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Remittances and Human Capital Development: An Empirical Analysis

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Abstract

Remittances inflow to the developing countries is an important and emerging source of external fund just after foreign direct investment. The nature of and extent of remittances report that the volume of remittances to the developing countries is increasing year by year and it is an upward trend since 1990s. Apart from the recent global financial crises, the annual growth rate of remittances in the last couple of years is more stable, whereas, the ODA and private debt represent the downward turns. The annual growth rate of remittances to the LDCs and low income countries are higher than that of middle income and high income countries. The Western Europe, the United States, high income OECD and non-OECD countries, GCC countries and the some other developing countries of Middle East are the main sources of remittances to the LDCs and low income developing countries. High transaction cost and the lack of trusted formal channel are the two important responsible factors to be noted for the informal transfer of remittances. The remittance cost is comparatively higher to the East Asia Pacific and African regions. The improved and spreading banking services up to the grass root level and the strict rules against 'hundi and hawala' can better help to reduce the informal transfers of remittances. In addition to exploring the characteristics of remittances to the developing countries, the goal of this study is to reveal the effects of remittances on changes in human capital. We analyze more specifically whether the remittances can contribute to the changes in average years of schooling as well as in primary, secondary and tertiary enrollment. We use the data of remittance flow and three levels of education for the panel estimation to 110 developing countries between 1960 and 2010. We apply the GLS model and it is checked and indicated by the Breusch and Pagan Lagrangian multiplier test for the random effects. The model represents the significant positive effects of remittances on the changes in average schooling years and secondary enrolment rate to the developing countries. According to the estimation, if remittances to GDP increase by a one percentage point, then it may increase the changes in average years of schooling and secondary enrollment by around 0.007 and 0.058 per cent respectively in each five years to the developing countries around the world. It reports the insignificant effect of remittances to the changes in primary level of education. It may be due to the almost free cost of primary education or comparatively low cost than the secondary and tertiary education. Democratic development has a positive effect on the changes in average years of schooling as well as in primary education. At regional levels, we find the highly significant and positive effects of remittances on the changes in average schooling years to the Latin America and the Caribbean, whereas, it has significant effects on the changes in tertiary enrollment in South Asia, and Middle East and North Africa. The remittance effects on the changes in average years of schooling are larger for female than that of male. Remittances may also contribute to the secondary enrollment along with average years of schooling to the developing countries with high financial development. Finally, our findings may provide the strong and adequate supports to the notion that remittances may have enough potentiality to improve at least the secondary level of education along with increased years of schooling to the developing countries.

Keywords: Remittances, human capital, developing countries and panel estimation.

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Acronyms and Abbreviations

FDI	Foreign Direct Investment
OECD	Organization for Economic Cooperation and Development
WDI	World Development Indicators
GMM	Generalized Method of Momentums
IV	Instrumental Variables
GLS	Generalized Least Squares
HC	Human Capital
ODA	Official Development Assistance
US	United States
GCC	Gulf Cooperation Council
UK	United Kingdom
EAP	East Asia and Pacific
LDCs	Least Development countries
UN	United Nations
IDB	Inter-American Development Bank
ECA	Europe and Central Asia
MIF	Multilateral Investment Fund
SSA	Sub-Saharan Africa
MNA	Middle East and North Africa
US \$	United States Dollar
LAC	Latin America and the Caribbean

Chapter 1

Introduction

1.1 Backgrounds

The remittance flow is getting more attention among economists and development experts not only for its' increasing volume but also for its' increasing impact on building and expanding the regional and local economy of many developing countries. Total amount of officially recorded remittances to the developing countries in 2011 is reported as \$ 351 billion, which is at least twice of the amount to the net official development assistance and aid received by them (World Bank, 2011a). The actual amount of remittances might even be more than the reported amount because of the informal channels. The World Bank reports that about half of the total remittances are moving globally through informal channels. Moreover, the formal remittances have increased on an average around 16 per cent annually to the developing countries since the very beginning of the current century (World Bank, 2006).

The growth of remittances has somewhat slowed down since 2009 in the Latin America and the Caribbean due to enduring consequences of the global financial crisis in the United States and Spanish economy as well as in the Middle East and North Africa due to the effects of 'Arab Spring'¹ (World Bank, 2011a). Apart from the global financial crisis, the flow of remittances has risen to all the six developing regions (East Asia and the Pacific, Europe and Central Asia, Latin America and the Caribbean, Middle East and North Africa, South Asia, and Sub-Saharan Africa) around the world in 2011.

The remittance flow may well depend on the permanency of migration as well as on the residential location of the other family members. This is because the nature and behavior of migrants' remittance flow may greatly be influenced by the different migration plans (Permanent versus temporary). For instances, Dustmann and Mestres (2010) explore that temporary migration plan can lead to more remittances than permanent migration. It may be due to the tendency of not remitting or little remitting by the emigrants for the permanent settle of full family in the destination.

Remittances may work as a signaling device of social status and/or prestige to the migrants of developing countries. This is why to make family members happy, the tendency of unsuccessful migrants to send back home a large portion of their income being accept a worsening living condition in the destination. Accordingly the people in the home country believe that they are successful in the place of destination as they send a large amount of remittances. On the other hand, successful migrants might try to send even larger amount than the unsuccessful migrants in order to signal their true economic situation despite the fact that not in all cases (Naiditch and

¹ A revolutionary protest and demonstration in the Arab World

Vranceanu, 2011). Consequently, the remitting amount may depend on the nature of migrants' sacrificing tendency of current consumption opportunities to reveal their status.

Remittances may have positive relationship with the stock of migrants but it has negative correlation with the exchange rate restrictions and higher transaction costs (Freund and Spatafora, 2008). They also report that if the transferring costs are going to be high, migrants may refrain to send their money home or may possibly try to remit through informal channels. Transaction costs can be lower in the economy of developed financial system along with less volatility of exchange rates (Mandelmal, 2012). Hence, appropriate monetary and exchange rate policies may better work to reducing the fluctuations of remittances and for creating a more stable financial situation to the developing countries.

Above facts and figures support that remittance is becoming a meaningful, momentous and decent source of financial support for quite a lot of developing economies. Remittance receiving those low income developing countries can obtain a lot of remittances through formal channel if it represents less risky and less expensive compared to informal ones. Increased financial openness may be one of the important ways to improving the formal channel though it may add some additional cost for setting up a financial business to rural areas in the situation of macro-economic instability. However, remittances have a persistent and optimistic effect on financial openness as well as for making the continued dynamic economy (Beine et al., 2012).

1.2 Statements

Remittances have a constructive effect on different economic indicators. For instances, increased flow of remittances may improve the investment level, labor productivity, consumption level and economic growth (Bayangos and Jansen, 2011). Rao and Hasan (2011) report the insignificant direct growth effect to analyzing the strength of remittances on the economic growth of the recipients' countries but they explore the significant indirect growth effects namely the development of financial sector and the improvement of investment level to the economy. Furthermore, it may lead to the competitiveness of the economy (Bayangos and Jansen, 2011).

Remittances may have positive relationship with human capital accumulation. This is because it may reduce the incidence of child labor and may increase the school enrollment (Calero et al., 2009). Edwards and Ureta (2003) report that remittance may decrease the dropout rate of school children by easing the capital constraints of the remittance recipients' households. But, Borraz (2005) argue that it may have a very few positive effect on schooling of children with a little educated mothers. Moreover, it may also positively be associated with improved health and increased educational attainment (Acosta et al., 2007).

Remittances have had a positive and significant effect on the education of younger (ages 5 to 10 years) children in Nepal. But it may have the insignificant impact on the older (ages 11 to 16 years) children's education due to more preference of work like tourist guide than the study. The positive effects of remittances on education may relatively be larger for young male children

than that of female (Bansak and Chezum, 2009). They report that the young male children gain more remittances than that of female due to the disadvantaged positions of the female children. Before that Lopez-Cordova (2005) argue that the remittance effects on education may be more relevant for the secondary school age children. It may be due to a complex relation between migration and remittances. Recently, Bredl (2011) also report that it has significant effects on education by reducing the households' budget constraints. The following above statements along with mixed experiences motivate us to conduct the recent study.

1.3 Research questions

The present study reveals the answers of the following questions: Is there any effect of remittances of international migrants on human capital development? If yes, then how much it may promote the education to the developing countries?

1.4 Objectives

In relation to the research questions, specific objectives of the study are as follows:

- i. To explore the nature and extent of remittances to the developing countries;
- ii. To assess the effects of remittances on the changes in average years of schooling, primary, secondary and tertiary education; and
- iii. To examine the remittance effects on the changes in education in response to gender, democracy and financial development.

1.5 Outline of the thesis

The current study is undertaken to investigate the characteristics of remittances to the developing countries and to analyze the effects of remittances on human capital development. To fulfill the objectives, the study is divided into seven chapters along with their different subsections. The first chapter explores the general backgrounds, statements, research questions, objectives and the outline of the thesis. The second chapter addresses the different important issues connected to the remittances and third world economy like diverse financial flows, current scenarios and trends, major recipients and sources of remittances, transferring channels and transaction cost etc. to analyze the first objective related to the nature and extent of remittances to the developing countries. Different development impacts of remittances are illustrated in chapter three on the basis of related empirical review in this field. Chapter four briefly explains the interrelated concepts of human capital and reveals the arguments how it can be developed through remittances and then it formulates the theoretical framework of this study. Sources of data and methodology of the study are illustrated in chapter five. Chapter six explores the major findings of the empirical analysis to realize the remittance effects on human capital. Chapter seven summarizes and concludes the study.

Chapter 2

Remittances and Third World Economy

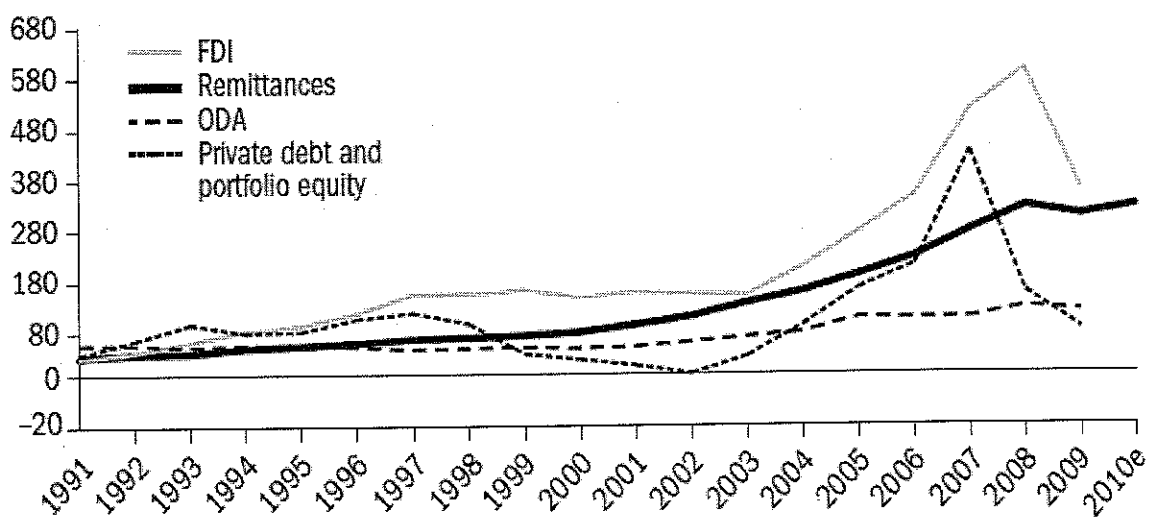
Before the 1980s, when people referred to international financial flows to developing countries, the debate would focus more on the issues related to foreign direct investment (FDI), private debt and official development assistance (ODA). However, since the late 90s, remittances of international migrants have become more prominent in the discussion on international financial flows along with the other three flows. Now the question may arise, what are reasons behind it? To get the answer of it we would like to analyze the trends and the characteristics of remittances flow to the developing countries.

2.1 Major foreign financial flows

In analyzing the trends of financial flows to developing countries, we may report that remittances flow is continuously an increasing trend since 1991 to 2010, except for the period of 2009 due to serious financial crisis of 2008 around the world. Meanwhile, FDI and private debt are much more volatile, while ODA shows more or less a stagnant situation during this period. All the mentioned four foreign financial flows to the developing countries have turned downward in 2009. After 2009 remittances flow is again on an increasing trend (Figure 2.1). In addition, remittances flow is comparatively more stable than the other flows. This is one of the reasons of why remittances flow is getting more attention during recent times together with FDI and than the other two financial flows namely private debt and ODA to the developing countries.

Figure 2.1: Remittances and other international financial flows to developing countries

US \$ billion



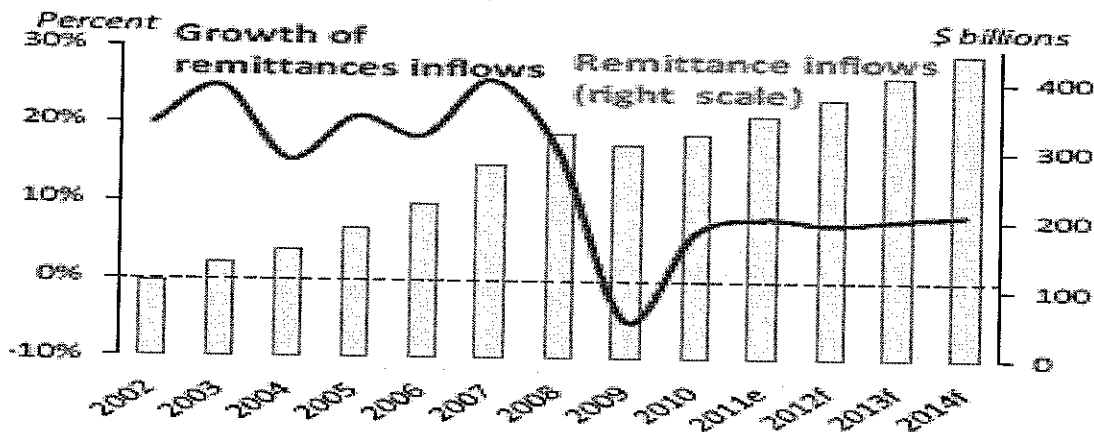
Sources: Migration and Remittances Factbook 2011, World Bank, 2011_b.

Note: Private debt excluding short term debt, FDI= Foreign Direct Investment, ODA= Official Development Assistance.

2.2 Trends of remittances

In analyzing the Figure 2.2 related to the growth of remittances inflows to developing countries, we may report that during the last decade (2002-2011) there are quite a few fluctuations in its' growth in the last few years. But, it may be the more inspiring fact that during the decade (1999-2008) the average yearly real growth rate of remittances is reported as 12.9 per cent, which is comparatively higher than the real annual growth rate of ODA (5.8 per cent) and near to FDI (11.0 per cent) (Yang, 2011). The World Bank (2011a) expects that the remittance flow to the developing countries may increase around 7 to 8 per cent annually from 2012 to 2014. But, of course, the recent and the forecasted future growth is lower than that of the previous periods like from 2002 to 2008, where it is reported as on an average 20 per cent. So, it is clear that the growth rate of remittances may increase with a slower pace at least for a few years due to the backward position of the world economy compared to the above mentioned previous periods.

Figure 2.2: Remittance flow to the developing countries



Source: Migration & Development Brief 17, Migration and Remittance unit, World Bank, 2011a

Note: Here, e is the vector of estimate and f means forecasting.

On the other hand, there may be a serious hazard in the process of remittance flow due to long-term unemployment and strict political attitudes of USA and EU towards new immigration due to the financial crisis. EU immigration reduction policy arising from the deepening and spreading debt crisis can affect the employment of existing migrants and the remittances flows to all six regions more particularly to the countries of Central Asia, Eastern Europe and the North Africa. This is because a major portion of their emigrants are in Europe. The tightening emigration policy of USA may affect the countries of Latin America and the Caribbean. Uncertainty of the world oil prices due to unbalanced world economy may possibly be the political risk in this regard for the Asian countries and more specifically for the South Asian countries. At the same time, the unstable and volatility in exchange rate can also be a risk in the outlook of remittances

around the world. The decreasing cost of sending remittances to the developing countries is the good sign for the developing economy but still now the remittance cost is remaining high in Sub-Saharan Africa compared to other developing regions like South Asia and Latin America and the Caribbean (World Bank, 2011a).

Table 2.1: Scenario of remittances flow

	2008	2009	2010	2011 _e	2012 _f	2013 _f	2014 _f
\$ billion							
All developing countries	324	307	325	351	377	406	441
East Asia and Pacific	85	85	94	101	109	117	127
South Asia	72	75	82	90	97	105	114
Central Asia and Europe	45	36	36	40	44	48	53
Middle-East and North Africa	36	34	35	36	37	39	42
Sub-Saharan Africa	22	20	21	23	24	26	28
Latin America and Caribbean	64	57	57	61	66	71	77
World	456	429	449	483	514	550	593
LDCs (UN classification)	23	24	25	27	29	32	35
Low income countries	22	23	25	28	30	33	37
Middle income	302	284	301	324	347	373	404
High income	132	123	124	132	137	144	152

Source: Outlook for Remittances 2012-2014, Migration and Remittance unit, World Bank, 2011a, based on the data from IMF Balance of Payments Statistical yearbook 2011, Central Bank, World Bank country desk and national statistical agencies.

Note: Here, e and f denote as estimate and forecast respectively.

2.3 Current scenarios

The developing countries of East Asia and Pacific region have received the largest share of remittances (\$ 101 billion) in 2011, whereas, the developing countries of Sub-Saharan Africa have received the lowest amount (\$ 23 billion) of that among the six regions around the world. The position of Sub-Saharan Africa is remained the same for the last few years. Majority of the countries in Sub-Saharan Africa are recognized as poor. Due to sever poverty and lack of proper education, they even may not be able to migrate to the developed economy and eventually the share of remittances is comparatively lower than the other developing regions like East Asia and Pacific (Table, 2.1).

The growth of remittances to the developing countries may vary from year to year across the six regions. For instances, the largest growth in 2008 is reported for the South Asia (32.6%), whereas, the largest growth in 2011 for the Central Asia and Europe (11.0%). Moreover, the interesting matter is that generally the largest growth of remittances for the low income countries

and the lowest growth for the high income countries around the world. For instances, about 12.0 % growth is reported for the low income countries and around 6.3% for the high income countries in 2011 (Table 2.2).

Table 2.2: Current and forecasted growth rate of remittances

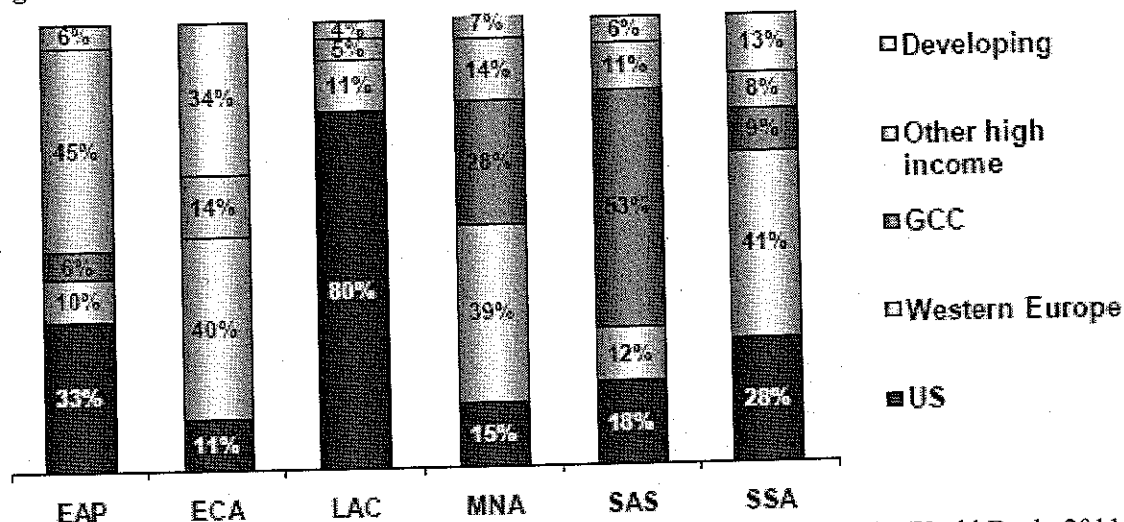
	2008	2009	2010	2011 _e	2012 _f	2013 _f	2014 _f
Growth rate (%)							
All developing countries	16.4%	-5.2%	6.0%	8.0%	7.3%	7.9%	8.8%
East Asia and Pacific	18.8%	0.4%	10.2%	7.6%	7.3%	8.0%	8.7%
South Asia	32.6%	4.8%	9.5%	10.1%	7.4%	7.9%	8.4%
Central Asia and Europe	16.3%	-19.8%	-0.1%	11.0%	8.8%	10.1%	11.4%
Middle-East and North Africa	12.0%	-6.7%	3.3%	2.6%	5.0%	5.3%	5.5%
Sub-Saharan Africa	15.8%	-7.0%	4.5%	7.4%	6.3%	6.8%	7.3%
Latin America and Caribbean	2.2%	-12.2%	1.2%	7.0%	7.6%	7.9%	8.1%
World	15.9%	-5.8%	4.6%	7.5%	6.4%	7.1%	7.7%
LDC _s (UN classification)	32.5%	2.0%	4.9%	8.5%	8.5%	9.1%	9.6%
Low income countries	32.8%	3.7%	8.9%	12.0%	9.4%	10.4%	11.5%
Middle income	15.4%	-5.9%	5.8%	7.6%	7.1%	7.6%	8.2%
High income	14.7%	-7.1%	1.1%	6.3%	4.1%	4.9%	5.7%

Source: Same as the Table 2.1

2.4 Remittance corridor

The sources of remittances to the recipient countries are in general known as remittance corridor. There are three main remittances corridors for developing regions around the world: i. Developing countries-High income OECD countries, ii. Developing countries-High income non-OECD countries and iii. Developing countries-Other developing countries. To have a concern about the sources of remittances to developing countries of six regions, we would like to explore the recent five important source regions (namely US, Western Europe, GCC (Gulf Cooperation Council) countries, Other high income countries, and Developing countries) for remittances around the world in 2010. The foremost two sources of remittances for developing countries of East Asia and Pacific are other high income countries (45%) and the US (33%). Western Europe (40%) and Developing countries (34%) are the two chief sources especially for the countries of Eastern Europe and Central Asia. A major portion of remittances (80%) to Latin America and the Caribbean countries come from US and it is the most notable source for that region. Western Europe (39%) and GCC countries (28%) are two prime sources for Middle East and North Africa. Six countries (Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and United Arab Emirates) of GCC (53%), US (18%) and the Western Europe (12%) are respectively the three core sources for South Asia. Yet again, Western Europe (41%) and the US (28%) are the two key sources of remittances for Sub-Saharan Africa (Figure 2.3).

Figure 2.3: Sources of remittances to the developing countries



Source: Migration & Development Brief 17, Migration and Remittance unit, World Bank, 2011a

2.5 Apex recipients and sending countries

Table 2.3 visualizes that India, China, Mexico, Philippines and Bangladesh are the top remittance recipients countries (in constant US \$) in 2011. These countries have had the top positions not only for the recent years but also for several years in the last two decades. Some small and low income countries like Tajikistan, Lesotho, Samoa, Moldova, Kyrgyz Republic and Nepal are the top recipient countries in 2010 around the world in respect to the proportion of GDP. From this scenario, it is clear that the economy of these countries is highly dependent on the remittances send by their emigrants.

Table 2.3: Top ten remittance-recipient countries in the world

Remittances received, 2011 (in US \$ billions)		Remittances received as a share of GDP, 2010	
India	58	Tajikistan	31
China	57	Lesotho	29
Mexico	24	Samoa	25
Philippines	23	Moldova	23
Pakistan	12	Kyrgyz Republic	21
Bangladesh	12	Nepal	20
Nigeria	11	Tonga	20
Vietnam	9	Lebanon	20
Egypt	8	Kosovo	17
Lebanon	8	El Salvador	16

Sources: World Bank, 2011a.

The following twenty countries listed in Table 2.4 can play an important role to the economic development of many low income and least developing countries like Tajikistan, Lesotho whose major portion of their country budget may come from the remittances of their international migrants. Hence, cooperation and coordination between the recipient and sending countries are essential for the continuous remittance flow to the developing countries. Interestingly, Lebanon is in the both remittance sending and recipients' list. This is because many migrants from Sub-Saharan Africa and Asia are working in Lebanon and similarly a lot of emigrants of Lebanon are working in the Western Europe and the United States.

Table 2.4: Top ten remittance-sending countries in the world

	Remittances sending, 2009 (in US \$ billions)		Remittances sending as a share of GDP, 2009
United States	48.3	Luxembourg	20
Saudi Arabia	26.0	Lebanon	17
Switzerland	19.6	Oman	10
Russian Federation	18.6	Maldives	9
Germany	15.9	Kuwait	8
Italy	13.0	Bahrain	7
Spain	12.6	Saudi Arabia	6
Luxembourg	10.6	Guinea-Bissau	5
Kuwait	9.9	Guyana	5
Netherlands	8.1	Tonga	4

Source: Migration and Remittances Factbook 2011, World Bank, 2011_b.

2.6 Transferring channels

Formal and informal are the two main channels through which emigrants generally send their money to their home country. There are various options in the formal channel but most likely transferring channel for remittances is banking transfer. Money transfer companies such as Money Gram, Western Union etc., credit card companies, regular mail services work as well in this regard. In recent times there are some other different companies also offered money transfer services, for instances, money transfer using mobile phones or through supermarket companies. Besides these formal channels, 'Hundi', 'Hawala' and courier services are more common in informal channels (Vargas-Lundius et al., 2008). More generally 'Hundi' and 'Hawala' transfer systems are considered as illegal ways of money transfer. This is because there is no official record of such flows as well as financial institutes especially the banking sector of recipients' country can't take any benefit for overcoming the liquidity and credit constraints of the economy while money is transferred through informal channels. On the other hand, the traditional big money lenders can take the financial benefit from the 'Hundi' and 'Hawala' system (Hariharan, 2012). For these reasons informal channels are usually known as money transfer without movements of money. Now the question arises, why migrants send their money through informal

channels? Basically, in the remote areas where banking facilities are not available, there may be one of the possible reasons of transferring remittances using informal channels. It is reported that migrants generally use to informal channels due to high cost to formal financial services (Vargas-Lundius et al., 2008).

Informal channels are more common in Africa and Asia, for instances, 'Hundi' system is frequently using channels in Bangladesh for sending remittances more particularly from the Middle East and its amount around 40 per cent of total remittances. Similarly, 'Hawala' system is more popular in Sudan and around 85 per cent of total remittances are routed through this process. But, the reverse scenario is for Latin America and Caribbean regions where majority of the migrants use to formal channel to transfer their money and non-banking financial services more likely the Western Union are widely used to transfer remittances from United States to Latin American and the Caribbean countries (IDB-MIF, 2004, p., 13). It is true that, for macro-level research on migration and remittances have to depend on the officially recoded namely formal flows of remittances as there is no evidence of informal flows. To reduce the informal flows, at first 'banking the unbanked' i.e., banking services should be provided up to the grass root levels even among those peoples who are not yet ready to receive those services. Secondly, awareness programs along with strict rules regarding informal ways of money transfer are necessary for all developing regions. In addition, it is necessary to keep the record at national and corridor levels for improved data in this regard.

2.7 Transaction cost

Remittance cost is an important matter when we argue about remittances and developing economy. If transferring cost continues to remain high then it may have a negative impact on the large proportion of poor migrants, their families at home country and their economies as well. This is because, in case of small transfers of remittances, most of the cases migrants would like to send their remittances through informal channels like export-import operators, currency dealers and hand-carried by migrants themselves (Gupta et al., 2009) due to higher costs related to formal transfer. With a bit of luck, average remittance transferring costs are decreasing globally and there are three significant reasons behind it together with others. First reason can be the result of the agreement of G₈ and G₂₀ countries. As everyone is concerned that the heads of these states and Governments took decision in July 2009 to reduce worldwide remittances cost on an average from 10 to 5 percent by the subsequent 5 years. Second, it may be due to increasing market competition among the remittance corridors and thirdly wider application of cheaper, updated and more convenient remittances transfer technologies. Though, many poor migrants don't like or migrants' families don't have access to these modern technologies of remittances transfers due to lack of proper education, motivation and awareness.

Remittance cost may vary for different factors such as remitted amount, regulatory environment, technological innovation, types of services used, transfer location and destination. Taking data from eleven developing countries from Asia, Africa and Europe, Orozco (2003) shows that bank

transfers have had a relatively low cost than other money transfer companies like Western Union. Average remittance cost has declined from 8.8 per cent in 2008 to 7.3 per cent in 2011, due to decreasing costs of high volume remittance corridors. For example, from United Kingdom to India and Bangladesh, United States to Mexico as well as France to North African countries.

Table 2.5: Average remittances cost in different regions

Regions	Weighted average cost for transferring US \$ 200 in 2011
South Asia	9.6
Latin America and Caribbean	12.8
Europe and Central Asia	14.8
Sub-Saharan Africa	16.6
East Asia and Pacific	18.0
Middle East and North Africa	19.0

Source: World Bank, 2011_a.

Note: Average cost is weighted by bilateral remittance flows.

Among the six developing regions, average weighted remittance cost is higher for Middle East & North Africa and East Asia & Pacific regions and almost double compared to South Asian region (Table 2.5). For instances, the remittance transfer from US to china or France to Morocco is relatively expensive than that from the US or UK to Nigeria. On the other hand, World Bank (2011a) reports that simple average cost for sending remittances is the highest in Sub-Saharan Africa due to a lot of giant corridors along with relatively larger costs in that region. Moreover, Nigeria has had a lower cost of remittances compared to many Sub-Saharan countries. Suki (2007) reports that the remittance cost from the United States to Latin America and the Caribbean have declined around 50 per cent since 2000 due to modern technologies of service providers and strong competition among them. Table 2.5 also represents that the cost is relatively cheaper in Latin America and cheapest in South Asia.

The current chapter is conducted to address the first objective of the current study related to the nature and extent of remittances to the developing countries. Consequently it explores the foremost financial flows to the developing regions, trends of remittance flow, current and forecasted remittance flows of World Bank, transferring channels and the cost of remittances. It also shows the top recipients and sources countries of remittances at the current time. Any kind of research desires a thorough literature review and for this reason the next chapter is devoted for focusing the development impacts of remittances with evidences.

Chapter 3

Remittances and Development Impacts

There are two major pathways through which remittances can promote greater development of poor and low income developing economies. First, remittances have the potential to improve the wellbeing of both the migrants' residents in the destination and the other family members left in the home country. This is because there may be a possibility of creating market for trade and commerce of products, which are not yet traded between these two parties. Migrants' other family members and relatives of home country can get a new connection for trading of their local available products in the market of abroad where their family members and relatives reside, but of course, it depends on the emigration rules of each and every country. These effects may be even stronger while remittances flow to the disadvantaged and needy groups of the population, hence, it may contribute to poverty reductions. Second, the sending remittances of migrants can play a vital role to flourish the financial market, enhancing small-scale and household entrepreneurs, and reducing financial market imperfection to promote the investments in productive physical and human capital development.

3.1 Defining remittances

The concept of remittances is very important for clear understanding of the story in recent study. Remittances are simply considered as the money transferred by the international migrants from the country of destination to their country of origin. In our study, remittances are assembled as the sum of workers' remittances, employee compensations and migrants' transfers based on the definition of Balance of Payment Statics Yearbook of IMF (International Monetary Fund). Workers' remittances are the current transfers of migrant workers who are employed in others' economy and resided in that economy for working purposes intended for a particular period say one year or more than that. For instances, the transfer of industrial laborers and workers in hotel and restaurants etc. Employee compensations refers to the transfers from the income or honorarium of non-residents' employees for works done for the residents of other economy. For example, transfers from the payments of development experts, researchers, ambassadors, consultants, students' stipend and scholarship, and the other benefits like cash in kind and etc. Migrants' transfers are the financial items that arise due to change of residences and/or migration of persons from one economy to another. It is generally measured as a part of capital account whereas workers' remittances and employee compensations are accounted as the components of current account.

3.2 Evidences on the development effects of remittances

One may raise the question, why remittance flow is considered being important for growth? First, remittance is the largest source of foreign financial flow for many low income developing countries. Again, more interestingly noticeable that remittances send by the international migrants to the country of their origin are more than doubled as large as foreign aid and assistances across the world. Remittances may be effective to poverty reduction, social welfare

and economic growth in both receiving and sending countries. Remittances may lead to bring an economic gain to the developing countries if it is used as more productive investment more likely to enlarging entrepreneurship and education for human capital development. In addition, remittances may have potentials to contribute to poverty alleviation, social inequality and creating macro-economic stability through development of human capital. Let's observe its' different effects from the following empirical review of available relevant literatures:

3.2.1 Remittances and entrepreneurs' development

Majority of the research concerning the development effects of remittances on different issues like health, education, entrepreneurs' activity, poverty and economic development etc. uses the micro level data for particular countries and, of course, a few studies also at macro level. A number of researchers like Massy and Parrado (1998), Woodruff and Zenteno (2001), Maimbo and Ratha (2005) and Yang (2006) argue that remittances can contribute significantly to promote the entrepreneurship at different levels removing the credit constraints. Some of these studies also explore that remittances can promote the access to self-employment and may possibly help to enlarging the investments in micro-enterprises and may improve the health status more particularly to the migrants' households. From these facts it is obvious that migrants' reserved remittances can be one of the important sources of investment for new and large entrepreneurships for many low income and least developing countries and that enterprises may create employment opportunities for the unemployed rural youths in the society.

3.2.2 Remittances, poverty and inequality

Several studies related to the remittances and poverty (e.g., Lopez-Cordova, 2005; Taylor et al., 2005; Yang and Martinez, 2005; Adams, 2006_a; Pernia, 2006) reveal the success stories to reducing the level of poverty and report that it has greater influence on its' incidences. In the same way, using household level data from Ghana, Adams (2006_b) and Adams et al. (2008) strongly argue that remittances from abroad may reduce poverty especially of recipients' households. Remittances may have potentials to decrease income inequalities in communities with a tradition of long-term migration but it may increase the economic inequalities within communities at the initial stages of migration (Papoport and Docquier, 2006). At macro-level, using data from 71 developing countries Adams (2005) reports that both international and internal remittances can significantly reduce not only the level of poverty but also its' depth and severity. He also argues that the remittances from international migrants may have a larger effect on poverty reduction than that of internal migrants. It may be due to comparatively a large volume of remittances from international migrants than internals. Again, using household level panel data from the ten Latin American countries Acosta et al. (2008) argue that international remittances may well reduce the poverty but they report the mixed effects (positive and negative) on income inequality using three different instruments of remittances. Recently, Gupta et al. (2009) show that remittances, which are considered as a sustained and non-public transfer by the migrants, have had a direct positive effect on poverty in Sub-Saharan Africa and they also report that it can uplift the financial conditions of households. This is because its' flow may promote an

abundant access to bank for relevant households. However, the effects of remittances on inequality and poverty may be mixed blessings in different societies, communities and countries.

3.2.3 Remittances, productivity and rural development

Increased agricultural productivity is gained in Botswana, Lesotho and Malawi in the long run due to larger farm investment supported by migrants' remittances, though relatively lower productions are realized for a short period at the initial stages of migration due to loss of labour force (Lucas, 1987). Similarly, Rozelle et al. (1999) find the negative impact of migration on the output level in rural China but latterly argue that the decreasing output is partly compensated by the greater access to capital from the remittances. International remittances may significantly contribute to the regional economic development and can improve the standard of living to the Southern Morocco (Hass, 2005). Moreover, the effects of emigrants' remittances on agriculture and rural development, particularly on rural employment may be context specific as it depends directly on the nature and extent of household expenditure, labour allocation and investment level of migrant's household, and in some way more importantly on the multiplier effects of remittances (Vargas-Lundius et al., 2008).

3.2.4 Remittances, growth and financial development

A quite number of studies reveal the relationship among remittances, financial development and growth. At macro level, Aggarwal et al. (2006) show that workers' remittances can promote the financial development of developing countries and may enhance the economic growth. In Contrast, Catrinescu et al. (2006) find a very weak positive effect of remittances on long-run macroeconomic growth although they emphasize on appropriate institutions and sound policies to achieving a long term developmental effects of remittances. Remittances may improve the economic growth of countries with less developed financial strength as it can be an important option for enlarging the financial investment overcoming the liquidity problems of financial intermediaries more likely to the banking sector. It may help in promoting the growth as it can work as an alternative channel of investment particularly when improper and weak functioning of credit markets fail to meet up the credit needs of the poor households (Giuliana and Ruiz-Arranz, 2009). Mundaca (2009) also shows a long term positive effect of remittances on growth due to increasing trends of financial intermediation, which is considered as a response of growth to remittances. She also mentions the importance of creating available financial services for better use of remittances to the general people as well as for boosting the economic growth as a whole. There may be a robust linkage between remittances and financial growth oriented development (Aggarwal et al., 2011) and again they strongly argue that remittances have positive and significant impact on financial improvement to developing countries.

This chapter explores the different development effects of remittances on the basis of relevant available facts and figures. It is clear from the evidences that remittances of international migrants are potential to promote different development activities in developing countries. The next chapter explores more specifically the effects of remittances on human capital.

Chapter 4

Remittances and Human Capital

Human capital development is becoming an important concern around the world during the period of globalization. More attractively, peoples are considered as the most critical asset to an information economy whereas the most talented and informative peoples can have more opportunities to preside over the entire economy. From that perspective, physical or financial capital can't be a prominent source of competitive advantage in the long-run to an emerging economy, whereas, peoples' know-how or their abilities, experiences, competencies and skills as well as access to human capital can be a powerful driver to building the economy more competitive. But the developing countries are not able enough to invest in human capital accumulation due to lack of resources. Moreover, remittances to developing countries can help in this regard through increased investment in education.

4.1 Understanding human capital

Almost all the researchers and experts in the field of human capital just technically avoid to clearly defining the term itself. Even the famous author Gary S. Becker, who is thought to be pioneer in this line and has received Nobel Prize for his renowned article entitled 'Human Capital', wouldn't define the term evidently. He reports that spending on training, education and medical care can promote human capital but not financial or physical capital. This is because we can't disconnect a human being from his or her health and/or values, skills and knowledge but it can be the possible way to move the physical and financial capital at the same time according to the desires of the proprietor (Becker, 1993, p., 16). Others like Lucas (1988) highlights the measures of human capital based on feasible expenditure on education and Schultz (1992) explores about human capital investment. But, Martin Husz is found different form the other authors who defines that "By human capital we mean the time, experiences, knowledge and abilities of an individual household or generation, which can be used in the production process" (Husz, 1998, p., 9). Moreover, human capital is an intangible asset that represents the peoples' competencies, capabilities and commitments with in a particular arena or framework like organization, society or country. In relation to the structure of a society education, trainings, medicals' cares etc. are different ways to creating and developing human into capital. Among them education is considered as the most important mechanism for the development of human capital.

4.2 Effects of remittances on human capital

A large number of household studies have already been done more specifically in the field of remittances and human capital. Using micro-level or household data, empirical studies related to the impact of remittances on education have conducted by Hanson and Woodruff (2003) in Mexico, Edwards and Ureta (2003) in El Salvador, Lopez-Cordova (2005) in Mexico and Yang (2006) in case of Philippines. All of them suggest that remittances may contribute to the improved schooling of children relaxing the credit and liquidity constraints of poor households.

Kanaiaupuni and Donato (1999), Lopez-Cordova (2005) as well as Hildebrandt and McKenzie (2005) study the impact of remittances on health, more specifically on infant mortality and birth weight and they report that remittances might be related with higher weight of children at birth at least to the remittance recipients' households. It may also help to the lower infant mortality. This is because it can provide and motivate the pregnant women to take the improved and healthy balanced diet along with appropriate medical check-up on a regular basis at prenatal period.

Studies related to remittances and education, Calero et al. (2009) report that remittances can affect the human capital investments and explore the issues using Ecuadorian case. Their findings report that remittances can increase the enrolment of school children and may reduce the incidence of child labor in rural areas especially for girls. From that sense, remittances may affect the human capital investment through relaxing the liquidity constraints and may facilitate to smoothing household consumption and can reduce the vulnerability to financial shock. It also reveals that the aggregate level shocks are correlated with increased work activities, while remittances are invested to smooth education and households face these shocks. Amuedo-Dorantes and Pozo (2010) analyze the effects of remittances on school attendance of children in the Dominican Republic and explore a positive response of rising school attendance for girls with the receipt of remittances and more particularly the secondary school children's attendance. They also explain that the higher order brothers and sisters are mostly benefitted from it. In addition, when they expand the samples to include the children in the migrants' households they find the negative impacts of migration on the children's school attendance, though it may cancel-out by the positive impact of remittances. Moreover, Remittances can help the remaining family members, especially the children of migrants' family to go to school by easing or removing the credit constraints (Dustmann and Glitz, 2011).

Using original bilateral data on remittances, Docquier et al. (2011) assess the relationship between remittances and migrants' education. Their theoretical model predicts that remittances and migrants relationship can be quite ambiguous and may depend on the immigration policy undertaken by the destination country. Afterwards, their empirical tested model also strongly supports the theoretical model as it also proves that the sign and magnitude of these relationships are determined by the immigration policy. So, skilled migrants can send more remittances if the destination country may have more restricted policy. Bredl (2011) also finds a significant effect of remittances on education using the data from three Haitian communities and supports the positive idea of findings and argues that remittances can play a vital role to preventing the budget constraints of poor households where financial shortage is recognized as the crucial character in schooling decision. In contrast, using a large set of national representative survey data, Hu (2012) examines the impact of rural-urban migration and remittances on the secondary school attendance of left behind children in China. Findings show that there may be a negative effect on the school attendance in rural areas due to the absence of adult household members, although it emphasizes that remittances can reimburse the loss to some extent. The effects are more prominent especially for girls and for the children of poor households due to the disadvantaged

positions of girls in rural China and the liquidity constraints of poor rural households respectively.

The recent study of Ziesemer (2012) views the positive total effects of remittances on the growth rates of per capita GDP, literacy and the level of investment. It also reports that the effects of net migration is negatively impacted on literacy and the level of investment but have had a positive relationship with growth. On the other hand, Alcaraz et al. (2012) study the impacts of remittances on school attendance and child labor to the recipients of Mexican households and report a negative shock on remittance receipt during 2008-2009 United States' recessions. They find a significant reduction of school attendance and a significant increase in child labor due to the negative shock of remittances. In another empirical investigation of Migration, human capital and growth by Maria and Lazarova (2012) study the impact of skill emigration on growth and human capital formation in some developing countries and they find the statistically significant impact of migration on human capital formation both on its' level and composition. They report the mixed blessings about its' effects on productivity growth as they find indeed both the winners and losers among the developing countries and express that it may depend on the advancement of technological sophistication to each individual developing county. From the above literatures related to remittances and human capital investment, it is clear that all studies are conducted using household level information.

4.3 Theoretical framework

It is still an ongoing debate whether remittances may help to the long term growth through financial and human capital development or disrupt the long run growth due to the substitution of labors and creating 'Dutch disease' effects. We also think along with other researchers and development think-tanks in this line that it is important to come to a consensus about the flow of remittances and long run economic growth as the volume of remittances to developing countries have increased massively during the last decade. Workers' remittances are the second largest financial flow to the developing countries, whereas, foreign direct investment is considered as the largest flow, though we are not focusing that issue in the recent study. Our major concern is confined to find out and exploring the relationship between remittances and human capital development. Let's have a look on the debate of human capital and growth.

Human capital can play a significant role in promoting the long-run sustained growth (Romer, 1990). Just after two years Mankiw et al. (1992) explore that human capital can be an ordinary factor and may be unable to bring into being endogenous growth but report a strong relationship between enrolment rates and per capita GDP growth. Despite the fact, subsequently Benhabib and Spiegel (1994), Bils and Klenow (2000) and Pritchett (2001) strongly argue that human capital development has a forceful contribution to economic growth. Using panel data from 1960 to 2000, in the recent study of Cohen and Soto (2007) show the constructive impact of human accumulation on economic growth as they find the significant positive coefficients for average years of schooling. From the above mentioned facts and figures of human capital it is clear that

human capital development can be one of the important drivers of economic growth and we are interested to assess the impact of remittances on human capital development assuming that remittances have had a long term positive impact on economic growth.

Education and training can have a large number of benefits beyond the economic growth, such as lower infant mortality, lower maternal mortality, good health and nutrition etc. This is because all kinds of education are helpful to increase the cognitive skills of human being for further implications. But, the impacts of education as well as schooling on economic growth can vary extensively across countries due to main three reasons (Pritchett, 2001). First, the weak institutional or governance structures may have a negative effect on human capital accumulation and that can lower the growth of the economy in general. Second, if the supply of educated manpower expands tremendously while the demand remains the same, the marginal returns to education may possibly be lowered. Third, lower educational quality has slower development or even no improvements of human capital and consequently that may have negative effects to the economic growth. Here, one point can be considered as opportunity that the extra supply of educated and skilled manpower of developing countries can migrate to the developed economies and may work as potential human capital and may send their income as remittances to build up their local and regional economies. In this way remittances can assist to a country's long term growth and development process.

From the literature review, it is clear that a lot of research reports the different developmental impacts of remittances but a very few studies analyze the effects of remittances to developing countries on human capital at macro level. Our study can contribute to the literature resource by investigating this issue, exploring the effects of remittances more particularly to the advancement of education. In addition, such kind of studies can be demanded more and more for making suitable policy guidelines for sustainable economic development to the developing nations overcoming the ongoing long term financial crisis around the world.

The current chapter represents the concept of human capital and explores the arguments regarding the development effects of remittances with special emphasis on human capital to find out the laps and gaps in this field and to formulate the theoretical framework of the study. It also briefly discusses the linkage between growth and human capital. The next chapter discusses the empirical ways to analyse the hypothetical model.

Chapter 5

Data and Methodology

Methodology is very important for any kind of research. This is because the reliability of a research depends on the quality and the appropriateness of the methodology.

5.1 Empirical model

We apply the generalized least square (GLS) model to analyze the effects of remittances of international migrants on the changes in human capital. The model of changes in human capital is a function of the fundamental interested variable incoming remittances of recipients' countries and a set of control variables. Hence, the econometric representation is as follows:

$$HC_{it} - HC_{i,t-5} = \alpha_i + \beta_1 R_{i,t-k} + \beta_2 X_{i,t-5} + \varepsilon_{it} \dots\dots\dots (1)$$

Where i indicates the cross section or the country, t denotes the time period and k indicates the lag; HC refers to the accumulation of human capital; R serves as remittances to the developing countries; X captures the set of control variables; α_i is the unobserved country specific fixed effect and ε_{it} denotes the error term; $HC_{it} - HC_{i,t-5}$ represents the changes in human capital between 5 years. Therefore, the variable in the left hand side of the model is changes in human capital between 5 years ($HC_{it} - HC_{i,t-5}$) as our data on educational attainment is on five years average. We are interested to test the β_1 , whether the coefficient or the marginal effect of remittances on the changes in human capital is statistically significant or not.

Human capital is first proxied by the educational attainment which is measured as the overall average years of schooling over 25 age population. Besides we use the gross enrolment and attendant at primary, secondary and tertiary level of education. Remittance to the developing countries is proxied by the proportion of remittances to GDP. In the model, we use the 10 years lag of remittances for the primary and secondary enrollment as well as for the average years of schooling whereas we use the 5 years lag of that for the tertiary enrollment. This is because we assume that the 25 over population have received the benefit from the remittances at primary and secondary level at least the 10 years before and at tertiary level at least the 5 years back. We also assume that 25+ people with average years of schooling have received the remittance benefit on an average 10 years before. For that reason $k = 10$, for the average years of schooling, primary and secondary enrollment and $k = 5$, for the tertiary enrollment. The endogeneity problem is removed in the model due to the lag of 10 years and it is tested and indicated by the Breusch and Pagan Lagrangian multiplier test for the random effects (Baum, 2006, pp: 229). Moreover the model is represented as the random-effects GLS (Generalized Least Square) regression model.

The regression model includes a number of control variables. First we add per capita GDP in constant US \$ 2000 as a measure of the level of economic development. This is because sending kids to school or participation of boys and girls in higher education can particularly depend on

the economic and financial ability of an individual as well as his or her households' income (Amuedo-Dorantes and Pozo, 2010) and that may directly be captured by the per capita income level. We also add the per capita GDP growth as a control because human capital accumulation more specifically the school enrollment rates have had a strong relation with per capita GDP growth (Mankiw et al., 1992; Pritchett, 2001; Cohen and Soto, 2007).

The openness in current and capital account have had positive effects on financial development (Chinn and Ito, 2002). Trade openness can lead to the increased human capital through investment in education reducing credit and liquidity constraints. Trade openness in our model is expressed as the proportion of exports plus imports of goods and services to GDP. Leff (1969) argue from the cross country analysis that the higher aggregate savings rate can play a significant role to the improved level of per capita income. Similarly increased gross domestic savings may promote the long run productive investment like education and health. This is because the financial sector of a country can be more capable to invest in productive sectors and to meet up the credit demands to the private sectors due to a large domestic savings. From that point of view we include the share of gross domestic savings to GDP as a control.

Using a cross country analysis Agell et al. (1997) report the shifting (from negative to positive) relationship between public expenditure and growth to the OECD countries. Though their findings are highly criticized by the Folster and Henrekson (1999) and they strongly argue that there can be a negative relationship between government expenditure and growth. But, government spending on education may have a higher impact on poverty reduction and increased productivity growth (Fan et al., 2000) and the increased educational attainment can be an important determinant of economic growth and development. Consequently, we incorporate the government expenditure as a share of GDP as a control to the model.

Helliwell (1994) finds relatively a less significant positive effect of democracy on education. Afterwards Lake and Baum (2001), Feng (2003), Baum and Lake (2003) and Brown and Hunter (2004) report and strongly argue that democracy have had a significant positive effect on human capital accumulation. Democracy can have a positive relationship with human capital development because democratically elected government may well try to invest more on public education and more specifically on primary education (Stasavage, 2005) and similarly education can progressively foresee the democracy as well (Bobba and Coviello, 2006). Recently Klomp and de Haan (2012) also find positive relationship between democracy and human capital. Therefore, we add political development representing the level of democracy proxies by the Polity2 variable as a control in our model.

In addition we include some demographic variables to the model as control such as working population, defined as the proportion of total population between 15 to 64 years; rural population, expressed as the share of total population; and the annual population growth. In relation to the dependent variables we use the lag of 5 years for all the controls. Variables related

to trade openness, credit to GDP and per capita GDP are specified with natural log. Descriptive statistics, correlation matrix among the variables and a complete list of countries that are included in the model are represented in Appendices.

5.2 Data sources

A dataset is developed including up to 110 countries between 1960 and 2010. Most of the data is taken from the World Development Indicators (WDI) of the World Bank (2012), the Barro and Lee (2010) dataset on educational attainment and the Polity IV score dataset on democratic development. Our dataset is an unbalanced panel. The proportion of total population in primary, secondary and tertiary enrollment and attendant along with the average years of schooling data are taken from the Barro and Lee series. Data related to the remittances, per capita GDP, trade openness, government spending to GDP, gross domestic savings to GDP, population between 15 to 64 years, rural population, population growth, credit to GDP, per capita GDP growth are all collected from the WDI. Data on political development representing the level of democracy is obtained from the Polity IV score panel. The sources of data in details are also represented in appendices' Table A2.

5.3 Global and regional model

We also estimate the model for six different regions besides the model for all countries together. In our models, we demonstrate the estimated coefficients along with their standard errors, R^2 value indicating the fitness of the model.

This is all about the methodology of the study and the next chapter discusses the main findings of our empirical research.

Chapter 6

Results and Discussions

This chapter first represents the outcomes of the empirical investigation and accordingly explains the analytical results along with coherent facts and figures. From that features, the ongoing chapter is recognized as the heart of this study.

6.1 Global changes in human capital

Table 6.1 reports the estimation of equation (1) to the changes in average years of schooling as well as the changes in the share of total population at primary, secondary and tertiary education assuming that interested variable remittances is exogenous and sufficiently well measured. We control for the factors listed in the methodology in all regression. The model represents that remittances of international migrants have a positive and significant effect on the changes in average years of schooling to the developing countries around the world. It is apparent from the model that if remittances to GDP increase by a one percentage point then the changes in average years of schooling within 5 years can increase by a 0.007 per cent. From that sense if the remittance growth continues to an increasing trend then after a certain period let's say after 50 years there may be a significant increase to the global average years of schooling and we may consider it as an important contribution of remittances to the improvement of education.

Our model reports the insignificant effects of remittances to the changes in primary education. It can be happened due to all most free and/or low cost of education at primary level compared to the secondary and tertiary education all over the world. The majority of governments of developing and low income countries provide huge amount of subsidies for increased enrollment at primary level of education. This is because it is one of the important conditions of the foreign and external funding agency and development organizations for the developing economy. More surprising fact is that apart from the primary level, our model again reports the positive and significant effects of remittances on the changes in gross enrollment at secondary level of education. Though in secondary level there are also opportunity costs to go to school instead of working in many developing countries. This is because remittances can increase the financial power of a family and may have therefore more resources to spend on secondary education. It reports that if the proportion of remittances to GDP increase by a one percentage point then it can bring about a 0.058 percentage point increase to the changes in secondary enrollment in every five years (Table 6.1). Our finding is supported by the argument of Lopez-Cordova (2005) and Dorantes and Pozo (2010) related to the significant effects of remittances to the secondary school education. Moreover, the model reports the insignificant effects of remittances to the changes in tertiary enrollment and attendant. It may be due to the fact that majority of the students at tertiary level be able to earn some money by doing a part time job but it may depend on the employment opportunities to the developing countries.

Table 6.1: Random effects of remittances on human capital development

	Average years of schooling	Primary education	Secondary education	Tertiary education
Working population	-0.015 (0.005)***	-0.068 (0.072)	-0.123 (0.064)**	0.017 (0.028)
Trade openness	0.079 (0.038)**	-0.444 (0.480)	0.136 (0.436)	-0.320 (0.208)
Credit to GDP	0.037 (0.028)	-0.041 (0.350)	0.295 (0.316)	-0.181 (0.147)
Rural population	-0.001 (0.001)	-0.015 (0.016)	0.014 (0.015)	-0.004 (0.007)
Population growth	0.003 (0.021)	0.487 (0.271)**	-0.361 (0.239)	-0.015 (0.106)
Per capita GDP growth	0.004 (0.006)	-0.015 (0.075)	-0.011 (0.066)	-0.014 (0.025)
Government spending to GDP	0.003 (0.003)	-0.027 (0.042)	0.045 (0.038)	0.013 (0.017)
Per capita GDP	0.0160 (0.028)	-0.969 (0.362)	-0.012 (0.328)	0.402 (0.150)***
Gross domestic savings to GDP	0.007 (0.002)***	0.019 (0.026)	0.062 (0.023)***	0.011 (0.011)
Polity2	0.005 (0.003)**	0.103 (0.042)***	0.018 (0.037)	-0.007 (0.016)
Remittances to GDP	0.007 (0.002)***	-0.009 (0.037)	0.058 (0.033)**	0.017 (0.017)
Constant	1.294 (0.417)***	12.395 (5.216)***	7.989 (4.67)**	-1.086 (2.122)
No. of observations	477	477	477	477
Number of ID (countries)	110	110	110	110
R-squared	0.104	0.273	0.044	0.145

Note: Standard error in parentheses. ***, ** and * represent the level significance respectively at 1%, 5% and 10%.

Table 6.1 also shows that working age population may have negative effects to the changes in average years of schooling as well as in secondary education. It reports the significant positive effect of trade openness to the changes in average years of schooling. Population growth may have positive effects to the changes in primary enrollment rate. Our model also reports the highly significant positive effects of per capita GDP growth to the changes in higher level of education to the developing countries around the world. According to the expectation, the share of gross domestic savings to GDP has highly significant positive effects to the changes in average years of schooling as well as in the secondary level of education though it shows the insignificant effects to primary and tertiary level. Democratic development may be able to bring positive contribution on the changes in average years of schooling as well as in the primary education since the relevant coefficients are positive and significant in our model.

6.2 Regional changes in human capital

We analyze the data separately for six different regions to have a concern about the effects of remittances to the advancement of education in different developing regions. Remittances have significant positive effects on the changes in tertiary enrollment in South Asia. It shows that a one percentage point increase in remittances to GDP can increase the changes in tertiary enrollment by around a 0.438 per cent in each five years. One thing is clearly different that the model at global level represents the insignificant effect of remittances at tertiary level of education whereas at regional level the model for South Asia reports the significant positive impact of that. The coefficient of tertiary education in South Asia indicates that remittances have a large effect on the changes in tertiary education to that region. It may be due to the high cost of tertiary education and a lack of part time employment opportunities to the tertiary level students in that region. Therefore, remittances can help to increase the tertiary enrollment rate in South Asia.

Our model doesn't report any significant effect of remittances to each three levels of education and even for average years of schooling to the rest of the Asian countries. Low levels of democracy and weak functioning of institutions may be the possible reasons for it. It also shows the insignificant coefficients to the average schooling years together with all three levels of education to Sub-Saharan Africa. It may be due to less government involvement, higher incidence of poverty and lower financial development of Sub-Saharan economy compared to other developing regions like Asia, North Africa and Latin America. The people of Sub-Saharan Africa may first prioritize to meet-up their other basic necessities like food and clothing instead of education using the remittances. We represent some robustness test for this matter in our next part of discussions.

Our model finds the insignificant impact of remittances to all three levels of education along with average years of schooling for OECD countries. It may be due to the fact that the countries of this region receive very little amount of remittances and/or even remittance inflows are nil for many OECD countries. It is true that high income OECD countries like the USA, UK, France, Germany, Netherlands, Belgium, Australia and etc. are the major sources of remittances for the developing countries. Therefore, remittances don't have any significant contribution to the improvement of education in the OECD countries. It shows that remittances to GDP may have a positive effect (0.093) on the changes in tertiary education to the Middle East and North African region though it has a highly significant larger negative effect (-0.397) on the changes in primary education compared to the effects in tertiary education. This is because the countries in Middle East like United Arab Emirates, Saudi Arabia, Kuwait, Qatar, and Oman etc. are also an important source of remittances to the developing countries. But, remittances can contribute a lot to the advancement in changing the average schooling years to Latin America and the Caribbean region as the coefficient of remittances characterize extremely significant positive effect for it. According to the estimation, if remittances to GDP in Latin America and the Caribbean increase

by a one percentage point then there is a possibility to increase the changes in average years of schooling by around a 0.034 per cent in every five years to that region.

Table 6.2: Random effects of remittances on human capital development in different regions

	Average years of Schooling	Primary education	Secondary education	Tertiary education
South Asia	0.041	-0.651	0.254	0.438
	(0.069)	(0.810)	(0.566)	(0.253)**
No. of observations	18	18	18	18
Number of ID (countries)	4	4	4	4
R-squared	0.690	0.867	0.771	0.884
Rest of the Asia	-0.075	0.496	-0.841	0.045
	(.056)	(1.053)	(0.928)	(0.154)
No. of observations	41	41	41	41
Number of ID (countries)	11	11	11	11
R-squared	0.327	0.261	0.122	0.500
Sub-Saharan Africa	0.003	-0.010	0.009	0.001
	(0.004)	(.044)	(0.040)	(.008)
No. of observations	122	122	122	122
Number of ID (countries)	66	66	66	66
R-squared	0.234	0.2245	0.154	0.136
Middle East and North Africa	-0.001	-0.397	0.047	0.093
	(0.009)	(0.091)***	(.095)	(0.044)**
No. of observations	37	37	37	37
Number of ID (countries)	8	8	8	8
R-squared	0.765	0.777	0.611	0.7968
Latin America and Caribbean	0.034	-0.032	0.096	0.105
	(0.015)***	(0.175)	(0.161)	(0.073)
No. of observations	91	91	91	91
Number of ID (countries)	20	20	20	20
R-squared	0.201	0.380	0.264	0.156
OECD countries	0.026	0.151	-0.094	0.116
	(0.032)	(0.411)	(0.390)	(.203)
No. of observations	148	148	148	148
Number of ID (countries)	38	38	38	38
R-squared	0.162	0.177	0.112	0.106

Note: Standard error in parentheses. ***, ** and * represent the level significance respectively at 1%, 5% and 10%.

6.3 Remittances, gender and human capital

We also analyze the data for males and females to report separately the remittance effects on males' and females' education. The model represents the positive and significant effects of remittances to the average schooling years and secondary education both for males and females. It shows that a one percentage point increase in remittances to GDP may increase the changes in

secondary enrollment and attendant by around 0.056 per cent for female and by around 0.061 per cent for male in each five years. Our estimation supports the Bansak and Chezum (2009) that remittances may have large effect for male compared to female at secondary level. But in case of average years of schooling, the coefficient of remittances in our model is a bit larger for female (0.008) than that of male (0.007). This finding suggests that the effects of remittances to the -

Table 6.3: Random effects of remittances on human capital development in response to gender, democracy and financial development

	Average Schooling years	Primary education	Secondary education	Tertiary education
Gender				
female	0.008 (0.002)***	-0.007 (0.039)	0.056 (0.035)*	0.005 (0.015)
No. of observations	477	477	477	586
Number of ID (countries)	110	110	110	116
R-squared	0.101	0.381	0.091	0.327
male	0.007 (.003)***	0.005 (0.039)	0.061 (0.036)*	-0.003 (0.017)
No. of observations	477	477	477	586
Number of ID (countries)	110	110	110	116
R-squared	0.113	0.315	0.057	0.129
Level of financial development				
High financial development	0.018 (0.008)**	-0.068 (0.106)	0.198 (.091)**	0.014 (0.037)
No. of observations	305	305	305	365
Number of ID (countries)	86	86	86	91
R-squared	0.118	0.208	0.069	0.127
Low financial development	-0.002 (0.003)	0.018 (0.041)	-0.018 (0.041)	0.024 (.020)
No. of observations	172	172	172	221
Number of ID (countries)	58	58	58	69
R-squared	0.214	0.292	0.060	0.180
Level of democracy				
Democracy	0.004 (.004)	-0.052 (0.051)	0.057 (.047)	0.003 (0.028)
No. of observations	310	310	310	362
Number of ID (countries)	85	85	85	88
R-squared	0.070	0.166	0.084	0.095
No or low level of democracy	0.004 (0.003)	0.055 (0.050)	0.009 (0.044)	0.008 (0.021)
No. of observations	157	157	157	211
Number of ID (countries)	52	52	52	65
R-squared	0.367	0.342	0.149	0.313

Note: Standard error in parentheses. ***, ** and * represent the level significance respectively at 1%, 5% and 10%.

developing countries may possibly be higher for females' education than that of males to increase the average schooling years. There may be two possible reasons behind it. First, the majority of the low income households in developing countries prefer first to send their male kids to school at primary level rather than females due to lack of financial resources. Second, they also prioritize more for males' education than females at secondary and tertiary level due to higher cost of education. Hence, remittances can support more to increase females' average schooling years compared to males overcoming the resource constraints and through investing the remittances for their education.

6.4 Remittances, financial development and human capital

We find the significant positive effects of remittances on the changes in average years of schooling and secondary education to the developing countries with high financial development. But our model doesn't find any significant effects of remittances to all three levels of education to the developing countries with low financial development. It may be due to the lack of sufficient education loan to the developing countries with low financial development though they may have the opportunity to flourish their local economy from the remittances overcoming the liquidity and credit constraints. Giuliana and Ruiz-Arranz (2009) argue that remittances have had positive effects on economic growth more-specifically to the low financially developed economy. Hence, the financial institutes of low financially matured developing countries and the remittance recipients should provide sufficient education loan to the advancement of education if they become capable enough to meet up the credit demand to the private sectors.

6.5 Remittances, democracy and human capital

We examine the model to know about the remittance effects on the changes in education regarding the level of democracy to the remittance recipients' developing countries. Our estimation finds the insignificant effects of remittances to each three level of education together with average years of schooling in response to both democracy and lower level of that. Hence, our findings don't provide the evidence that the level of democracy may have the connection to the remittances and the investment in education. Though, democracy may have a link with human capital (Brown and Hunter, 2004; Stasavage, 2005; Bobba and Coviello, 2006; Klomp and de Haan, 2012).

From the above discussions, we may report the significant positive impact of remittances to the changes in average years of schooling to the developing countries around the world. Apart from the primary and tertiary level, remittances may help to increase the enrollment rate in secondary education. At regional level, the model reports the insignificant effects of remittances to the changes in different three levels of education to the Rest of the Asia, Sub-Saharan Africa and the OECD countries. But it has the significant positive effects to the average years of schooling in Latin America and the Caribbean and also has the positive effects to tertiary education in South Asia, and the Middle East and the North Africa. Remittances may have the larger effects on females' average years of schooling than that of males. It may also promote the secondary

enrollment and average schooling years to the developing countries with high financial development. The model shows the insignificant effects of remittances on the changes in educational attainment in response to the level of democracy. Hence, we would like to conclude this section that remittances can be more effective to the advancement of education more specifically the secondary level and the average years of schooling to the developing countries.

Chapter 7

Summary and Conclusion

It is the last chapter of the current study. It summarizes the entire investigation and concludes the story with some major guidelines regarding remittances and human capital development.

7.1 Summary

Remittances are the second largest source of external fund just after FDI for a large number of developing countries. From that point of view, it is an important and emerging source of capital for the developing economy as well as for low income poor countries. Besides the fact, the remittance recipients' countries don't have to depend on the external funding agencies or development organizations or developed countries as well as their dominating and/or complex conditions for their source of fund. Moreover, it can be recognized as the most stable and prominent private source of foreign currency for the underprivileged countries who are in serious economic crisis. The recent study aims at first, exploring the nature and extent of remittances to the developing countries and second, examining the contribution of remittances to the changes in the advancement of education. Hence, the main research question: is there effect of remittances of international migrants on human capital development more specifically to the enhancement of different three levels of education?

We analyze the first objective of the study on the basis of the past, present and the forecasted information we have. Remittance is an increasing trend to the developing countries since 1990s till recent years except 2009. During the ongoing world economic recession, other foreign financial inflows more specifically the official development assistance (ODA) and the private debt to the developing countries represent a fluctuating trend, whereas, remittances' flow shows comparatively more stable and an upward movement. Average annual growth rate of remittances is reported as 12.9 per cent during the decade (1999-2008), whereas, the growth rate of FDI and ODA represent respectively as 11.0 and 5.8 per cent (Young, 2011). Total amount of remittances to the developing countries have reached at \$ 351 billion in 2011, which is clearly the enthusiastic recovery from \$ 325 in 2010 and \$ 307 billion in 2009. Moreover, the annual growth rate of remittances for low income countries and LDCs (UN classification) are higher than that of middle income and high income countries in recent years.

The United States, Western Europe, High income OECD and non-OECD countries, six countries of GCC and some other developing countries of Middle East are the main sources of remittances to the LDCs and low income developing countries. The USA, Saudi Arabia, Switzerland, Russia, Germany and Italy are the top remittance sending countries around the world in recent periods. Formal and informal are the two major channels for transferring remittances to the developing countries. Banking transfer is the most likely channel in formal transfers along with Money Gram and Western Union. Informal channels like 'hundi' and 'hawala' are recognized as the illegal way of money transfer. Migrants may use to informal channel due to higher transaction

cost as well as for the lacking of trusted formal channels. Spreading banking facilities up to the grass root level, awareness programs and the strict rules against the illegal transfers may better help to reduce the informal inflows. In addition, average transferring cost of remittances is decreasing around the world though it is still high for the Asia Pacific and African regions.

A data set is developed up to 110 countries between the periods of 1960 and 2010 to assess the second and third objectives, which are our major concern in the current study. WDI of the World Bank (2012), the Polity IV score data set and the Barro and Lee (2010) series are the major sources of our data. Human capital is proxied by the average years of schooling over 25 age population. It is also proxied by the proportion of total population in primary, secondary and tertiary enrollment and attendant. Proportion of remittances to GDP is our prime interested explanatory variable. We also provide a set of control variables to the regression analysis. We estimate the generalized least square (GLS) model to examine the impact of remittances on the changes in human capital. In the model we use the lagging (10 years) regressors and it is tested by the Breusch and Pagan Lagrangian multiplier test for the random effects. Furthermore it is considered as the random-effects GLS regression model.

Our model shows the significant positive effects of remittances to the changes in average years of schooling and secondary education to the developing countries around the world. It reports the insignificant remittance effects to the changes in primary enrollment. It can be due to the free and/or cheap cost of primary education compared to secondary and tertiary level around the world. It also reports the insignificant effect to tertiary education. It may be due to the fact that the tertiary level students have the opportunity of earning by doing a part time job. According to our model, if remittances to GDP increase by a one percentage point then it may increase the changes in average years of schooling and secondary enrollment by around 0.007 and 0.058 per cent respectively in each five years. Our model reports the insignificant effects of remittances to the changes in education enrollment rate along with average years of schooling to the Rest of the Asia, Sub-Saharan Africa and the OECD countries. But it shows the significant positive effects on the changes in tertiary enrollment to South Asia as well as Middle East and North Africa. Again, it shows the highly significant positive effects to the changes in average years of schooling to the Latin America and the Caribbean region. The model reports the larger positive effects of remittances to the changes in average years of schooling for female than that of male. In contrast it has a larger effect for male than female in case of secondary enrollment. We find the insignificant effects of remittances to the changes in education enrollment in response to the level of democracy. However, it represents the significant positive effects of remittances on the changes in average years of schooling and secondary education to the high financially developed economy of developing countries.

7.2 Conclusion

Remittances are becoming more stable, reliable and an emerging source of fund for the developing countries apart from the financial hardship and the downward spiral of the world

economy. Researchers, development experts and policy makers have already recognized the different development potentials of remittances but the impact of remittances on global and regional human capital development remains unexplored. Understanding the effects of remittances on human capital improvement is important. This is because it can be one of the foremost drivers for enhancing the long-run economic growth. Again it may promote the financial development and may challenge the hunger and poverty to the developing countries. Hence, remittances can help to the increased growth and development of developing countries ensuring its investment in human capital development.

To fill up the knowledge gap between remittances and human capital development and realizing the importance of this field, we investigate the effects of remittances on changes in human capital. More specifically, we analyze the effects of remittances on changes in average years of schooling as well as changes in primary, secondary and tertiary enrollment and attendant. We find that remittances have a positive effect on the changes in average years of schooling and secondary education to the developing countries around the world. At regional levels, remittances can contribute to the changes in tertiary enrollment to South Asia, and Middle East and North Africa. Moreover, it may work as a catalyst to increase the average schooling years to Latin America and the Caribbean. Remittances can contribute more to the changes in females' average schooling years compared to males. It can also contribute to the changes in secondary education and average years of schooling to the developing countries with high financial development. Finally, it can be concluded that the increasing trend of remittances to the developing countries may be helpful to increase the changes in average years of schooling and secondary enrollment rate to the developing countries.

We think it is the first research in a large scale for the cross-country analysis in understanding the effects of remittances on human capital development. From that sense it may have a few shortcomings. We use only the officially recorded flow for the remittance data and that is the underestimation of the original inflows as it avoids the informal flows. Household level data can be more suitable for better understanding its' effect on human capital. We don't use the GMM dynamic framework model of Arellano and Bond (1991) due to the lack of more dynamic data of human capital as we use five years average data in all levels of education and also for average years of schooling. We consider that our data in the dependent variables are not so much dynamic and hence the further research can review the current findings along with more dynamic and new sets of data overcoming the above mentioned all shortcomings.

Appendices

Table A1: A complete list of countries included in the model

Countries (110)			
Albania	Finland	Malawi	South Africa
Algeria	France	Malaysia	Spain
Argentina	Gabon	Mali	Sri Lanka
Australia	Gambia	Mauritania	Sudan
Austria	Germany	Mexico	Sweden
Belgium	Ghana	Mongolia	Switzerland
Benin	Greece	Morocco	Syria
Bolivia	Guatemala	Namibia	Tajikistan
Botswana	Guyana	Nepal	Thailand
Brazil	Haiti	Netherlands	Togo
Bulgaria	Honduras	New Zealand	Trinidad Tobago
Burundi	Hungary	Nicaragua	Tunisia
Cambodia	India	Niger	Turkey
Cameroon	Indonesia	Pakistan	Uganda
Central African Republic	Iran	Panama	Ukraine
Chile	Ireland	Papua New Guinea	United Kingdom
China	Israel	Paraguay	Tanzania
Colombia	Italy	Peru	Uruguay
Congo	Jamaica	Philippines	USA
Costa Rica	Japan	Poland	Venezuela
Croatia	Jordan	Portugal	Vietnam
Cyprus	Kazakhstan	Republic of Korea	Zambia
Czech Republic	Kenya	Romania	Zimbabwe
Denmark	Kyrgyzstan	Russian Federation	
Dominican Republic	Latvia	Rwanda	
Ecuador	Lesotho	Senegal	
Egypt	Liberia	Sierra Leone	
El Salvador	Libya	Slovakia	
Fiji	Lithuania	Slovenia	

Table A2: Definition of variables and sources of data

Variables	Definition	Sources
Average schooling years	The average years of schooling over 25 age population	Barro and Lee (2010)
Primary education	The proportion of total population in primary enrolment and attendant	Barro and Lee (2010)
Secondary education	The percentage of total population in secondary school enrolment and attendant	Barro and Lee (2010)
Tertiary education	The proportion of total population in tertiary or higher level of schooling	Barro and Lee (2010)
GDP Per capita	Per capita GDP in constant US \$ 2000	World Bank (2012)
Trade openness	The percentage of exports plus imports of goods and services to GDP	World Bank (2012)
Government spending	The general government expenditure expressed as a percentage of GDP	World Bank (2012)
Gross domestic savings	Proportion of gross domestic savings to GDP	World Bank (2012)
Polity2	Political development representing more specifically the extent of democratic situation.	Marshall and Jaggers (2010)
Remittances	Worker remittances + employee compensation + migrants' transfers as a proportion of GDP	World Bank (2012)
Working population	Proportion of total population between 15 to 64 years	World Bank (2012)
Rural population	The share of rural counterparts to total population (%)	World Bank (2012)
Population growth	Population growth (annual %)	World Bank (2012)
Per capita GDP growth	Per capita GDP growth (annual %)	World Bank (2012)
Credit to GDP	The share of credit to GDP (%)	World Bank (2012)

Table A3: Correlation matrix among variables

	davg2	dprim2	dsec2	dter2	popu_ag~1564	ln_openness	ln_credit	rurpop	popgr	gdppc_gr
davg2	1.0000									
dprim2	-0.3407	1.0000								
dsec2	0.6644	-0.6535	1.0000							
dter2	0.4066	-0.3349	-0.1185	1.0000						
popu_ag~1564	-0.0328	-0.4863	0.0786	0.2981	1.0000					
ln_openness	-0.0019	-0.1437	0.0992	-0.0065	0.1357	1.0000				
ln_credit	-0.0140	-0.3058	0.0136	0.2472	0.5969	0.1193	1.0000			
rurpop	-0.0750	0.3645	-0.0363	-0.3635	-0.6082	0.0164	-0.4809	1.0000		
popgr	0.0222	0.4665	-0.1390	-0.1959	-0.7708	-0.1430	-0.3745	0.4338	1.0000	
gdppc_gr	-0.0053	-0.0457	0.0220	0.0279	0.2001	0.1043	0.0716	0.0107	-0.1094	1.0000
govcons	0.0382	-0.2101	0.0965	0.0902	0.1524	0.3691	0.2893	-0.2233	-0.1458	-0.0536
ln_gdppc	0.0528	-0.4454	0.0633	0.3822	0.7122	0.0518	0.7132	-0.7802	-0.5297	0.0546
gdsavings~p	0.1468	-0.1588	0.1142	0.1719	0.3924	-0.0123	0.3308	-0.3383	-0.1834	0.1066
Polity2	-0.1032	-0.4027	0.0238	0.2065	0.5798	0.0809	0.4290	-0.4453	-0.4647	0.0673
remit_gdp	-0.0415	0.0875	-0.0189	-0.1081	-0.1787	0.2177	-0.1531	0.2267	0.0707	0.1415
		govcons	ln_gdppc	gdsavi~p	Polity2	remit~p				
govcons		1.0000								
ln_gdppc		0.3201	1.0000							
gdsavings~p		-0.1136	0.4663	1.0000						
Polity2		0.1523	0.5637	0.1342	1.0000					
remit_gdp		0.1006	-0.2577	-0.6326	-0.1390	1.0000				

Table A4: Descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
davg2	1460	.4611096	.3348941	-.987	2.076
dprim2	1460	-1.148767	4.991799	-28.4	23.9
dsec2	1460	3.119795	3.748412	-17.1	28.5
dter2	1460	1.056575	1.704199	-6.4	17
popu_ag~1564	1435	58.8889	6.798822	45.1673	83.30708
ln_openness	1226	4.124367	.6681241	-1.535618	6.021307
ln_credit	1158	3.233949	.976375	-.5441248	5.543687
rurpop	1435	50.5078	24.83917	0	97.88
popgr	1435	1.880198	1.551187	-4.880105	16.67768
gdppc_gr	1213	1.973856	3.571692	-21.55041	30.90292
govcons	1209	15.41035	6.182069	3.915094	56.40001
ln_gdppc	1228	7.620711	1.573082	4.421541	10.93378
gdsavings_~p	1219	18.41106	14.60856	-99.5549	67.5681
Polity2	1183	1.126148	7.381007	-10	10
remit_gdp	795	3.440039	8.003188	.0017261	84.82852

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Declaration

I would like to declare that I have completed the thesis independently and, do not use any other sources apart from the list mentioned in references

Date:

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