modelling the interaction between remittances and economic growth that is mediated by inflation.

GDP_t= f (REM)

We express this in an equation form as:

$GDP_t = \alpha + \beta REM_t + \varepsilon_t$ (3.1)

Further, the economy of Pakistan faces double digit inflation and it is observed that high inflation rate is harmful to economic growth as it decreases the

[3] de Mello, (1997); De Gregorio, (2003); Kemal, et al., (2002); Narayan, (2005); Ahmed et al., (2011)

manufacturing activities and also it reduces the value of currency[4]. So inflation is included in our analysis and also our main objective is to investigate the impact of worker's remittances on economic growth that is mediated by inflation.

$$GDP_t = \alpha_o + \beta_1 INF_t + \beta_2 REM_t + \varepsilon_t \qquad (3.2)$$

3.2 Econometric Methodology

It is observed from theoretical and empirical literature that foreign remittances have an impact on both economic growth and inflation. This study will try to estimate the relationship between foreign remittances, and economic growth mediated by inflation by using Structural Equation Model (SEM).

3.3 Mediation Analysis

Mediation, introduced by Barron and Kenny (1986) is defined when one variable (M) mediates the effect of initial variable (x) on outcome variable (y). Mediation analysis includes three parts. The initial variable is a determinant variable to which the other variables are associated. A variable is called a "mediator to the extent that it accounts for the relationship between the predictor and criterion. Mediation testing is widely used in behavioral science and psychology to test the influence of latent variables. There are two techniques to detect mediation. The regression technique and structural equation modeling. Barron and Kenny (1986) and Sobel (1982) presented the basic approach of mediation based on regression analysis. Literature explains how the structural equation modeling is preferred over the regression proposed by Barron and Kenny (1986).

[4] Gylfason, (1999); Hodge, (2006).

Structural equation modeling (SEM, also called covariance structure analysis) is designed, in part, to test more complicated models in a single analysis instead of testing separate regression analyses. In addition, the SEM analysis approach provides model fit information that provides information about consistency of the hypothesized mediational model to the data. Measurement error is a potential concern in mediation testing because of attenuation of relationships and the SEM approach can address this problem by removing measurement error from the estimation of the relationships among the variables.[5] SEM is preferred over regression because SEM minimizes standard error with greater capacity than regression because of simultaneous estimation of all parameters in one model. Moreover, SEM accommodates smaller sample exactly the way it handles large samples. The smaller the sample size is, the more advantageous is to prefer SEM over regression because as sample size increases, the distinctions between the two techniques become minor.[6]

3.4 Data

This study used the annual time series data of Pakistan from time period 1973 to 2014 in order to find the long run relationship between foreign remittances, inflation and economic growth. Data on foreign remittances are taken from the State Bank of Pakistan (SBP) while the data on GDP (per capita) are taken from World Development Indicator (WDI). The data of CPI which is used as a proxy of inflation is taken from International Financial Statistics (IFS). The definition of variables used in the analysis are given in Table 3.1

[5] Newsom(2014)
[6] Lacobucci et al. (2007)

Table 3.1 Definition of Variables

Variables	Definition
Worker's Remittances	Workers' remittances are current transfers for family maintenance by migrants who are employed and residents in new economies. (A resident is a person who stays, or is expected to stay for a year or more in an economy). Remittances are given in milion dollars.
GDP per capita	GDP per capita is gross domestic product divided by midyear population. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. Data are in current U.S. dollars.
Inflation	Inflation which is measured by CPI, shows the annual percentage change in the cost to the average consumer of

	acquiring a basket of goods and services that may be fixed or changed at specified intervals, such as yearly. The Laspeyres formula is generally used.

Conclusion

This chapter provides the detail about the data and methodology which is used to get the desired objective that is to check the impact of remittances on economic growth that is mediated by inflation. Structural equations model (SEM) is used to check the impact of remittances on economic growth that is mediated by inflation. SEM is a tool used for mediation analyses, one model is fit and there is no need to fit a series of equations or models like the regression technique of Baron and Kenny (1986). SEM is preferred over regression because SEM minimizes standard error with greater capacity than regression because of simultaneous estimation of all parameters in one model. Moreover, SEM accommodates smaller sample exactly the way it handles large samples. The smaller the sample size is, the more advantageous is to prefer SEM over regression because as sample size increases, the distinctions between the two techniques become minor.

Chapter 4

Empirical Findings and Discussion

4.1 Introduction

In order to check the impact of remittances on economic growth that is mediated by inflation as discussed in the previous chapter time series data of Pakistan for the time period ranging from 1973 to 2014 is being used. Results are explained below.

4.2 Mediation Test Results:

Mediation is a hypothesized causal chain in which one variable affects a second variable that, in turn, affects a third variable. The intervening variable is the mediator. It "mediates" the relationship between a predictor and an outcome. In our model, remittances are serves as predicator; inflation rate is taken as a mediator and GDP are taken as outcome variable.

REM= remittances

GDP= gross domestic product

INF=inflation rate

Table 4.1: Path estimates of Remittances and GDP

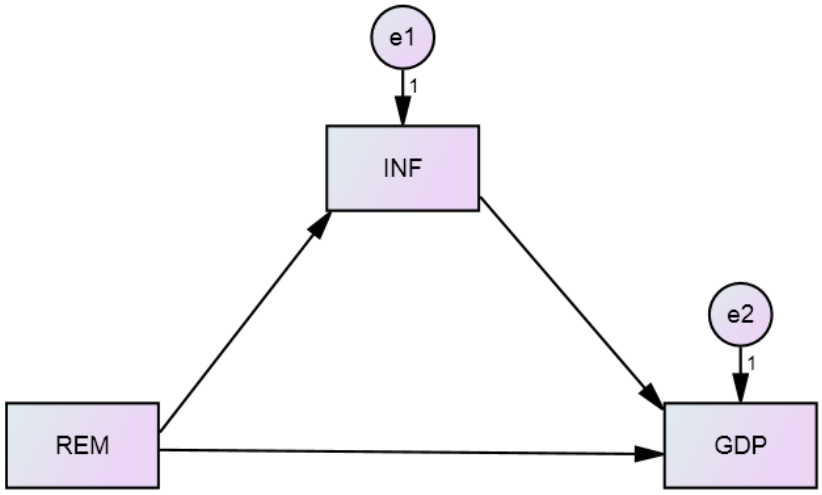
			Estimate	S.E.	C.R.	P	Label
GDP	<---	REM	.048	.007	6.610	***	par_1

In the first stage of analysis, the independent variable is a significant predictor of GDP. Table (4.1) shows that remittances are significant predictor of GDP. The first condition of the mediation testing is satisfied that confirms that independent variable is significant predictor of dependent variable. The table (4.1) shows that remittances have a positive and significant impact on economic growth as due to remittances there is an increase in inflow of capital and saving and when these savings are invested then there is an increase in economic growth [Iqbal *et al.* (2013)] and moreover remittances create current account surplus which puts upward pressure on production function and as a result there is an increase in economic growth [(Qayyum and Nawaz, 2014)]. Now we will introduce mediating variable i.e. inflation rate in the analysis and

estimate the impact of including this mediating variable on the relationship between remittances and GDP.

Table 4.2: Path estimates of Remittances, Inflation and GDP

			Estimate	S.E.	C.R.	P	Label
INF	<---	REM	.010	.001	9.225	***	par_2
GDP	<---	REM	-.007	.007	-.962	.036	par_1
GDP	<---	INF	5.416	.613	8.842	***	par_3



The relationship between remittances and GDP turns out to be significantly negative with the inclusion of mediating variable. The table (4.2) shows that there is partial mediation as the coefficient of remittance to GDP reduces from 0.48 to -0.007. The correlation between the predictor i.e. remittances and mediating variable i.e. inflation is positive and statistically significant and also there is positive and

statistically significant correlation between the mediator (inflation) and dependent variable (GDP). Inflation partially mediates the relation of remittances and Economic growth (GDP).

This result shows that remittances have negative impact on economic growth mediated by inflation. As increase in remittances encourage inflation through the channel of money supply[7]. According to the studies it is concluded that there is a negative impact of inflation on economic growth because due to inflation there is a decrease in investment and productivity growth [Fischer (1993) and Barro (1996), Burno and Easterly (1998)] and moreover inflation increases budget deficit and deformed foreign exchange rate [Fischer (1993)]. In short we conclude that remittances have indirect negative impact on economic growth through the channel of inflation and our result supports the migrant's pessimist's argument that remittances have adverse impact on economic growth.

[7] Irfan (1983), Nazir *et al*., (2012), Nisar, and Tufail (2013), Roy and Rahman (2014)

Chapter 5

Conclusion and Policy Implication

Conclusion

The main focus of this study is to examine the impact of worker's remittances on economic growth that is mediated by inflation. We use Structural Equation Model (SEM) to investigate the effect of remittance inflows on economic growth that is mediated by inflation. The main finding of this study shows that remittances have adverse impact on economic growth that is mediated by inflation in Pakistan. The reason behind this result may be an increase in the money supply due to remittances inflow which leads to increase in inflation rate and according to literature due to inflation, budget deficit increase while investment and productivity growth decreases which have negative effect on economic growth. This study argues that remittance inflows are not itself bad but it is the way of consumption due to which worker's remittances become the reason of putting inflationary pressure on the recipient economy. Therefore we can conclude that inflation occurs in the recipient economy like Pakistan because of worker's remittances due to the variations that occurs in demand side and also in money supply. So, there is a need to spend these remittance inflows in productive and valuable investment in order to control the inflationary impact of remittances in the recipient countries like Pakistan.

Policy Implications

Some policy recommendations are given below:

- The policies should be prepared at the government level in order to channel the remittances inflow in the productive and valuable investment like investment on education, to enhance the productive ability for the fulfilment of the demand that is generated by worker's remittances. Effective investment opportunities should be provided by the government to increase the use of remittances toward the investment activities instead of consumption and increasing the saving rate is one way of doing this. In Pakistan, saving rate is low as compare to marginal propensity to consume (Khan *et al.* 2007). Through Political stability environment can be made favorable for investment.
- The government should take some valuable steps to decrease the cost of remitting funds through formal means for the purpose of getting stable level of remittances inflow.
- Price stability is one of the essential aims of the central bank. For the purpose of keeping the inflation rate stable and at low level central bank must cooperate with the government in making the policies, as consistency is needed between monetary and fiscal policy.

Future Research

This is almost the first study which tried to examine the effect of remittances on economic growth which is mediated by inflation. In Pakistan, the distribution of the worker remittances is unequal across different provinces (Nisar and Tufali, 2013). In some provinces, remittances inflow is more while in some provinces these remittances inflow are not very much. So the research on the same topic i.e. the impact of remittances on economic growth mediated by inflation can be made at provincial level by using the provincial data of worker remittances which can be helpful for policy makers in making appropriate policies regarding the economy.

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Appendix Table 1

Growth Performance of the Real GDP and Worker Remittances along With Inflation in Pakistan during 1970s-2000s

	1970s	1980s	1990s	2000	2000-04	2005	2006	2007	2008	2009	2010	2011	2012	2013
Real GDP(avg annual %age)	5.2	7.3	4.6	4.7	4.3	7.7	6.2	5.7	1.6	3.6	4.4	4.5	4.7	4.9
Worker Remittances(% of GDP)	6.0	8.6	3.6	3.9	3.4	3.9	4.0	4.2	4.3	5.4	5.5	5.7	6.2	6.2
Inflation (avg. annual %age)	7.9	8.4	10.6	8.0	2.0	9.1	7.9	7.6	20.3	20.3	13	11.9	9.6	7.6

Data source: World Development Indicator (WDI)

Appendix Table 1

Mediation Statistics (SPSS-Amos outputs)

Model	NFI Delta1	RFI rho1	IFI Delta2	TLI rho2	CFI
Default model	1.000		1.000		1.000
Saturated model	1.000		1.000		1.000
Independence model	.000	.000	.000	.000	.000

Note: As the NFI value is equal to 1, it indicates a very good fit