REMITTANCES, ECONOMIC GROWH, INEQUALITY AND POVERTY: AN EXPLORATION OF THE LINKAGES FOR DEVELOPING ASIA.

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DECLARATION

I hereby declare that this thesis, neither as a whole nor as a part thereof, has been copied out from any source. It is further declared that I have carried out this research by myself and have completed this thesis on the basis of my personal efforts under the guidance and help of my supervisor. If any part of this thesis is proven to be copied out or earlier submitted, I shall stand by the consequences. No portion of work presented in this thesis has been submitted in support of any application for any other degree or qualification in Pakistan Institute of Development Economics or any other university or institute of learning.

Waqar Ahmed Qamar

Dedicated to

My loving parents

&

My niece Alina Arslan

Acknowledgement

In The Name of Allah, Most Gracious, Most Merciful

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Abstract

The direct and indirect impact of remittances on growth, inequality and poverty has earned a consensus the world over. This study, using the annual data for twelve Asian developing countries, over time span of 1998-2013, gauges the linkages between remittance inflows, economic growth, inequality and poverty. Results from Generalized Method of Moments (GMM), applied on simultaneous equation model (SEM), exhibit that remittance inflows have statistically significant growth enhancing and poverty and inequality reducing effect in selected countries. We find a stronger direct poverty reducing impact of remittances. Most importantly, however, these gains are conditional on the level of financial market development. Additionally, the poverty reducing impact of remittances is conditional on remittances-inequality nexus and the remittances reduce poverty only when they are found cutting inequality down. Remittance inflows are found reducing the income inequality. Evidence also suggests that, remittances serve as the substitute to credit constraints. Finally we find that remittances are primarily sent for altruistic motives (meeting daily routine expenditures). The study recommends that remittance inflows should be channelize through formal sources. For effective use of remittance inflows, governments of the respective countries (through collaborating with financial institutions) should ease the process of sending and receiving remittances through developed banking sector.

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Chapter 1

Introduction

Increase in economic growth bringing a reduction in poverty levels remains the central focus of all the economic policies the world over. The tools to alleviate poverty have a long history and have been changing over the time. Recently, with the advent of globalization, foreign capital inflows across the borders have earned a consensus as an effective source of fighting poverty and enhancing economic growth. The role is even stronger for resources deficient developing countries. Of the foreign capital inflows, financial inflows remained most common and remittance inflows fall at the heart of all type of financial capital flows across the globe.

Remittances, following foreign direct investment (FDI), have greater socio-economic implications for economic growth and poverty reduction for the recipient countries (Lucas and Stark 1985, Adam 2006). Remittance inflows generate direct and indirect impacts on economic growth and poverty alleviation. In countries with lower level of development and poor financial market, remittances, at very first hand, by their very nature, generate an impact at household level primarily through increased consumption and saving of the recipient household. In developing world, having higher poverty levels, a bulk of this increased consumption goes on food items. The increased income resulting from remittances serves as primary cut on the poverty levels.

Remittances also help people to get out of vicious circle of poverty[1] through the channel of financing the basic needs of the recipient families (Aggarwal et al., 2011, Giulinao and

1 In this study poverty is measured in terms of Food deficit, kilocalories per person per day. The depth of hunger is low when it is less than 200 kilocalories per person per day and high when it is higher than 300 kilocalories per person per day (World Bank Data). For more details see the Data and Methodology section.

Arranz 2009) and improving the living standards through increased marginal propensity to save of recipient households (Siddiqui and Kemal 2006, Orozco 2006, Adams and Page 2005, Adams 2002). Primarily, remittances act as an insulator against income shocks and lift up the poor families and in poor countries with low levels of household income, these inflows help people to manage and mitigate the effects of any adverse income shock (Yang and Choi 2007).

In a larger perspective, remittance inflows play as an important factor to enhance economic growth through multiple channels[2]. Growth impacts of remittances include, improved consumption and living standards (Ratha, 2013), developed financial sector (Aggarwal et al., 2006), increased investment (Giuliano and Arranz 2009) and ultimately economic development and raised employment. Moreover, as a result of remittance inflows expenditures on consumption goods may leads to increase in tax revenues[3] and thus the physical infrastructure of the recipient country will be strengthened which ultimately persuade economic growth (Khan 2009)[4]. Also remittances serve as the source of providing funds to build schools (better education) and health centers or clinics, thus, helpful to increase infrastructure and human capital formation (Orozco 2006).

Remittances inflows, in addition to direct impacts, also help cutting poverty levels down through increased economic growth. There are three main channels through which

2 The direct effects: obtained by regression of growth on remittances and other explanatory variables. theory supports negative relationship of output growth and volatility of output growth so indirect channels of remittances effect on growth by reducing output volatility, by increasing financial development leads real effective exchange rate to appreciate (Dutch Disease phenomenon), more spending on health and education that lead to human capital formation and by improving investment ratio to GDP. These channels have empirically been analyzed by Chami et al (2009), Acosta (2008), Acosta, Lartey, and Mandelman (2007), Lopez, Molina, and Bussolo (2007) and Amuedo-Dorantes and Pozo (2004).

3 Sales tax

4 Remittances can affect economic growth through multiple channels including in major, physical and human capital accumulation (positive), moral hazard problem with labor force (negative) and growth in total factor productivity (positive) (Barajas et al., 2009).

economic growth reduce poverty. These include (a) direct channels in which poor are directly targeted by provision of better health, sanitation facilities, education and rural infrastructure development etc., (b) trickledown effect (market channel) in which poor are helped through economic linkages such as migration of labor within sector and regions, increased labor demand etc., and (c) policy channels which guide the development process for a greater equality through subsidy programs, direct income transfers and public investments etc. improvements in initial economic conditions of households better helps to understand that how powerful the effect of economic growth on poverty reduction.

At the same it needs to be highlighted that the ultimate outcome of poverty reduction impact of remittances is hugely conditional on the impact thereof on inequality. Rising income inequality may generate negative impacts for economic growth and development in the long run and poverty consequently. The debate on remittances-inequality nexus is far from being conclusive. Remittance inflows may also significantly reduce income inequality through channel of raised income of the poor (Wyatt 1996). It is documented also that remittances may worsen the inequality when better offs are able to send their family member to abroad for better opportunities (Lipton 1980)[5]. This is particularly relevant when the cost of migration is higher which leave the bottom poor not able to migrate. According to World Bank (2007) better offs families receive more remittances than the poor ones in Soviet Union countries.

Given this discussion, it is important to realize that the nature, magnitude and impact of remittances are to a large extent conditional on level of financial development of the

5 Similar conclusion by (Portes and Rumbaut 1990, Cuecuecha and Page 2008, Adams 2008)

recipient country. The countries with higher levels of financial development not only attract the larger inflows but also the nature of impact is different and remittances produce firstly a growth enhancing impact and then direct poverty reducing impact; indirect impact may be stronger than direct one. While in the countries with lower level of financial development, remittances are remitted without formal channels primarily and go directly to the recipient households. In the former case, the remittances can be better channelized to more productive use including investment in infrastructure etc. in later case, most of the remittances are used for current consumption and less is saved; the case generally in developing countries. Further, through improved financial sector development credit constraints may also be reduced consequently (Gupta et al., 2009)[6]. Remittance inflows encourage not only banking or financial sector development but also foreign exchange reserves (Aggarwal et al., 2011, Ruiz-Arranz et al., 2005)[7]. Finally remittances not only drive economic growth, but are also driven by economic growth and poverty levels[8].

It is in this context, we envisage examining the impact of remittances on poverty reduction controlled for interlinkages between remittances, economic growth and inequality. We further argue that impact is conditional on level of financial development and the nature of relationship between remittances and economic growth. Remittances inflows coming through well-developed financial market are more likely to persuade economic growth, reduce inequality and alleviate poverty significantly.

6 Similar conclusion is made (Calaro 2008, Jongwanich 2007, Faini 2002, Taylor 1999, Lucas 1988).

7 Going the other way round, remittances can also lead to increased financial development if sent through proper channel (Aggarwal et al., 2011, Giulinao and Arranz 2009). These inflows can improve domestic financial intermediation by stimulating investment efficiency in two ways namely i) Investment efficiency affected in a way that remitter or recipient has some information (beneficial or not) relative to domestic financial intermediaries, if remittance inflows invested domestically. (ii) These inflows can improve domestic financial development by increasing economies of scale in financial intermediaries or large number of depositors may be the reason behind financial reforms (for benefits) taken by government.

8 To avoid repetition, detail on channels of simultaneity is provided in data and methodology chapter of this thesis.

The region of Developing Asia is selected purposefully for the study. Developing Asia is the largest labor exporting region of the world and remittances are fastest growing inflows in Asian countries with an increase from 21 US billion dollars in 1995 to 177 US billion dollars in 2010 registering a 763% growth rate (UNDP 2011). Remittances trends for Asian developing countries are shown in Appendix A.

In the top ten remittance receiving countries, more than half fall in the region under study[9]. According to Asian Century Institute, remittance inflows to Asian developing countries stood about more than half of the total remittance inflows to developing countries in 2012[10]. World Bank (2011) reported that in some Asian developing countries[11] magnitude of remittances inflows are greater than that of FDI and other private capital flows.

Also Developing Asia holds a huge share of world's population and most of the world's poorest are in Asian developing region. This is because of high growth in population, political instability, caste discrimination, bad condition of education, health and water (Gaiha et al., 2006). Remittances are irrefutable source of external finance in Asia and are considered to be a key factor in enhancing growth and alleviating poverty. Next chapter provides the relevance of the study in the context given above.

9 China(66 US billion Dollars), India(70 US billion Dollars), Philippines(24 US billion Dollars), Pakistan(14 US billion Dollars), Bangladesh(14 US billion Dollars), Vietnam(9 US billion Dollars) and Lebanon(7 US billion Dollars) in 2012.

10 Remittances in the selected Asian developing countries show an increasing behavior from 1998 to 2013 and in 2013 the remittances as a percentage of GDP shows greater share in some of Asian developing countries like Kyrgyz Republic (31.52), Philippines(9.81), Bangladesh (9.24), Jordan(10.82), Pakistan (6.30), India (3.73) shown in the figure 2 given above.

11 Asian countries: Bangladesh, Nepal and Yemen

1.1. Significance and Scope of Study:

This study gauges the impact of remittances on poverty alleviation controlling the interlinkages with economic growth and inequality. The nexus though already explored many studies [Cooray (2012), Anyanwu (2011), Adenutsi (2011)]. Importantly however these studies ignore the totality of the nexus and ignore simultaneity. This study, while exploring the issue, improves on the extant literature multifold. Firstly, we use a measure of poverty [deficient in kilo calories per day] to capture the stronger direct impact of remittances as the remittance inflows in the region at the first point of entry primarily go to the recipient households through informal channels. This study uses the depth of food deficit (kilocalories per person per day) as a proxy of poverty[12] as it is explained in introduction that the remittances are considered to reduce poverty in developing countries by the channel of fulfilling the daily expenditures and increased consumption so the proxy of food deficit is best suit for this study and justified by Sen (1983).

Secondly, given the multiple interlinkages between remittances and growth, growth and poverty, poverty and inequality and inequality and economic growth, this study adopts simultaneous equation model (SEM). Thirdly the impact of remittances is controlled for financial development level. In this context, this study provides more reliable and efficient estimates for poverty reducing impact of remittances providing the policy implication and recommendations regarding financial development and fair distribution through which the severity of poverty and inequality can be reduced by remittances in an effective way.

12 Depth of hunger or intensity of food deprivation indicates how much food-deprived people fall short of minimum food needs in terms of dietary energy. The food deficit in kilocalories per person per day, is measured by comparing the average amount of dietary energy that undernourished people get from the food they eat with the minimum amount of dietary energy they need to maintain body weight and undertake light activity. The depth of hunger is low when it is less than 200 kilocalories per person per day and high when it is higher than 300 kilocalories per person per day (World Bank Data). For more details see the Data and Methodology section

1.2. Objectives of Study:

On the whole the objective of this study is to examine the impact of remittances on poverty given the interlinkages between remittances, economic growth, inequality and poverty. More specifically the objectives are as follow:

a) To gauge the impact of remittance inflows on economic growth in Asian developing countries.
b) To analyze the impact of remittances on inequality in developing countries of Asia.
c) Conditional on growth and inequality impact of remittances, to analyze the impact of remittance inflows on poverty in the region.
d) To examine the role of financial market development in defining the impact of remittance inflows on economic growth and poverty subsequently.
e) Finally, based on empirical findings, to draw policy guidelines for further improvements.

1.3. Summary and Structure of the Thesis:

Remittance inflows are considered to be an important factor in persuading economic growth and curtailing poverty and inequality through direct and indirect channels. The notable point is that remittances affect economic growth through different channels and get affected by economic growth, creating simultaneity in the system. We also argue that the impact of remittances is dependent on the situation of financial markets in the region. The nexus is analyzed in a totality by considering SEM, and applying GMM to control both simultaneity and endogeneity. The rest of the thesis is structured as explained. The very next chapter (chapter 2) provides a review on the studies in literature regarding relationship of remittances, economic growth, inequality and poverty. Theoretical and econometric

model, model specifications, data and estimation methodology are explained in Chapter 3. Chapter 4 provides results and discussions. Chapter 5 concludes the major findings and draws policy implications and recommendation.

Chapter 2

Review of Literature

This chapter provides an overview of the past studies on the remittances, growth, inequality, and poverty nexus. Enormous literature is accessible to comprehend the channels through which remittance inflows affect economic growth, poverty and inequality. This chapter provides a brief snapshot of the literature however.

A significant positive impact of remittance inflows on the economic growth is documented in literature (Cooray 2012, Ratha 2013)[13]. Cooray (2012) used GMM estimation technique on the date from 1970 to 2008 and concluded that remittance inflows have significant and positive impact on economic growth in South Asia[14]. Remittances are also an important source to finance the investment that leads to enhance economic growth in the countries with less developed financial sector (Giuliano and Arranz 2009). Ahmed et al., (2011) showed a positive growth impact of remittances in Pakistan.

Imai et al., 2014 by using annual panel data from 1980 to 2009 for 24 Asia Pacific countries, concluded that remittance inflows are beneficial for the economic growth and poverty reduction. Poverty reduced through increase in human capital, consumption level due to increase in remittance inflows in developing countries (United Nations 2011, Adams and page 2005, Siddiqui and Kemal 2006, Shroff 2009, Ratha 2013)[15].

13 Similar results are presented by [Shera and Meyer, (2013); Goldberg and Levi, (2008); World Bank, (2006); Obiechina and Emeka, (2013); Fayissa and Nisah, (2008)].

14 See critical appraisal on how this study deviates from the one we are undertaking

15 Same conclusion is made by [Kemal, (2001); Brempong and Asiedu, (2009); Chukwuone, Amaechina, Enebeli-Uzor et al, (2012); Javid et al, (2012); Imai et al, (2012); Gupta et al, (2009)].

It stretches to the consensus that remittance inflows to a country are a beneficial tool to reduce poverty. The channels for this impact can be direct and indirect including increased income of recipient families leading to consumption smoothing pattern, raised physical and human capital investment, enhancement of financial sector development and credit constraint reduction (Faini 2002, Calaro 2008, Lucas 1988, Gupta et al., 2009).

It is found that remittances have a significant and positive impact on poverty reduction in countries having remittances more than 5% of GDP and results are highly significant in Asian developing countries with remittances more than 5% of GDP (21 developing Asian countries and 29 other developing countries). These results are obtained by applying 3SLS technique on single equation model for the data of 77 developing countries (United Nations 2011).

Taylor et al., (2005) showed that in case of rural Mexico, the international remittances have more equalizing effect in reducing poverty. These results were obtained by using inequality and poverty decomposition techniques. For Africa Gupta et al., (2009) documented 1% fall in head count poverty due to 10% increase in the remittances in the Sub-Saharan Africa.

Numerous studies have analyzed the impact of remittances on inequality[16]. Impact of remittances on inequality depends upon the history of migration and the opportunities available (Stark, Taylor and Yitzhaki, 1986). Remittances have an equalizing impact on inequality in a village having a long history of migration to developed region but opposite in a village having only internal migration and little international migration history (Stark, Taylor and Yitzhaki, 1988).

16 (Portes and Rumbaut 1990, Wyatt 1996, Cuecuecha and Page 2008, Adams 2008)

Furthermore, remittances impact on inequality reduction is strong in those countries where average income is high and migration cost and brain drain is low (Ebeke and Goff 2009). Further, Remittances reduce inequality in the country where poor are migrating more and inequality remained same in the country where rich are migrating more.

Anyanwu (2011) investigated the impact of remittances on income inequality in African countries by using the panel of five eight-year non-overlapping windows for period 1960-2006. The results suggested a positive and significant impact on income inequality in Sub-Saharan African countries wherein 10% increase in remittances (% of GDP) results in 0.013 % increase in inequality and remittances inflows to North Africa reduce the inequality. Furthermore, the author explained the reason of positive impact of remittances on inequality i-e the families that receive the remittances are well-off thus increased inequality through expenditure increase and new technology because migrants are from families with upper or middle class income (Lipton 1980, Portes and Rumbaut 1990)

Importantly, Deluna and Pedida (2014) concluded by applying Granger Causality Test between inequality and remittances in Philippines that there is a one way relation between the two running from inequality to remittances.

Wouterse (2010) used Gini decomposition and showed that marginal increase in remittances from intra-African migration reduce inequality whereas a marginal increase in remittances from the more costly and risky intercontinental migration has the opposite effect and the concentration coefficient unveils that households with intercontinental migrants are found to be much less poor in terms of head-count, depth, and severity

measures. Additionally, because of educational expenditures and regional differences the impact of remittances is mixed on inequality (Leon and Koechlin 2007).

Ratha, (2013) explained the countercyclical behavior of remittances inflows, Remittance inflows can be affected by the economic growth, low growth motivate people to migrate and send more remittances to their families to fulfill the basic needs. Furthermore, a string of literature is available which identifies that remittance has a negative effect on the economic growth; the reason behind this is decline in the labor force participation which leads output to decline (Chami et al., 2003). Barajas, Chami, and Fullenkamp (2009) identifies that there is no impact of remittances on growth.

Similarly, thread of literature is present which highlights that remittance inflows and financial sector development are positively related and that remittances stimulate economic growth but volatility of remittances are harmful to growth in African countries. Studies use interaction term of remittance and financial development and found a positive impact (Nyamongo et al., 2012). Mughal et al., (2010) concluded that impact of remittances on inequality is not as strong as on poverty.

The issue has been explored for Pakistan also. Javid et al., (2012) found that there is positive and statistically significant growth impact of remittances by using ARDL technique for the period of 1973-2010 for Pakistan. Furthermore, the District wise poverty analysis was used and concluded that remittances are the source of poverty-alleviation in a developing country like Pakistan. Similarly Siddiqui and Kemal (2006) concluded that the major factor in explaining the poverty increase in Pakistan is the decline in remittance inflows during 1990s. Further, Kemal (2001) explained that remittances are the important

factor affecting level of poverty by income and consumption level and also by capital stock increase.

Mughal et al., (2010) examined the micro and macroeconomic relation between poverty/inequality in Pakistan and they concluded that there is a negative relation between poverty and remittances from Middle-East and the impact is stronger on poverty than on inequality and at micro level international remittances, their impact on inequality and poverty is higher in 2001-02 but in 2005-06 the impact of internal remittances is strong and they concluded the channel through which remittances influence the poverty and inequality is household savings.

2.1. Critical Appraisal

The preceding discussion highlights the significance of remittances in enhancing economic growth and alleviating poverty. The review given above suggests that in the extant literature, primarily, the studies have used single equation model (Cooray 2012)[17]. Mostly OLS is used to get the results (Anyanwu 2011, Mughal et al., 2010)[18]. The second most used technique is 2SLS (Mughal et al., 2010, Imai et al., 2014), 3SLS (United Nations 2011) and GMM (Cooray 2012, Anyanwu 2011, Ebeke and Le Goff 2009, Adenutsi 2011). Fewer of them used Fixed and random effects (Shera and Meyer 2013) and ARDL (Javid et al., 2012). In existent literature most of studies captured only endogeneity but simultaneity is ignored and in the extent literature almost in all studies poverty is measured by only head count ratio or poverty gap and no alternative measure of poverty has been

17 [Shera and Meyer, (2013); Barajas, Chami, and Fullenkamp, (2009); Leon and Koechlin, (2006); Anyanwu, (2011); Ebeke and Le Goff, (2009); Javid et al, (2012); Mughal et al, (2010)] presented similar studies.

18 [Cooray, (2012); Ebeke and Le Goff, (2009)] presented similar studies.

used in this framework of study yet. By taking these points into account, this study will take care of both endogeneity and simultaneity. Also this study will use new measure of poverty[19] which is more appropriate given the nature of entry of remittances in the region.

19 In this study poverty is measured in terms of Food deficit, kilocalories per person per day. The depth of hunger is low when it is less than 200 kilocalories per person per day and high when it is higher than 300 kilocalories per person per day (World Bank Data). For more details see the Data and Methodology section also explained in significance and scope section.

Chapter 3

Data and Methodology

This chapter construct the theoretical and reasonable base to be taken for the empirical findings of the study which includes the model specification, selection and construction of the variables, Data source and the methodology to be used.

3.1. The Model:

Remittance inflows are essential factor determining the economic growth. Coupled with direct effects, remittances effect poverty and inequality through indirect channels of which economic growth itself stand atop. To examine this nexus, we start from the growth impacts of the remittances and then extend the model to a system of four equations to be estimated simultaneously. The growth equation, based on the work of Cooray (2012), is derived from Neo-Classical production function which is further extended for the inclusion of remittance inflows. The general form of Neo-Classical production function model is:

$$Y_{it} = A_{i0}\ e^{\delta t}\ Z_{it}^{\phi i}\ K_{it}^{\alpha}\ H_{it}^{\beta}\ L_{it}^{1-\alpha-\beta}\ e^{\varepsilon_{it}} \quad (1)$$

$0 < \alpha < 1$ and $0 < \beta < 1$

In equation 1, *i* and *t* represent country and time period respectively, *Y* is for aggregate output (GDP), *K*, *H* and *L* shows the physical capital, human capital and labor force respectively. Whereas *Z* capture the impacts of omitted trended variables that includes remittances (R), openness (OP), domestic investment (DI), foreign direct investment (FDI),

and financial development (FD-CR). Φ is for the growth impact of remittances and the control variables that are mentioned above. And ε is for the error term.

By dividing the above function with Total Labor force *L*, we convert it in the per capita form.

$$y_{it} = A_{i0}\, e^{\delta t}\, Z_{it}^{\phi i}\, k_{it}^{\alpha}\, h_{it}^{\beta}\, e^{\varepsilon_{it}} \quad (2)$$

Now the GDP per capita is denoted by *y*, physical capital per capita is shown by *k* and human capital per capita is represented by *h*. And with simple log linear specification the equation is as follows:

$$ln\, y_{it} = \ln A_{io} + \delta t + \phi i ln Z_{it} + \alpha ln k_{it} + \beta ln h_{it} + \varepsilon_{it} \quad (3)$$

Further, the equation is extended for other control variables:

$$G_{it} = \alpha_o + \alpha_1 PC_{it} + \alpha_2 R_{it} + \alpha_3 HC_{it} + \alpha_4 FD\_CR_{it} + \alpha_5 OP_{it} + \alpha_6 FDI_{it} + \alpha_7 DI_{it} + \alpha_8 RFD_{it} + \varepsilon_1 \quad (4)$$

Lagged growth is added as an explanatory variable, that capture the dynamic relationship of the variables (Agison and Mayer 2000) so, equation (4) is modified as:

$$G_{it} = \alpha_o + \alpha_1 G_{it-1} + \alpha_2 LnPC_{it} + \alpha_3 LnR_{it} + \alpha_4 HC_{it} + \alpha_5 LnFD\_CR_{it} + \alpha_6 LnOP_{it} + \alpha_7 LnFDI_{it} + \alpha_8 LnDI_{it} + \alpha_9 RFD_{it} + \varepsilon_1 \quad (5)$$

In equation 5 the dependent variable G is GDP per capita growth. G_{t-1} is a lag dependent variable, PC is physical capital, R is remittance inflows, HC is human capital, FD-CR is financial development, OP is trade openness, FDI is foreign direct investment, DI is

domestic investment and the interaction term RFD is joint impact of remittances and financial development.

In equation 5 economic growth is defined by GDP per capita growth as it shows the overall economic condition (Zureiqat 2005). Worker's remittance (calculated by World Bank) is used to represent remittance inflows. Lagged GDP per capita (G_{t-1}) is included to capture dynamic relationship of the variables and to check the convergence hypothesis (Barro 1991, Barro 1996, Barro and Martin 1995). Telephone lines per 100 persons, a proxy of physical capital (PC), are used in accordance with Aseduo (2002) and Brzozowski (2006)[20].

Another important variable used in the regression analysis is human capital (HC). It is still a debatable issue to find the exact proxy of HC. Empirical literature provides alternative proxies of HC. Mankiw et al., (1992) have used secondary school enrollment ratio of age between 12 to 17 years as proxy of HC. Average years of schooling (population above 15 years and below 65 years) have been used by Wang and Yao (2001). In recent literature "education attainment" as percentage of population of age 15 and above or 25 and above by Barro and Lee (1994, 2001 2013) has gained popularity as proxy of HC[21]. Adult literacy rate as HC proxy is also used by Azariadis and Drazen (1990) and Romer (1990).

The proxy of human capital developed by Barro and Lee (2013) average years of schooling (25+) but there were constraints in data availability. Portela et al., (2004) argued that it may underestimate the attainment results. Human capital in annual frequency is available in

20 We are also aware the weakness of the proxy in this world of cellular mobiles but the choice is restricted by unavailability of data

21 Krueger and Lindahl (2001), Nehru (1995), Psacharopoulos & Arriagada (1986)

Penn World Table (PWT) prepared by Feenstra et al., (2013). Human capital proxy consists of index of human capital based on years of schooling (Barro and Lee 2012) and the returns on education (Psacharopoulos 1994). Thus we use human capital data from PWT (2013).

Domestic credit to private sector (percentage of GDP) is used as a proxy of financial development (FD-CR) which is an important determinant of economic growth because easy access to credit is a source of motivation to small businessmen to invest which leads to enhance economic growth (FitzGerald 2006). Financial development (FD-CR) has been proxied by different variables in the literature. Empirical literature has used M1 or M2 as a proxy for FD-CR because of easy availability but this measure is criticized on the grounds that underdeveloped or developing economies normally have high ratio of money to GDP.

It is further argued that these monetary aggregates are more a measure of monetization rather than financial development and it makes no difference between liabilities among financial institutions. Furthermore, these aggregates are unable to represent the actual volume of funds channeled to productive sector so M2 to GDP is weak proxy. Later on domestic credit provided by the banking sector was used as proxy of financial development. Another proxy that is used is credit provided to private sector which measures the availability of funds to private sector more accurately[22]. We use domestic credit provided by banking sector as our main proxy of financial development.

Economic growth also affected by trade openness (Dewan and Hussein 2001). Trade openness (OP) is calculated as (X+M/GDP). Similarly FDI inflows also effect the

22 Acosta et al (2007,2009), Khan and Senhadji(2000), Cooray (2012), maksimovic (2001), Levine (1997), Aggarwal et al (2006), King and Levine (1993) and many others,

economic growth through different channels i-e innovation, infrastructure development (de Mello 1996, Borensztein et al., 1998).

An interaction term (RFD) used to understand the combine impact of remittances and financial development. Domestic investment (DI) is calculated as Gross fixed capital formation (percentage of GDP) minus FDI (percentage of GDP).

The interesting point in equation 5, is that economic growth is determined by remittances but remittances itself can get determined by economic growth (Ratha 2013), generating simultaneity in the nexus. The factors like low growth and unemployment motivate people to migrate to abroad and increase in migration will lead to increase in remittance inflows (Todaro 1969)[23]. Similarly high growth is a sign to increase in income and thus people are able to migrate now as they can bear the cost of migration because of increase in income. High growth also motivates people to send more remittances for investment purposes (Todaro 1969). On the other hand, increased remittances inflows could have positive as well as negative impact on growth depending upon the transmission channel employed[24]. This establishes the simultaneous relationship among the variables economic growth and remittances in our model and makes us to incorporate the second equation into the model.

$$R_{it} = \beta_o + \beta_1 R_{it-1} + \beta_2 G_{it} + \beta_3 REER_{it} + \beta_4 LnMigr_{it} + \beta_5 POV + \beta_6 INQ + \varepsilon_2 \qquad (6)$$

23 According to the neoclassical theory of migration (Todaro, 1969), People migrate in response of push factors related to home economy and pull factors related to foreign economy, push factors are weak investment and poor governance and less job opportunities and pull factors are more job opportunities, living standards, exchange rate, health and education.

24 As Barajas et al (2009) points out three channels through which remittances effect growth.

In equation 6 (based on Adenutsi (2011), dependent variable R is remittances (% of GDP), R_{t-1} is a lag dependent variable, REER is Real effective exchange rate, Migr is Migration, POV is Poverty, INQ is Inequality and rest of the variables are defined in equation 5.

Real exchange rate is calculated as (CPI) USA/ (CPI) local]* official exchange rate[25]. Depreciation in exchange rate of domestic country motivates migrants to send more remittances to finance the credit in the foreign currency[26] and vice versa (Wahba 1991). By exchange rate depreciation[27], we mean level of exchange rate increase remittance inflows domestic country. Real effective exchange rate is used in this study and calculated as relative consumer price indices multiplied by official exchange rate.

Large number of migrants means more remittance to recipient country. Poverty (POV) is proxied by *depth of the food deficit (kilocalories per person per day* and inequality (INQ) is measured by Gini coefficient. Remittance inflows level can be predicted by the inequality level (Gini coefficient) in short run so somehow inequality has an impact of determining the level of remittance inflows (Deluna and Pedida 2014) are added in accordance with Adenutsi (2011).

Remittance inflows are the source to poverty reduction through direct (increased income) and indirect (increased economic growth; trickle down etc) channels. Thus, to examine the impact of remittance inflows on poverty and similarly impact of remittances on inequality, equation (7 & 8) are added in the model.

25 See data description section

26 Similar comments by Higgins *et al* (2004), Dorantes and Pozo (2004), Hysenbegasi and Pozo (2000), Faini (1994) and Chandavarkar (1980).

27 To increase the remittance inflows governments in developing countries depreciate their exchange rates enhance remittances inflows (Wahba 1991).

$$POV_{it} = \gamma_o + \gamma_1 LnR_{it} + \gamma_2 G_{it} + \gamma_3 LnPCY_{it} + \gamma_4 LnFD\_CR_{it} + \varepsilon_3 \quad (7)$$

In equation 7, dependent variable is Poverty (POV) and independent variables is, initial GDP per capita (PCY). Rests of the variables are defined as in equation 5 and 6. Initial per capita income is used to capture the starting point of poverty reducing trajectory of the respective countries. Similarly, Inequality-Remittance nexus is important to understand the impact of remittances on inequality and the final outcome in terms of poverty alleviation.

$$INQ_{it} = \alpha_o + \alpha_1 LnREM_{it} + \alpha_2 Ln\,(X)_{it} + \alpha_3 Z_{it} + \varepsilon_4 \quad (8)$$

In equation 8, X includes lagged inequality (INQ_{t-1}) to capture the persistence of inequality, G, PC and OP while, *Z* is a vector of variables including inflation CPI, FDI and LIT (adult literacy rate)[28]. By incorporating the controls, we get:

$$INQ_{it} = \delta_o + \delta_1 (INQ\_1)_{it} + \delta_2 Ln\,REM_{it} + \delta_3 LnRG_{it} + \delta_4 LnPC_{it} + \delta_5 CPI_{it} + \delta_6 LnFDI_{it} + \delta_7 LnLIT_{it} + \varepsilon_4 \quad (9)$$

This completes our model comprising of four equations 5, 6, 7 and 9 with dependent variables, GDP per capita growth, remittances, poverty and inequality respectively. The next section dwells on the construction of data.

28 Model is also estimated by using human capital index instead of literacy and the results are same.

3.2. Data Description:

Asian developing countries[29] are selected on the basis of data availability. This study covers the time period from 1998- 2013. The data are primarily extracted from World Development Indicators (WDI) 2012, International Financial Statistics (IFS) 2012, Penn World Table (PWT) 2013, Barro and Lee 2012, Estimated Household Income Inequality Data set by University of Texas (EHII) and Quality of Government (QOG) data set.

Poverty is proxied by Depth of the food deficit (kilocalories per person per day). Poverty is an important issue for development of any country. Main indicators to measure poverty are poverty head count ratio (1.25 and 2 $ a day) and poverty gap but the problem with these indicators is that the data was not available or with almost all missing values. According to Sen (1983) *"There is an irreducible absolutist core in the idea of poverty. If there is starvation and hunger then, no matter what the relative picture looks like – there clearly is poverty".* So, the proxy of food deficit (kilocalories per person per day) against poverty can be used. All data will be taken in constant US dollars and equations are in the linear log forms. For the ease of reader, variables (notation, source, name and construction) are shown in the table given below.

29 (Bangladesh, Cambodia, China, India, Indonesia, Iran, Jordan, Kazakhstan, Kyrgyz Republic, Malaysia, Pakistan and Philippines

Table 1: Variable name, Notation, Construction and Source

Variable Notation	Variable Name And Construction	Source
G	GDP per capita growth (annual %)	World Development Indicators
PC	Physical Capital (Telephone per 100 persons)	World Development Indicators
R	Personal Remittances received (percentage of GDP)	World Development Indicators
HC	Human capital index	PENN WORLD TABLE (PWT)
FD-CR	Financial Development (Domestic credit to private sector (% of GDP))	World Development Indicators
OP	Trade Openness calculated as Exports+Imports/GDP	World Development Indicators
FDI	Foreign Direct Investment	World Development Indicators
DI	Domestic Investment (%age of GDP) calculated as (Gross Fixed Capital Formation-FDI)	World Development Indicators
REER	Real Effective Exchange Rate (calculated by (CPI) USA/ (CPI) local]* official exchange rate)	World Development Indicators
Migr	International Migrant Stock (% of population)	World Development Indicators
POV	Poverty proxy is Depth of the food deficit (kilocalories per person per day)	World Development Indicators
PCY	GDP per capita (constant 2005 US$)	World Development Indicators
INQ	Inequality (GINI coefficient)	EHII
LIT	Literacy (Average years of education)	Barro & Lee
CPI	Inflation (Consumer Price Index)	World Development Indicators

3.3. Estimation Methodology:

Lagged values of dependent variables are included in the model to understand dynamic relationship of the variables. By this inclusion assumption of orthogonality is not valid and problem of endogeneity is created. In the simultaneous framework, OLS gives inefficient results in presence of lagged variables. And single equation estimates will give invalid results also (Carkovic and Levine, 2005). This suggests that the most appropriate approach to estimate the system of equation is instrumental variable (IV) approach. The most widely used technique is Two Stage Least Squares (2SLS) but in this study it cannot be used as it deals with only endogeneity and do not deals with contemporaneous correlation (i.e. correlation between errors terms of the endogenous variable). So, in the all available estimation techniques the most appropriate technique is Generalized Method of Moments (GMM) because it deals with both simultaneity and endogeneity.

In this study GMM time series (HAC) is used as it deals with all the problems discussed above and it correct the problems of heteroscedasticity and autocorrelation of the error terms and also is resilient to contemporaneous and autocorrelation of unknown form looking at both panel and time series dimensions. Further, to get white noise residuals or heteroscedasticity and autocorrelation corrected (HAC) standard errors, we used Newey-West technique[30].

In case of GMM, with large number of instruments its efficiency increases unlike in 2SLS or 3SLS. The efficiency of GMM estimates, however, is conditional on the instrument

30 Newey-West method is applicable and valid for large sample (50 or more observations. See Gujarati's 5th Edition). Newey-West method is extension of White's method which give standard errors corrected for hetroskedasticity but Newey-West method is not only consistent with autocorrelation but also with hetroskedasticity of unknown form.

validity[31]. A valid instrument must be orthogonal to error term and strictly correlated with endogenous variable. Sargan J test is used to judge the instruments validity. Null hypothesis that "instruments are exogenous" tested and higher p-value is necessary to accept the null hypothesis.

Simultaneous equation model consist of four equations (5, 6, 7 and 9) is used. These equations named as Growth, Remittances, Poverty and Inequality respectively. The data on the variables are collected from the data banks given above and keeping in mind the endogeneity and simultaneity the GMM is used as the estimation methodology and the empirical findings are discussed in the very next chapter.

31 Two types of instruments; (i) internal instrument (lagged values of dependent variables and levels of exogenous variables) (ii) external instrument (lies outside the model).

Chapter 4

Results and Discussions

Simultaneous equation model, consisting of four equations (5, 6, 7 and 9 in previous chapter) is estimated by applying GMM and the results are reported in the tables 3, 4, 5 and 6 respectively. These tables show results of the equations with dependent variables economic growth, remittance inflows, poverty and inequality respectively[32]. Though all the equations are estimated simultaneously but results are reported in this format for the ease of reader. Further the discussion on results provided based on the tables and moves from M-1 (the base model) to M-5 (the final model) in all the tables. Major conclusions are based on the final model (M-5) in all cases as the rest of the models may carry omitting variable bias and are estimated just to see the sensitivity of the outcomes to the alternative set of control variables, the results of model (M-1) and (M-5) for each equation are interpreted below and the rest of the specifications (M-2), (M-3) and (M-4) are reported in appendix B. The style is adopted to provide the sensitivity analysis. To avoid any confusion, the discussion on results is provided separately for each table (in other words on each the four equations of the model.

4.1. Descriptive Analysis:

The analysis starts with description of the data and table below contains results of descriptive statistics of the variables incorporated in this study. The data are showing variations in major variables used in the analysis. Most importantly, PCY registered

32 All the tables reported and discussed separately but all four equations estimated simultaneously and column 1 (M-1) of all the four tables jointly gives the first specification of the simultaneous equation model. And in the table's columns 2 (M-5) shows final specification. The alternative specifications (M-2), (M-3) and (M-4) are shown in appendix B for each equation, this is to show the sensitivity of direction and magnitude of the alternative set of control variables.

maximum value (4408.53) for Malaysia while minimum (283.1) for Cambodia suggesting markedly different level of economic performance at the beginning of 1990. This difference has a significant impact on the trajectory of poverty alleviation.

Table 2: Descriptive statistics

Variables	Mean	Median	Maximum	Minimum	Std. Dev.
G	4.06	4.19	13.69	-14.39	3.61
PC	10.18	7.62	38.33	0.19	9.26
R	5.23	2.25	31.52	0.08	6.82
HC	2.35	2.51	2.98	1.63	0.43
FD-CR	46.03	31.75	158.5	3.83	37.62
OP	0.86	0.76	2.07	0.24	0.46
FDI	3.50	2.45	23.54	-2.76	3.67
DI	20.82	20.08	43.54	1.91	7.59
REER	2425.79	70.82	21251.75	0.66	4727.02
Migr	7.22	2.30	49.17	0.04	11.92
POV	93.15	102.00	288	3	59.36
INQ	37.63	37.37	47.03	29.95	3.92
PCY	1303.45	1003.15	4408.53	283.1	1136.32
CPI	78.56	78.92	213.95	18.32	27.24
LIT	6.79	6.82	11.74	3.07	2.40

Cambodia has comparatively higher poverty (288 kilo calories per person per day). Similarly, remittance are maximum (31.52 % of GDP) in Kyrgyz Republic and minimum (0.08 % of GDP) in Kazakhstan. With maximum remittance inflows in Kyrgyz Republic, inequality is minimum (29.95) reveals that remittance might be the source to it. A huge variation is also observed in remittances inflows (%GDP) across the sample countries with average value of 5.23. Similar is the case for financial development level.

4.2. Regression Estimates:

The estimations are undertaken using SEM. Specification 1 (M-1) serves as the base while specification 5 (M-5) is the final model in all the equations. Base model is estimated to capture the impact of control variables on the nexus under investigation. Worth pointing out is that equation for poverty is used as control equation and it remains similar in all the specification. The impact of remittances on poverty is then analyzed using alternative control variables in other equations of the model.

Specification 1 comprises M-1 of table 3, 4, 5 and 6 respectively estimated simultaneously reporting estimates for economic growth, remittances, poverty and inequality respectively. In M-1 of table 3 (determinants of growth), lagged value of GDP per capita growth (G_{t-1}), physical capital (PC) and remittance inflows (R) are used as independent variables. M-1 of table 4 (determinants of remittances) carries per capita GDP growth (G), lagged remittances (R_{t-1}) and real effective exchange rate (REER) as expletory variables. M-1 of table 5 (determinants of poverty) provides estimates on remittances-poverty nexus. Similarly, to examine the remittances-inequality nexus, the variables used in M-1 of table 6 (determinants of inequality) includes lagged inequality (INQ_{t-1}), (R), (G), (PC), (CPI), FDI and Literacy (LIT) remain unchanged in all specifications. Further, M-1 of table 3, 4, 5 and 6 is a basic set of variables that provide the base for the comparison with other specifications.

4.3. Economic growth determinants:

This section provides estimates for the determinants of economic growth, their direction and magnitude of impact and importantly the impact of remittances on economic growth. Further this section, discusses the comparison of M-1 (base model) and the final model (M-5)[33] of table 3 given below:

Table 3: GMM Estimates, Determinants of economic growth

Estimation results				
Dependent variable: GDP per capita growth (G_{it})				
	Base model (M-1)		***Final model (M-5)***	
Variables	***Coefficient***	***P-value***	***Coefficient***	***P-value***
G_{it-1}	*0.88****	*0.00*	*0.48****	*0.00*
	(0.03)		*(0.04)*	
$LnPC_{it}$	*-0.07*	*0.33*	*0.22***	*0.04*
	(0.07)		*(0.1)*	
LnR_{it}	*0.08**	*0.10*	*0.46****	*0.00*
	(0.06)		*(0.11)*	
HC_{it}			*-1.35****	*0.00*
			(0.27)	
$LnFD\text{-}CR_{it}$			*0.83****	*0.00*
			(0.13)	
$LnOP_{it}$			*0.04*	*0.99*
			(0.24)	
$LnFDI_{it}$			*0.89****	*0.00*
			(0.14)	
$LnDI_{it}$			*0.51***	*0.06*
			(0.28)	
RFD_{it}			*-0.03****	*0.00*
			(0.01)	
Constant	*0.58****	*0.00*	*0.11*	*0.88*
	(0.2)		*(0.71)*	
R-squared	*0.22*		*0.39*	
J-Stat	*0.13*		*0.14*	
P-Value	*0.90*		*0.98*	
No. of Obs	*143*		*143*	

*In parentheses, below each variable in all specifications, HAC standard errors are reported. *** is for 1% significance level, ** is for 5% significance level, * is for 10% significance level.*

33 The alternative specifications (M-1), (M-2) and (M-3) are shown in Appendix B for sensitivity of the outcomes of to the set of control variables.

As is evident, M-1 of table 3 suggests that remittance inflows (R) are found to have a statistically significant positive sign implying that remittances enhance economic growth (Fayissa and Nsiah 2008). Further, a statistically significant positive sign of the lagged GDP per capita growth (G_{t-1}), explains persistence in growth rate[34] not allowing the convergence within the developing Asia.

Final specification of table 3 (M-5), provides final specification with set of control variables. An interaction term of remittances and financial development (RFD) is incorporated to check the combine effect of remittances and financial development or substitutability in persuading growth. As is evident RFD carries a statistically significant negative sign which means that remittance inflows through the proper financial channel leads to financial development, enhances economic growth. Further, negative sign of RFD confirms the substitutability between remittances (R) and financial development (FD-CR) (Giuliano and Ruiz-Arranz 2005). Physical capital (PC), insignificant in the base model (M-1), shows a positive and significant impact on economic growth means that good infrastructure, better facilities like telecommunication, roads, energy, health and education contribute to economic growth positively (World Bank 1994). Most importantly, the impact of remittances gets stronger when set of control variables is included in the estimation.

Human capital (HC) in final model (M-5 of table 3), attains a negative sign and is found statistically significant suggesting that low quality education and high cost of education may lead to less job opportunities at initial stages which may lower the economic growth

34 A number of studies including Barro (2012, 1996, 1991), Cooray (2012), Barro and Sala-i-Martin (1995), Dollar and Kraay (2002) consider lagged log of GDP per capita as initial GDP. A negative value of initial GDP is called convergence hypothesis. Our result, a positive and statistically significant value of lagged log of GDP per capita in all specifications, rejects the convergence hypothesis.

(Pritchett 2001). Financial development (FD-CR) is introduced, creating a statistically significant positive impact on the economic growth. This is because of easy access to credit is a source of motivation to small businessmen to invest which leads to enhance economic growth (FitzGerald 2006).

Finally (M-5 of table 3), FDI and domestic investment DI both exhibit a positive, statistically significant impact on economic growth but trade openness (OP) is with positive and insignificant impact on economic growth. FDI enhances growth through two main channels. Firstly, in the form of easing technology transfers, spillover and business know-how to poor countries resulting in increase in the production of all firms, not just of those firms receiving FDI inflows (Alfaro 2003, Carkovic and Levine 2002). This provide economic rational to offer special incentives to attract foreign capital (Romer 1993). Secondly, FDI transfers new knowledge by introducing alternative management practices, enhancing organizational capabilities, training the labor and acquisition of new skills (i.e. human capital formation)[35]. Domestic investment (DI) has a positive sign suggesting that DI has growth persuading impact (Adams 2009).

35 See Basu and Guariglia (2007), Todo (2006), Borensztein et al (1998), De Mello (1997).

4.4. Remittance inflows determinants:

This section provides results for determinants of remittance. Sticking to the previous notation, M-5 of table 4 reports the results of the final model. Positive sign of GDP per capita growth (G), statistically significant unlike in M-1, suggests better economic conditions in the home country and it will motivate migrants to send more remittances to invest in the home country (Lucas and Stark 1985).

Table 4: GMM Estimates, Determinants of remittance inflows

Estimation results				
Dependent variable: Remittances inflows (R_{it})				
	Base model (M-1)		**Final model (M-5)**	
Variables	**Coefficient**	**P-value**	**Coefficient**	**P-value**
R_{it-1}	1.01***	0.00	4.83***	0.00
	(0.03)		(0.11)	
G_{it}	-0.01	0.16	0.33***	0.00
	(0.03)		(0.05)	
$REER_{it}$	-0.04	0.15	0.22***	0.00
	(0.03)		(0.06)	
$LnMIGR_{it}$			0.38***	0.00
			(0.09)	
$LnPOV_{it}$			-0.06***	0.00
			(0.03)	
$LnINQ_{it}$			-0.03	0.20
			(0.03)	
Constant	0.066***	0.00	5.29***	0.00
	(0.02)		(0.92)	
R-squared	0.22		0.39	
J-Stat	0.13		0.14	
P-Value	0.90		0.98	
No. of Obs	143		143	

*In parentheses, below each variable in all specifications, HAC standard errors are reported. *** is for 1% significance level, ** is for 5% significance level, * is for 10% significance level.*

The first specification in which the statistically significant positive sign of lagged remittances (R_{t-1}) creating a significant impact in the current year implies that the more remittances of current year as a result of more remittances in the previous year that motivate

people to remit more and due to safe remittances in the previous year. The higher amounts of remittances sent last year serve is "signal" of inductive environment. Highest impact of lagged remittances suggests the importance of the overall conducive "environment".

Poverty (POV) exerts a negative and statistically significant impact on remittances. The reason behind is that when poverty increases, the poor families cannot bear the higher cost of migration so remittance inflows may decrease (Ebeke and Le Goff, 2009). The finding brings evidence for causality from poverty to remittances. Inequality (INQ) has a negative impact on remittances but it is statistically insignificant. Migration (Migr), generating a significant and positive impact on remittances, means that increase in the migrant stock will lead to increase in the remittance inflows as shown in M-5 of table 4.

Approximating the overall economic performance as a policy variable, real effective exchange rate (REER) enters statistically significant with positive sign indicating that appreciation in the currency of home country resulting more inflow of remittances (Dakila and Claveria 2007). Positive sign shows an appreciation in the home currency (increase in REER) which is a sign of good economic environment in the country thus, self-interest (investment) motive dominates, and the inflows of remittances through formal channel will increase in order to gain from investment back in home country. In comparison, M-1 of table 4, growth and REER has a negative impact on remittances but in M-5 both have remittance enhancing impacts.

An alternative explanation is also available in the literature. Appreciation in the home currency leads to increase in remittances inflows to home country in terms of foreign

currency, resulting a less buying for households in the home country[36]. Households require extra amount of foreign currency to buy that basket of commodities, if consume certain basket of goods and workers from home in abroad should sent more remittances back in home resulting an increase in remittances inflows. It is however argues that in the context of the study at hands, former explanations explains findings better.

4.5. Poverty determinants:

Now we turn to the major question of impact of remittances on the poverty. Controlled for growth, remittance and inequality interlinkages, the results are reported in table 5 below.

Table 5: GMM Estimates, Determinants of poverty

Estimation results				
Dependent variable: Poverty (POV_{it})				
	Base model (M-1)		**Final model (M-5)**	
Variables	**Coefficient**	**P-value**	**Coefficient**	**P-value**
R_{it}	0.62	0.63	-1.02**	0.03
	(1.28)		(0.03)	
G_{it}	1.562**	0.03	-0.49	0.42
	(0.72)		(0.61)	
$LnPCY_{it}$	-49.82***	0.00	-53.13***	0.00
	(2.38)		(2.39)	
$LnFD\text{-}CR_{it}$	-2.45	0.29	-3.11*	0.10
	(2.32)		(1.72)	
Constant	429.07***	0.00	452.53***	0.00
	(16.10)		(14.29)	
R-squared	0.22		0.39	
J-Stat	0.13		0.14	
P-Value	0.90		0.98	
No. of Obs	143		143	

*In parentheses, below each variable in all specifications, HAC standard errors are reported. *** is for 1% significance level, ** is for 5% significance level, * is for 10% significance level.*

36 (Migration and remittances during the global financial crises and beyond) a book by Ibrahim Sirkeci, Jeffery H. Cohen and D Ratha; World Bank. Generally the remittances are remitted in foreign currency which later on is converted into local.

The evidence suggests that remittances (R) have significant poverty reducing impact on poverty when growth and remittances equations have full set of control variables. M-5 depicts a strong negative impact of remittances on poverty. It is interesting to note that direct impact of growth is statistically insignificant (M-5) while the direct impact of remittances is stronger and significant statistically. The findings also suggest the intitia per capita GDP (PCY) is strong predictor of the poverty alleviation efforts. Remittances with a significant negative impact on poverty implies that remittance inflows increase the income of households and results a higher level of consumption of both durable and non-durable goods(altruistic motive) and also increase the saving level of family back home.

In the Ultimate final specification, financial development (FD-CR) is generating a negative and significant impact which implies that with more access to the credit facilities to small entrepreneurs leads to financial development and through this poverty can be reduced (Ordonez 2012, Jeanneney and Kpodar 2008).

4.6. Inequality determinants:

To conclude our estimation we finally discuss the inequality-remittances relation. As is evident from table 6, lagged dependent variable (INQ_{t-1}) enters statistically significant with positive sign in M-1 of table 6 suggesting a higher (lower) persistence (decay) of inequality. In the base model, remittances (R) exert a positive impact on inequality though the impact is insignificant.

Table 6: GMM Estimates, Determinants of inequality

Estimation results				
Dependent variable: Inequality (INQ_{it}) GINI				
	Base model (M-1)		**Final model (M-5)**	
Variables	**Coefficient**	**P-value**	**Coefficient**	**P-value**
INQ_{it-1}	0.98***	0.00	0.93***	0.00
	-0.02		-0.01	
LnR_{it}	0.06	0.28	-0.06*	0.07
	-0.02		-0.04	
G_{it}	0.03	0.65	-0.32***	0.00
	-0.07		-0.09	
$LnPC_{it}$	-0.07	0.35	-0.06***	0.00
	-0.08		-0.03	
$LnOP_{it}$	-0.84	0.22	0.30***	0.00
	0.78		0.08	
CPI_{it}	-0.01	0.27	-0.01***	0.00
	-0.01		-0.02	
$LnFDI_{it}$	0.11	0.22	-0.02*	0.10
	-0.02		-0.02	
$LnLIT_{it}$[37]	0.11	0.23	-0.46***	0.00
	-0.13		-0.13	
Constant	-0.3	0.79	6.25***	0.00
	-1.17		-0.67	
R-squared	0.22		0.39	
J-Stat	0.13		0.14	
P-Value	0.9		0.98	
No. of Obs	143		143	

*In parentheses, below each variable in all specifications, HAC standard errors are reported. *** is for 1% significance level, ** is for 5% significance level, * is for 10% significance level.*

37 Equation 9 is also estimated by using Human capital index rather Literacy because literacy is used as a proxy of human capital as explained in Chapter 3 and the results were same.

In M-5 of table 6, reports the results for a specification wherein growth and remittances equations carry all the required control variables. Contrary to the base model, the variables in the final model (M-5), the variables turn significant and carry theoretically right signs. Remittances (R), are found creating a significant negative impact on inequality which suggests that remittance inflows can cause increase in income of households with illiquid assets and accumulation of the productive assets are financed by remittance inflows resulting in increase in future income and thus, inequality reduced by indirect channel and direct effect of remittance inflows (Wyatt 1996). Most importantly, the impact of remittances on poverty (M5 in table 5) seems following the impact of remittances on inequality. Remittances when increase inequality, cause an increase in the poverty (M-1 table 5)

Growth comes up with negative and statistically significant impact on inequality implying that increase in wages in the areas (population density is higher resulting in increase in the personal contacts, access to information and more job opportunities will have a spillover effect, leading to reduction in inequality (Majumdar et al, 2009).

Trade openness (OP) exerts positive and statistically significant impact on inequality (M-5 table 6) because increase in OP may increase inequality in developing countries with relatively excess supply of the resources (Land, Labor and Capital) because more openness will lead to increase in relative returns to the natural resources that are more unequally distributed than others (Leamer 1987). Similarly, Trade openness will cause an increase in the inequality, more prominent in the poor countries, examined by Barro (2000).

Inflation (CPI) leads to inequality reduction, statistically significant negative is shown. This result can be justified by the reason that the countries under consideration are not

developed (developing) so with increase in the food items prices, wages of many middle class or poor people rise who are associated with the food items business (producers or labors) thus, it can be possible that inflation has a negative impact on inequality (Ravallion 2000). Literacy (LIT) enters with statistically significant negative impact on the inequality. Morrisroe (2014) explained that low literacy has a negative impact on the household earnings so its mean high literacy is a sign of increase in household's earnings therefore as literacy level rises the inequality declines. Finally physical capital (PC) generates statistically significant negative impact on inequality (M-5 of table 6). Physical capital (PC) and the present value of all future labor income are the two components of total wealth if the capital of a poor family rises (more rapidly than that of rich family) as a result of increase in wage and it shows greater share in the total wealth thus by this inequality diminishes (Cecilia 2007).

Sargan J test is applied to confirm the validity of the instruments. The p-values[38] in the 2nd last row of the table 3, 4, 5 and 6 suggest that instruments are valid as the p-values are greater than 0.05 and for the validity of instruments there should be higher p-value.

38 J stat is calculated automatically in E-views and comes in the result window but P-value is calculated by using the command in E-views **scalar p=@chisq(J stat, instrument rank)** whereas instrument rank is calculated as parameters minus instruments.

4.7. Summary of Results:

This section summarizes the results of the final specification M-5 of equation 5, 6, 7 and 9 presented in the table 3, 4, 5 and 6 respectively. Most importantly remittance inflows persuade economic growth and interaction term of remittances and financial development (RFD) is with statistically significant negative sign indicating that remittances remitted through proper channel support financial development leading to economic development. The evidence further confirms the substitutability of remittances and financial development (Giuliano and Ruiz-Arranz 2005). Remittance inflows are found reducing poverty Remittance inflows significantly reduce the inequality (Wyatt 1996). It is documented that the poverty reducing impact of remittances is conditional on level of economic development and nature of remittances-inequality nexus.

Chapter 5

Conclusion

This study gauges the impact of remittance inflows on economic growth, poverty and inequality in twelve Asian developing countries during the time period of 1998-2013. Based on GMM estimates in SEM framework, some key findings emerge as follow: First, in developing Asian countries remittance inflows are found growth enhancing and poverty reducing Increased remittance inflows can make people to get out of poverty cycle by filling the basic needs (improved living standards) (Siddiqui and Kemal 2006)[39] and provide funds for better education, health and human capital accumulation (Orozco 2006). Further, poverty reducing impact of growth (trickle down), though insignificant, is conditional on the equitable distribution of income. Further, the positive impact of growth on poverty (M-1 of table 5) suggests that in start it is possible that increase in growth leads to increase in inequality and thus poverty increases (Ravallion 2007). Most importantly, the GDP per capita growth reduced the inequality indicating a fair distribution.

Second, the joint impact of financial development and remittance inflows captured through interaction term suggests that increasing remittance inflows are acting as substitute to banking sector and helped small entrepreneurs to finance their projects.

Third, remittance inflows not only appear productive for economic growth but also helping households to get out of poverty as a negative coefficient of remittance variable is documented in poverty equation and importantly, this impact is conditional on financial

39 Similar conclusion by Orozco 2006, Adams and Page 2005 and Adams 2002)

development at one hand while on remittances-inequality nexuses on the other. Remittances are found growth reducing only when the reduce inequality. .

Forth, remittance inflows are found to be an alternative source of financing to the credit and can efficiently adopted for investment purposes for small entrepreneurs. Fifth, human capital is not developed enough in the Asian developing countries to persuade economic growth as it carries negative sign in growth equation (Barajas et al., 2009). It is however worth mention that a negative sign on human capital must be interpreted carefully and must not meant a negative impact of increased human capital on growth per se. Rather it indicates that the countries need to provide environment where human capital gains can be achieved. Sixth, remittance inflows are the significant source to reduction in income inequality. Seventh, our study findings are evident that direct impact of remittances is stronger. .

Finally, physical capital (PC), foreign direct investment (FDI) and domestic investment (DI) are the important determinants of economic growth. GDP per capita growth (G), real effective exchange rate (REER) and Migrant stock (Migr) increase the remittances GDP per capita growth (G), initial per capita income (PCY) leads to reduction in poverty and real GDP per capita (RG), physical capital (PC), inflation (CPI), foreign direct investment (FDI) and literacy (LIT) reduce the income inequality.

5.1. Policy Recommendations:

The empirical findings discussed in the previous section of this study are helpful in drawing some important policy recommendations as follow:

1. Implementation of the policies by Government that enable the poor households to send their people to developed countries are beneficial. Policies to provide more credit facilities, education and skills would be helpful in exporting skilled labor to developed countries generating higher earning and remitting more to the home country.
2. Further, financial sector reforms should be made to encourage people to send remittances through a formal channel. Improved and advanced banking sector with less cost of transaction will result in growth enhancement and poverty reduction through inducing people to remit through formal channels.
3. If there is less cost on migration so that people from the poor segments of society can migrate the money inflows from illegal channels.
4. A good monitoring on remittances so that the money inflows from illegal channels can be reduced.
5. There should be such policies to enhance the household savings to make remittances more productive in order to reap the benefits from remittances.
6. Given the possibly that that remittances widen the inequality if the households that receive remittances are already well off (higher cost if migration preclude poor to go abroad) (Lipton 1980), the governments should make such policies that can mitigate adverse income distribution as a result of remittance inflows. Such policies

include policies to generating opportunities for poor to migrate at one hand while managing the remittances inflows through formal channels.

References

1. Acosta, P. A., Lartey, E. K., & Mandelman, F. S. (2009). Remittances and the Dutch disease. *Journal of international economics*, *79*(1), 102-116.
2. Acosta, P., & Mandelma, F. S. (2007). Remittances, and the Dutch Disease/Federal Reserve Bank of Atlanta Working Paper No. 2007–08. *Atlanta, GA: Federal Reserve Bank of Atlanta*.
3. Acosta, P., Calderon, C., Fajnzylber, P., & Lopez, H. (2008). What is the impact of international remittances on poverty and inequality in Latin America?.*World Development*, *36*(1), 89-114.
4. Adams Jr, R. H. (2002). Precautionary saving from different sources of income: Evidence from rural Pakistan. *World Bank Policy Research Working Paper*, (2761).
5. Adams Jr, R. H., Cuecuecha, A., & Page, J. (2008). Remittances, consumption and investment in Ghana. *World Bank Policy Research Working Paper Series, Vol*.
6. Adams Jr, R. H., Cuecuecha, A., & Page, J. (2008). The impact of remittances on poverty and inequality in Ghana. *World Bank Policy Research Working Paper Series, Vol*.
7. Adams, R. H. (2006). *Remittances and poverty in Ghana* (Vol. 3838). World Bank Publications.
8. Adams, R. H. (2006). *Remittances and poverty in Ghana* (Vol. 3838). World Bank Publications.
9. Adams, R. H., & Page, J. (2005). Do international migration and remittances reduce poverty in developing countries?. *World development*, *33*(10), 1645-1669.

10. Adenutsi, D. E. (2011). Do remittances alleviate poverty and income inequality in poor countries? Empirical evidence from sub-Saharan Africa.
11. Aggarwal, R., Demirgüç-Kunt, A., & Martinez Peria, M. S. (2006). Do workers' remittances promote financial development? *World Bank Policy Research Working Paper*, (3957).
12. Aggarwal, R., Demirgüç-Kunt, A., & Pería, M. S. M. (2011). Do remittances promote financial development? *Journal of Development Economics*, *96*(2), 255-264.
13. Agosin, M. R. And Mayer, R. (2000) *Foreign Investment In Developing Countries Does It Crowd In Domestic Investment?* UNCTAD/Osg/Dp/146.
14. Ahmed, J., Zaman, K., & Shah, I. A. (2011). An empirical analysis of remittances-growth nexus in Pakistan using bounds testing approach. *Journal of Economics and International Finance*, *3*(3), 176-186.
15. Alfaro, L. (2003) *Foreign Direct Investment And Growth: Does The Sector Matter?* Available At Http://Www.Grips.Ac.Jp/Teacher/Oono/Hp/Docu01/Paper14.Pdf
16. Alfaro, L. Chanda, A. Kalemli-Ozcan, S. And Sayek, S. (2004) *FDI and Economic Growth: The Role of Local Financial Markets*. Journal of International Economics, 64, 89-112.
17. Anyanwu, J. C. (2011). International remittances and income inequality in Africa. *Review of Economic and Business Studies*, *4*(1), 117-148.
18. Arrellano, M. And Bond S.R. (1991) *Some Tests Of Specification For Panel Data: Monte Carlo Evidence And An Application To Employment Equations*. Review of Economic Studies, Vol.58, 277-297.

19. Barajas, A., Chami, R., Fullenkamp, C., Gapen, M., & Montiel, P. J. (2009). Do workers' remittances promote economic growth? *IMF Working Papers*, 1-22.

20. Barro, R. and J.W. Lee (2001) *International Data on Education Attainment: Updates and Implications.* Oxford Economic Papers, 53(3)

21. Barro, R. J. (1996). *Getting it right: markets and choices in a free society*. Mit Press.

22. Barro, R.J.; Sala-i-Martin, X. (1995), Economic Growth, McGraw-Hill, Cambridge, MA.

23. Barro, Robert J. (1991). "Government spending in a simple model of endogenous growth.".

24. Bryan R., (2004) "Remittances in Armenia: Size, Impacts and Measures to enhance their contribution to Development", USAID/Armenia, October 1, 2004. http://pdf.usaid.gov/pdf_docs/PNADB948.pdf

25. Brzozowski, M. (2006) *Exchange Rate Variability and Foreign Direct Investment.* Eastern European Economics, Vol. 44, No. 1, January–February 2006, 5–24.

26. Carkovic, M. And Levine, R. (2005) *Does Foreign Direct Investment Accelerate Economic Growth?* In Moran, T. Graham, E. And Blomström, M. (Eds. *Does Foreign Direct Investment Promote Development?* Washington, Dc: Institute for International Economics, 195-220.

27. CD-ROM, W. D. I. "World Development Indicators." *World Bank, Washington, DC* (2013).
28. Chami, R., Fullenkamp, C., & Jahjah, S. (2003). Are immigrant remittance flows a source of capital for development?
29. Cooray, A. (2012). The impact of migrant remittances on economic growth: evidence from South Asia. *Review of International Economics*, *20*(5), 985-998.
30. Dakila, F., & Claveria, R. (2007). Identifying the Determinants of Overseas Filipinos' Remittances: Which Exchange Rate Measure is Most Relevant?.*Center for Monetary and Financial Policy. BSP Working Paper Series, (2007-02)*.
31. De Mello, L.R. (1997) *Foreign Direct Investment in Developing Countries and Growth: A Selective Survey.* Journal of Development Studies, 34, 1-34.
32. Deluna Jr, R., & Pedida, S. (2014). Overseas Filipino Workers Remittances, Inequality and Quality of Life in the Philippines.
33. Edwards, A. C., & Ureta, M. (2003). International migration, remittances, and schooling: evidence from El Salvador. *Journal of development economics*, *72*(2), 429-461.
34. Edwin, Dewan and Shajehan Hussein (2001). Determinants of Economic Growth: Panel Data Approach. Economics Department Reserve Bank of Fiji (Working Paper 01/04)
35. Faini, R. (2002, September). Migration, remittances and growth. In *Conference on Poverty, International Migration and Asylum, Helsinki, September* (pp. 27-28).

36. Fayissa, Bichaka and Nsiah, Christian (2008). The impact of remittances on economic growth and Development in Africa. *Department of economics and finance working paper series*.

37. Feenstra, R. C., Inklaar, R., & Timmer, M. (2013). *The next generation of the Penn World Table* (No. w19255). National Bureau of Economic Research.

38. Fitzgerald, D. (2006). Rethinking emigrant citizenship. *NYUL Rev.*, *81*, 90.

39. Fosu, A. K. (2009). Inequality and the impact of growth on poverty: comparative evidence for sub-Saharan Africa. *Journal of Development Studies*, *45*(5), 726-745.

40. Gaiha, R.; K. Imai; and M. A. Nandhi. 2006. "Millennium Development Goal of Halving Poverty in Asia and the Pacific Region".

41. García-Peñalosa, Cecilia. (2007). The economics of distribution and growth: Recent issues. *Fourth Annual DG ECFIN Research Conference: Growth and income distribution in an integrated Europe: Does EMU make a difference*.

42. Giuliano, P., & Ruiz-Arranz, M. (2009). Remittances, financial development, and growth. *Journal of Development Economics*, *90*(1), 144-152.

43. Giuliano, P., & Ruiz-Arranz, M. (2009). Remittances, financial development, and growth. *Journal of Development Economics*, *90*(1), 144-152.

44. Goldberg, L. S. And Kolstad, C. D. (1995). *Foreign Direct Investment, Exchange Rate Variability and Demand Uncertainty.* International Economic Review, Vol. 36, No.4, 855-873.

45. Gupta, S., Pattillo, C. A., & Wagh, S. (2009). Effect of remittances on poverty and financial development in Sub-Saharan Africa. *World Development*, *37*(1), 104-115.

46. Hermes, N. And Lensink, R. (2003) *Foreign Direct Investment, Financial Development and Economic Growth.* The Journal of Development Studies, Vol. 40, No.1, 142-163.

47. Hildebrandt, N., McKenzie, D. J., Esquivel, G., & Schargrodsky, E. (2005). The effects of migration on child health in Mexico [with comments]. *Economia*, 257-289.

48. Imai, K. S., Gaiha, R., Ali, A., & Kaicker, N. (2014). Remittances, growth and poverty: New evidence from Asian countries. *Journal of Policy Modeling*, *36*(3), 524-538.

49. International Monetary Fund, 2006a, "International Financial Statistics Database" (Washington). Available via the Internet: http://www.imfstatistics.org/imf/

50. Javid, M., Arif, U., & Qayyum, A. (2012). Impact of remittances on economic growth and poverty. *Academic Research International Vol*, *2*.

51. Jeanneney, S. G., & Kpodar, K. (2008). *Financial development and poverty reduction: can there be a benefit without a cost?* (No. 8-62). International Monetary Fund.

52. Jones, C. I. (1995). R&D Based Models for Economic Growth. Journal of Political Economy 103: 759-784

53. Jones, C. I. (1995). Time series tests of endogenous growth models. *The Quarterly Journal of Economics*, 495-525.

54. Jongwanich, J. (2007). *Workers' remittances, economic growth and poverty in developing Asia and the Pacific countries*. United Nations Publications.
55. Kemal.A.R. (2001). Structural Adjustment, Macroeconomic Policies, and Poverty Trends in Pakistan. Asia and Pacific Forum on Poverty: Reforming Policies and Institutions for Poverty Reduction.
56. Koechlin, V., & León, G. (2007). International remittances and income inequality: An empirical investigation. *Journal of Economic Policy Reform*, *10*(2), 123-141.
57. Kumar, Shiva A. K. "Poverty and Human Development in India: Getting Priorities Right" UNDP in India, Occasional Paper 30. http://www.undp.org.in/report/PHDI.htm
58. Lartey, E. K., Mandelman, F. S., & Acosta, P. A. (2012). Remittances, exchange rate regimes and the Dutch disease: a panel data analysis. *Review of International Economics*, *20*(2), 377-395.
59. Leamer, E. (1987). Paths of development in the three factor, n-good general equilibrium model. Journal of Political Economy, 95(5), 961–999.
60. Levine, R. (1997). Financial development and economic growth: views and agenda. *Journal of economic literature*, 688-726.
61. Lipton, M. (1980). Migration from rural areas of poor countries: the impact on rural productivity and income distribution. *World development*, *8*(1), 1-24.
62. Lucas, R. E. (1988). On the mechanics of economic development. *Journal of monetary economics*, *22*(1), 3-42.
63. Lucas, R. E., & Stark, O. (1985). Motivations to remit: Evidence from Botswana. *The Journal of Political Economy*, 901-918.

64. Maëlan, L. E., & Ebeke, C. H. (2009). *Why Migrants' Remittances Reduce Income Inequality in some Countries and not in others?* (No. 200919). CERDI.

65. Majumdar, S., & Partridge, M. D. (2009). Impact of Economic Growth on Income Inequality: A Regional Perspective. In *Agricultural and Applied Association in its series 2009 Annual Meeting*.

66. Mankiw, G., Romer, D. And Weil, D. (1992) *A Contribution to the Empirics of Economic Growth*. Quarterly Journal of Economics, 107 (2), 407-437, May.

67. Morrisroe, J. (2014). Literacy Changes Lives 2014: A new perspective on health, employment and crime. National Literacy Trust.

68. Mughal, M., & Diawar, B. (2010). Impact of Remittances on Inequality and Poverty: Macro and micro-evidence from Pakistan.

69. Mundaca, B. G. (2009). Remittances, financial market development, and economic growth: the case of Latin America and the Caribbean. *Review of Development Economics*, *13*(2), 288-303.

70. Nyamongo, E. M., Misati, R. N., Kipyegon, L., & Ndirangu, L. (2012). Remittances, financial development and economic growth in Africa. *Journal of Economics and Business*, *64*(3), 240-260.

71. Ordóñez, P. (2012). Financial Development and Poverty, a Panel Data Analysis. *Universidad Icesi School of Management and Economics Research Paper*, (31).

72. Orozco, M. (2006). International Flows of Remittances: Cost, competition and financial access in Latin America and the Caribbean—toward an industry scorecard. *Washington, DC: Inter-American Dialogue*.

73. Orozco, M. (2006). Sending money home: Can remittances reduce poverty.*id21 Insights*, (60).

74. Pritchett, L. (2001) *Where Has All the Education Gone?* World Bank Economic Review 15, 367–391.

75. Rao, B. B., & Hassan, G. M. (2011). A panel data analysis of the growth effects of remittances. *Economic modelling*, *28*(1), 701-709.

76. Ratha, D. (2013). The impact of remittances on economic growth and poverty reduction. *Policy Brief*, *8*, 1-13.

77. Ratha, D., & Shaw, W. (2007). *South-South migration and remittances* (No. 102). World Bank Publications.

78. Ravallion, M. (2007). Economic growth and poverty reduction. Do poor countries need to worry about inequality? October 2007. 2020 Focus brief on the world's poor and hungry people. The World Bank. Washington, DC.

79. Sala-i-Martin, X., & Pinkovskiy, M. (2010). *African poverty is falling... much faster than you think!* (No. w15775). National Bureau of Economic Research.

80. Sen, A. (1985). A sociological approach to the measurement of poverty: a reply to Professor Peter Townsend. *Oxford Economic Papers*, 669-676.

81. Shera, A., & Meyer, D. (2013). Remittances and their impact on Economic Growth. *Periodica Polytechnica Social and Management Sciences*, *21*(1), 3-19.

82. Shroff, K. (2009). Impact of remittances on poverty in Mexico. *Global Citizen Project*.

83. Singh, H., & Jun, K. W. (1995). Some new evidence on determinants of foreign direct investment in developing countries. *World Bank Policy Research Working Paper*, (1531).

84. Siddiqui, R., & Kemal, A. R. (2006). Remittances, trade liberalization, and poverty in Pakistan: The role of excluded variables in poverty change analysis. *The Pakistan Development Review*, 383-415.

85. Solow, R. M. (2000). Toward a macroeconomics of the medium run. *The Journal of Economic Perspectives*, 151-158.

86. Stark, O., Taylor, J.E., and Yitzhaki, S. (1986) Remittances and inequality. The Economic Journal, 96(383), pp. 722–740.

87. Taylor J. E., (1992), "Remittances and Inequality Reconsidered. Direct Indirect and Intertemporal Effects", Journal of Policy Modeling, Vol. 14(2): 187 – 208.

88. Taylor, E. J. (1999). The new economics of labor migration and the role of remittances in the migration process. *International migration*, *37*(1), 63-88.

89. Taylor, J. E., & Wyatt, T. J. (1996). The shadow value of migrant remittances, income and inequality in a household-farm economy. *The Journal of Development Studies*, *32*(6), 899-912.

90. Taylor, J. E., Mora, J., Adams, R., & Lopez-Feldman, A. (2005). Remittances, inequality and poverty: Evidence from rural Mexico. *Department of Agricultural & Resource Economics, UCD*.

91. Tsakloglou, P., & Cholezas, I. (2005). Education and inequality in Greece.

92. Wahba, S., (1991), "What Determines Workers Remittances?" Finance and development, Vol. 28, No. 4, December, pp. 41 - 44.

93. Wang, Y., & Yao, Y. (2001). Sources of China's economic growth, 1952-99: incorporating human capital accumulation.

94. Woodruff, C., & Zenteno, R. (2001). Remittances and Microenterprises in Mexico. Unpublished paper, University of California at San Diego.

95. World Bank (1994) *World Development Report.* Washington, Dc, the World Bank.

96. World Bank. (2011). Migration and remittances factbook: World Bank Publications

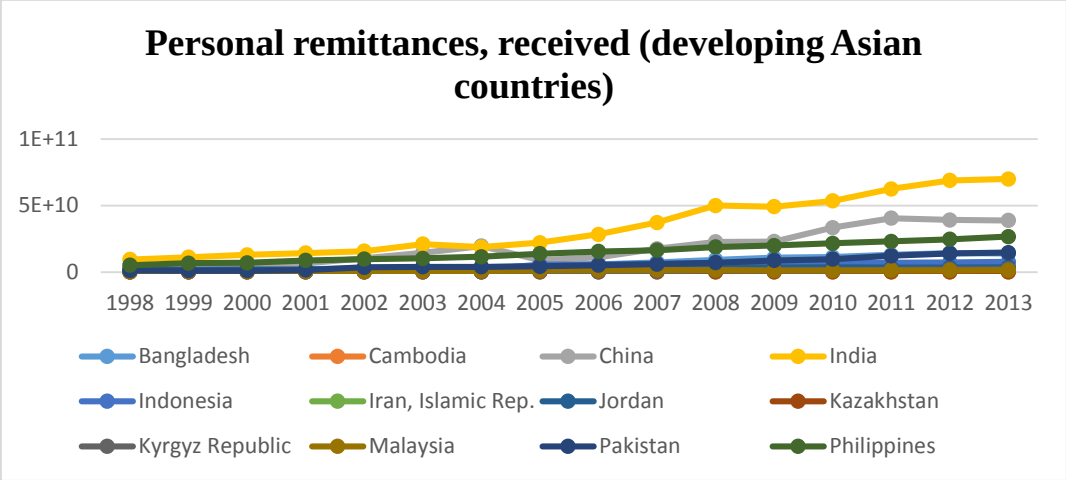
97. WouTerSe, F. (2010). Remittances, poverty, inequality and welfare: Evidence from the Central Plateau of Burkina Faso. *The Journal of Development Studies*, *46*(4), 771-789.

98. Yang, D., & Choi, H. (2007). Are remittances insurance? Evidence from rainfall shocks in the Philippines. *The World Bank Economic Review*, *21*(2), 219-248.

99. Zureiqat, H. M. (2005). Political Instability and Economic Performance: A Panel Data Analysis. Award Winning Economics Papers (http://digitalcommons.macalester.edu/econaward/1).

Appendix A

Figure 1: Personal remittances, received (Selected Asian Developing Countries)



Data Source: World Development Indicators (WDI), 2013.

Appendix B

Table 8: GMM Estimates, Sensitivity Analysis (Growth equation)

Estimation results

Dependent variable: GDP per capita growth (Git)

	Regression (M-2)		**Regression (M-3)**		**Regression (M-4)**	
Variables	**Coefficient**	**P-value**	**Coefficient**	**P-value**	**Coefficient**	**P-value**
G_{it-1}	0.88***	0.00	0.86***	0.00	0.68***	0.00
	(0.04)		(0.03)		(0.04)	
$LnPC_{it}$	0.15	0.22	0.22**	0.04	0.18**	0.02
	(0.12)		(0.1)		(0.08)	
LnR_{it}	0.13**	0.05	0.17***	0.01	0.08*	0.10
	(0.07)		(0.06)		(0.05)	
HC_{it}	-0.63**	0.03	-0.92***	0.00	-1.49***	0.00
	(0.28)		(0.25)		(0.2)	
$LnFD\text{-}CR_{it}$			0.26***	0.01	0.18***	0.01
			(0.1)		(0.07)	
$LnOP_{it}$					0.12	0.37
					(0.14)	
$LnFDI_{it}$					0.58***	0.00
					(0.11)	
$LnDI_{it}$					0.64***	0.00
					(0.21)	
RFD_{it}						
Constant	1.63***	0.00	1.42***	0.00	1.58***	0.01
	(0.48)		(0.43)		(0.6)	
R-squared	0.22		0.24		0.35	
J-Stat	0.13		0.13		0.13	
P-Value	0.93		0.98		0.97	
No. of Obs	143		143		143	

*In parentheses, below each variable in all specifications, HAC standard errors are reported. *** is for 1% significance level, ** is for 5% significance level, * is for 10% significance level.*

Table 9: GMM Estimates, Sensitivity Analysis (Remittance inflows equation)

Estimation results

Dependent variable: Remittances inflows (R_{it})

	Regression (M-2)		**Regression (M-3)**		**Regression (M-4)**	
Variables	**Coefficient**	**P-value**	**Coefficient**	**P-value**	**Coefficient**	**P-value**
R_{it-1}	1.01***	0.00	3.78***	0.00	3.80***	0.00
	(0.03)		(0.09)		(0.07)	
G_{it}	-0.01	0.16	0.09*	0.10	0.17***	0.00
	(0.03)		(0.06)		(0.04)	
$REER_{it}$	-0.03	0.20	-0.21	0.13	-0.21	0.13
	(0.03)		(0.04)		(0.03)	
$LnMIGR_{it}$			0.75***	0.00	0.81***	0.00
			(0.08)		(0.05)	
$LnPOV_{it}$						
$LnINQ_{it}$						
Constant	0.07***	0.00	2.81***	0.00	2.39***	0.00
	(0.02)		(0.48)		(0.32)	
R-squared	0.22		0.24		0.35	
J-Stat	0.13		0.13		0.13	
P-Value	0.93		0.98		0.97	
No. of Obs	143		143		143	

*In parentheses, below each variable in all specifications, HAC standard errors are reported. *** is for 1% significance level, ** is for 5% significance level, * is for 10% significance level.*

Table 10: GMM Estimates, Sensitivity Analysis (Poverty equation)

Estimation results

Dependent variable: Poverty (POV_{it})

	Regression (M-2)		**Regression (M-3)**		**Regression (M-4)**	
Variables	**Coefficient**	**P-value**	**Coefficient**	**P-value**	**Coefficient**	**P-value**
R_{it}	-0.02	0.99	0.35	0.77	-0.13	0.86
	(1.29)		(1.17)		(0.72)	
G_{it}	0.72	0.29	1.70***	0.01	0.69*	0.09
	(0.68)		(0.61)		(0.41)	
$LnPCY_{it}$	-51.09***	0.00	-49.21***	0.00	-51.05***	0.00
	(2.65)		(1.83)		(1.3)	
$LnFD\text{-}CR_{it}$	-1.31	0.54	-3.05*	0.10	-1.12	0.41
	(2.13)		(1.91)		(1.36)	
Constant	438.44***	0.00	426.11***	0.00	436.79***	0.00
	(17.83)		(11.06)		(7.89)	
R-squared	0.22		0.24		0.35	
J-Stat	0.13		0.13		0.13	
P-Value	0.93		0.98		0.97	
No. of Obs	143		143		143	

*In parentheses, below each variable in all specifications, HAC standard errors are reported. *** is for 1% significance level, ** is for 5% significance level, * is for 10% significance level.*

Table 11: GMM Estimates, Sensitivity Analysis (Inequality equation)

Estimation results

Dependent variable: Inequality (INQ_{it})

	Regression (M-2)		**Regression (M-3)**		**Regression (M-4)**	
Variables	**Coefficient**	**P-value**	**Coefficient**	**P-value**	**Coefficient**	**P-value**
INQ_{it-1}	0.91***	0.00	0.91***	0.00	0.92***	0.00
	-0.01		-0.01		-0.01	
LnR_{it}	-0.05*	0.10	-0.06*	0.10	0.03	0.21
	-0.04		-0.04		-0.03	
G_{it}	-0.24***	0.00	-0.26***	0.01	-0.20***	0.00
	-0.09		-0.1		-0.07	
$LnPC_{it}$	0.13	0.13	0.13	0.12	-0.07	0.13
	-0.12		-0.13		-0.08	
$LnOP_{it}$	0.39***	0.00	0.34***	0.01	0.25***	0.00
	0.13		0.13		0.05	
CPI_{it}	-0.03***	0.00	-0.03***	0.00	-0.03***	0.00
	-0.01		-0.01		-0.01	
$LnFDI_{it}$	-0.06**	0.02	-0.06**	0.02	0.05	0.80
	-0.03		-0.03		-0.02	
$LnLIT_{it}$	-0.21*	0.08	-0.19*	0.10	-0.31***	0.00
	-0.12		-0.12		-0.08	
Constant	4.90***	0.00	4.95***	0.00	4.66***	0.00
	-0.76		-0.73		-0.48	
R-squared	0.22		0.24		0.35	
J-Stat	0.13		0.13		0.13	
P-Value	0.93		0.98		0.97	
No. of Obs	143		143		143	

*In parentheses, below each variable in all specifications, HAC standard errors are reported. *** is for 1% significance level, ** is for 5% significance level, * is for 10% significance level.*