

**CROSS COUNTRY INVESTIGATIONS OF HUMAN CAPITAL,  
REMITTANCES AND FINANCIAL DEVELOPMENT: MONGOLIAN CASE  
STUDY**

**BY**

**Dorjpagam Jagdal**

**THESIS**

*Submitted to*

*KDI School of Public Policy and Management*

*in partial fulfillment of the requirements for the degree of*

**MASTER OF PUBLIC POLICY**

2014

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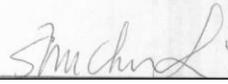
**MASTER OF PUBLIC POLICY**

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Approval as of August, 2014

## **ABSTRACT**

### **CROSS COUNTRY INVESTIGATIONS OF HUMAN CAPITAL, REMITTANCES AND FINANCIAL DEVELOPMENT: MONGOLIAN CASE STUDY**

**By**

Dorjpagam Jagdal

This study empirically investigates how personal remittance and financial development influence human capital formation and supply of the countries, as well as how they are related with each other for the developing 88 countries during the period 1995-2011. The study is based on mixed methods of quantitative and qualitative analysis. The central focus is on the empirical analysis of remittance, financial sector development and their impact on human capital formation. Survey from Mongolian migrants to South Korea reveals the human face of the empirical analysis. For panel data analysis, fixed effect model is used by considering three separate dependent variables for human capital indicators: primary, secondary, and tertiary level school enrollment.

We find that personal remittances and financial sector development are positively and significantly related to human capital, indicating that increases in remittances and more developed financial sector the country has human capital accumulation increases. On the other hand, financial development and remittances are negatively and significantly related showing that if a country has a less developed financial sector, then remittances from abroad become the main source of investment in human capital and vice versa. The case study results also support these findings.

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Dedicated to my dearest parents, Jagdal Bat-Ochir and Dejidmaa Tsedendorj, sister-Dechmaa Jagdal, nephew-Temuulen, my beloved Erdenedavaa Batbayar, supervisor Prof. Shu-Chin Lin, Prof. Schuckman Hugh Erik, all professors of KDIS: Prof. Cho Dongchul, Prof. Cho Man, Prof. Choi Tae-Hee, Prof. Hahm Sang-Moon, Prof. Kim Taejong, Prof. Paik Sung-Joon, Prof. Lee Seung-Joo, and Prof. You Jong-Il, all my friends at Ewha Womans University, KDIS, Mongolian Students Association in Korea (CMOX), and my brothers and sisters of SKMAGIKO.

## ACKNOWLEDGEMENTS

There are a number of people without whom I may not have written and completed this research work and to whom I am greatly indebted.

I am grateful to my dearest Prof. Shu-Chin Lin for leading me through the process. Your enthusiasm, encouragement, and faith in me throughout my study at KDIS have been extremely helpful. With your guidance to the right source, theory, and practical usage of programs, I managed to finish my work successfully. Let it be known to you that I am always grateful for all your support and I am blessed to meet you at KDIS. Thank you very much for being not only my econometrics and finance professor, but also my lifetime mentor and I am keen to our further research as well.

I thank my dear Prof. Schuckman Hugh Erik for being an extraordinary committee member. Your guidance to an academic world, since my first semester at KDIS, helps me throughout my studies as well as in my future research. Besides the academic knowledge you equipped me with, your humble personality, broad knowledge, respect to all cultures profoundly inspired me. Thank you very much and as you said, “May be our paths will cross sometime in the future”. Moreover, I thank all my great professors and academic advisors at KDIS: Prof. Cho Dongchul, Prof. Cho Man, Prof. Choi Tae-Hee, Prof. Hahm Sang-Moon, Prof. Kim Taejong, Prof. Paik Sung-Joon, Prof. Lee Seung-Joo, and Prof. You Jong-II.

To my beloved parents, Jagdal Bat-Ochir and Dejidmaa Tsedendorj who have been a source of encouragement and inspiration to me throughout my life, a very special thank you for your faith in me, cheering, and guiding me to become present me. To my lovely sister, Dechmaa Jagdal thank you for being the role model of my life and for the good advice you proffered to me when needed. I thank my little nephew, Temuulen for your cute encouragement. To my beloved Erdenedavaa Batbayar, thank you for supporting me and being my side throughout my study in Korea. To my dear friends at Ewha Womans University, KDIS, Mongolian Students Association in Korea (CMOX), and my brothers and sisters of SKMAGIKO, many thanks for all your help and support.

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## **ACRONYMS AND ABBREVIATIONS**

GDP: Gross Domestic Product

IMF: International Financial Fund

OECD: Organization for Economic Co-operation and Development

WDI: World Development Indicator

WTO: World Trade Organization

LDCs: Least Developed Countries

# 1. INTRODUCTION

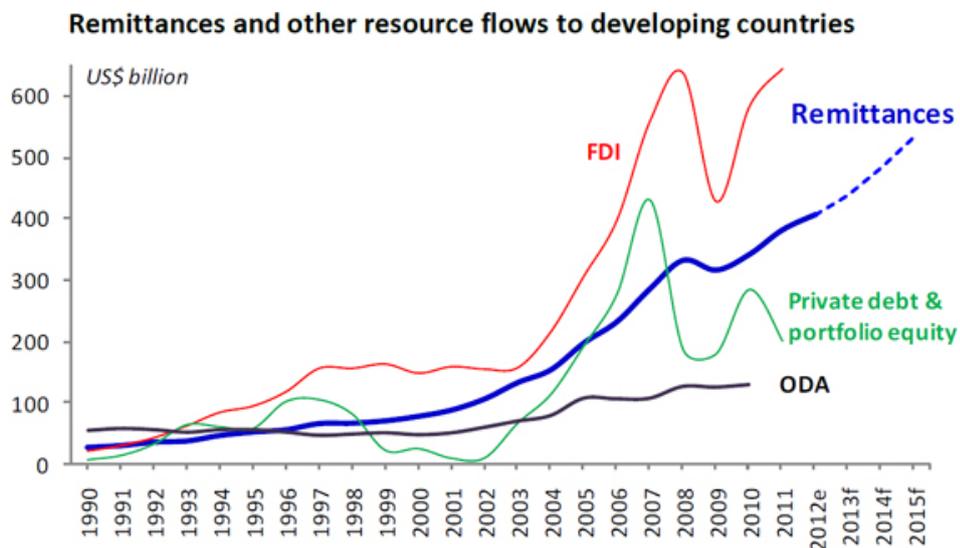
## 1.1 Background

Remittances are largely personal transactions from migrants to their friends and families. They tend to be well targeted to the needs of their recipients.

--Towards Human Resilience:  
Sustaining MDG Progress in an Age of Economic Uncertainty

After foreign direct investment (FDI), remittances have become one of the main sources of external financing for the developing countries over the past two decades and constant increase is expected as shown in the following graph. According to the World Bank "Migration and Development Brief", officially recorded remittances flows totaled \$514billion in 2012, compared to \$132 billion in 2000. Among \$514billion in total, remittances to developing countries are \$400billion, a trend which is expected to grow at an average of 8.8 percent annual rate from 2013 to 2015,

**Figure1.**



Source: World Development Indicators and World Bank Development Prospects Group

totaling approximately \$515 billion in 2015 (p1-2). Earlier empirical studies' results of the impact of international remittances on economic growth as well as poverty reduction are mixed. While Stark and Lucas, Taylor, Solimano find a positive relationship between remittances and economic growth of the countries, the recent studies of IMF and Abdullaev indicate a negative and no impact, respectively.

The studies that analyze the impact of remittances on education such as Kroeger and Anderson (2013) for the case of Kyrgyzstan during revolution and financial crisis period 2005-2009, Banzak and Brian (2009) for the case of Nepal school-age boys and girls find that young children benefit more from remittance compared to older ones and the benefits, controlling for absenteeism, tend to be stronger for male children: girls in remittances' receiving households are more likely to be malnourished. These papers argued that household absenteeism pressures children to contribute the time to household work and market work rather than education. Abdullaev (2011) shows remittances have no impact on physical capital accumulation, but a positive impact on human capital accumulation. The most recent empirical study in impact of remittances on human capital formation in 89 developing countries from year 1970 to 2010 by Abubakar and Normaz (2013) suggests that "...On average, an increase in migrant remittance inflows by 1% is associated with a 2% rise in years of schooling at both the secondary and tertiary levels..." Acosta *et.al* (2007) in the study named 'The Impact of Remittances on Poverty and human Capital: Evidence from Latin American Household Surveys' argued that even though remittances have positive impact on education and health, this impact is restricted to the specific groups of the population.

To study deeply about the remittances impact on the economy, financial sector should not be excluded. Thus, the secondary main point of this study is about financial sector development and its relation with human capital and remittances. Financial systems have been recognized to play a crucial role in economic growth and development across countries. This recognition dates back to Bagehot, Cameron, McKinnon, who showed that the financial sector could be a catalyst for economic growth if it is developed to be well functioning. A well-functioning and well-developed financial sector is expected to attract funds inflow such as remittances for financing economic growth and development projects.

Admittedly, several studies including Econstor working paper by Andres argue that one of the negative effects of substantial remittances is the possibility that they produce the “Dutch Disease” effect. As will become evident in the following discussion below, however, remittances have positive development effects on savings, consumption, investment, growth, income distribution, and poverty. “Using a sample of 31 small-open developing economies from Sub-Saharan Africa (SSA) and Latin America and Caribbean (LAC), Ahortor and Adenutsi (2009) found that, generally, remittances promote long-run growth.”

## **1.2 Research problem**

The statistics shows that remittances have become one of the main sources external financing for the developing countries. And its constant increase for recent years has been in the center of discussions economists in terms of its effect on economic growth. The researchers studied remittances impact on economic growth and reached different conclusions. Stark and Lucas (1988), Taylor (1983), Solimano

(2003), Adams and Page (2005), Ahortor and Adenutsi (2009) find the positive relationship between remittances and economic growth of the countries. The research result of Chami, R. *et al.* (2003) using a panel of 113 countries over thirty years finds that remittances negatively associated with economic growth. The recent study of Abdullaev (2011) shows negative impact and IMF's 2005 World Economic Outlook highlights the lack of correlation between these variables respectively. The paper aims to address that through which channel, remittances affect economic growth of the country. Thus, the central focus of this study is human capital accumulation regarding its contribution to economic growth. The previous studies focused on migration and remittances issues apart from the financial sector. The significance of this paper is remittances and financial sector development combination study on human capital and relationship between these variables to illustrate more complete understanding of the insights.

### **1.3 Research Questions**

Through transition economies' cross country empirical analysis and survey from the migrants from Mongolia to South Korea, this study aims to reveal:

1. What are the impacts of remittances and financial development on human capital?
2. How financial development and remittances are correlated with each other?

### **1.4 Hypothesis**

Increasing income through remittances may increase investment in children's schooling by helping to relax household constraints. Thus remittances are positively associated with human capital accumulation Banzak and Brian (2009). Even though there is no absolute consensus about the McKinnon-Shaw hypothesis that the removal

of financial repression accelerates in significant enhancement for long-run growth prospects, the dominant result from various empirical studies is that financial sector development usually impacts positively on economic growth Adenutsi (2011). To take an example, Levine (1997), Obstfeld (1994), Khan and Senhadji (2000), and King and Levine (1993) document how financial development is associated with greater growth across countries through different mechanisms. Therefore, financial development is also expected to have positive correlation with human capital accumulation as a main channel of growth. Finally, the hypothesis for the relationship between remittances and financial sector development is negative assuming that remittances become the main source of human capital investment in less financially developed countries Giuliano, and Arranz (2005).

To understand these questions, the study concentrates on the panel data regression results, its interpretation and individual migrants' survey. After gaining the result from the analysis of panel data, the study specifically aims to highlight the case of Mongolia to investigate insight of remittance impact on human capital accumulation. Through this investigation of cross country panel data and the case of Mongolia, the study aims to recommend some policies for the developing countries to deal with remittances and financial development issues more effectively toward human capital accumulation and development.

### **1.5 The Structure of the Paper**

The remainder of the paper is organized as follows. Chapter 2 summarizes the main findings from the research on financial development and reviews the literature on the development impact of remittances. Chapter 3 discusses the data used and the methodology pursued to study the impact of remittances and financial sector development on human capital formation and relation between these two. Chapter 4 presents the empirical results, Chapter 5 shows case study result on empirical findings, and finally Chapter 6 draws conclusions from these findings.

## 2. LITERATURE REVIEW

The relevant literature includes determinants of human capital; remittances, impact on economic growth, human capital accumulation, and income inequality; financial development, impact on economic growth and human capital; and financial development and remittances. Preceding discussion on remittances and financial development is how both affecting human capital accumulation and how they related to each other.

### 2.1 Determinants of Human Capital

The most valuable of all capital is that invested in human beings.

--Alfred Marshall, *Principles of Economics*

Human capital is the attributes of a person that are productive in some economic context and it is “Productive investments embodied in human persons, including skills, abilities, ideals, health, and locations, often resulting from expenditures on education, on-the-job training programs, and medical care.”<sup>1</sup> Human capital often refers to formal educational attainment, with the implication that education is investment whose returns are in the form of wage, salary, or other compensation. These are normally measured and conceived of as private returns to the individual but can also be social returns. Investment in human beings has seldom been taken into account in the formal care of economics until the 1960s when Shultz first introduced the term “human capital”; even though many economists, including

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<sup>1</sup> Michael P. Todaro and Stephen C. Smith, *Economic Development* (Pearson: 12th edition, 2012), 360

Marshall, have seen its relevance in his writing. Although economists have long known that people are an important part of the wealth of nations, they were reluctant to see human as a capital because it seems to reduce man to mere material component, to something akin to property. “ J.S.Mill at one time insisted that the people of a country should not be looked upon as wealth because wealth existed only for the sake of people. But, the concept exists only for the advantage of people.” Among the few who have looked upon human beings as capital, there are three distinguished names: Adam Smith, H.von Thunen, Irving Fisher. Schultz (1961) argued that “Yet the main stream of thought has held that it is neither appropriate nor practical to apply the concept of capital to human beings” (p.1). His hypothesis is that “Investment in human capital is probably the main explanation for difference between increase in national output and increases of land, man-hours, and physical reproducible capital” Schultz (1961, p.1). The author stated that “Laborers have become capitalists not from a diffusion of the ownership of corporation stocks, but from the acquisition of knowledge and skill that have economic value. This knowledge and skills are in great part the product of investment and, combined with other human investment, predominantly account for the productive superiority of the technically advanced countries. To omit them in studying economic growth is like trying to explain Soviet ideology without Marx.” He discussed about human capitals’ two different aspects in his “Investment in Human Capital” paper as:

Human resources obviously have both quantitative and qualitative dimensions. The number of people, the proportion who enters upon useful work, and hours worked are essentially quantitative characteristics. ... Quality components are as skill, knowledge, and similar attributes that affect particular human capabilities to do productive work” (Schultz, 1961, p.8).

And he concentrates on quality components of human capital as skill, knowledge, and similar attributes that affect particular human capabilities to do productive work and according to him, five major categories are: (1) health facilities and services including all expenditures that affect the life expectancy strength and stamina, which is consistent with population growth, and fertility rate determinants; (2) on-the-job training; (3) formally organized education at the elementary, secondary, and higher levels that is consistent with school enrollment ; (4) study programs for adults that are not organized by firms; (5) migration of individuals and families to adjust to changing job opportunities that is consistent with remittances and financial development determinants of human capital respectively in this study Schultz (1961, p.9). His preliminary estimates suggest that the stock of education in the labor force rose about eight and a half times between 1900 and 1956, whereas the stock of reproducible capital raised four and a half times, both in 1956 prices. In his paper, he pointed out the internal migration need of workers to adjust to changing job opportunities. That is what makes investment in human capital valuable.

In the previous empirical studies, researchers choose different determinants for the human capital depending on their study focus. Bildirici *et.al* (2005) has chosen following factors as determinants of human capital:

Average life expectancy, adult literacy rate, schooling rate, per capita income, average living index, education index, GDP index, human development index, human living index, inflation, exports, imports, growth rate, regional development differentials, general population growth rate, urban population growth rate, education expenditures, urban unemployment, wages, wage index, net rate of migration and workers' saving.(p.129)

Their empirical study is based on panel data analysis of 77 countries and it includes many variables as their focus is determinants of human capital theory, growth and

mainly on brain drain. Bildirici *et.al* (2005) has chosen human development indexes as measure of human capital stating that “human capital is related to human development while schooling rate is increasing human capital rise.” Talpos and Enache (2010) studied human capital determinants of foreign direct investment inflows in the UE new member states and applied following variables as indicators:

Life expectancy at birth-females, life expectancy at birth-males, fertility rate, persons with lower secondary education attainment (as % of total population aged 15-64), persons with upper secondary education attainment, persons with tertiary education attainment, foreign languages learned per pupil, mathematics, science and technology enrolments and graduates. (p.486)

While above variables are considered as indicators in the previous study, an another research work on African countries case by Oketch (2006), “Determinants of human capital formation and economic growth of African countries” has taken determinants such as per capita GDP growth, physical capital investment, investment in education all refer to total increments for the five-year time periods<sup>2</sup> for each of the 47 African countries (p.559). However, the author took total expenditure on education as a percentage of GDP for the measure of human capital saying that expenditure will more reflect quality of the education than school enrollment rate. In our study, unlike these previous studies, we take three levels of school enrollment as measures of human capital by following common practice, and as well as based on reliability of data, relates with remittances from abroad. Having reviewed the literature, this study will take remittances as percentage of GDP, financial development proxies as independent variables as main concern and some controlling variables such as

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<sup>2</sup> Years of time period: 1960-1965, 1965-1970, 1970-1975, 1975-1980, 1980-1985, 1985-1990, 1990-1995, and 1995-1998

government expenditure, inflation, trade, and population growth to investigate impact on our dependent variable, human capital.

## **2.2 Remittances, Impact on Economic Growth, Human Capital, and Income Inequality**

Earlier empirical evidence of international remittances impact on economic growth is mixed. While Stark and Lucas (1988), Taylor (1983), Solimano (2003), Adams and Page (2005), Ahortor and Adenutsi (2009) find the positive relationship between remittances and economic growth of the countries. The research result of Chami, R. *et al.* (2003) using a panel of 113 countries over thirty years finds that remittances are negatively associated with economic growth. This result is consistent with their model in which remittances weaken recipients' incentives to work and, therefore, lead to poor economic performance Aggarwal, R., et al (2006). The recent study of Abdullaev (2011) shows negative impact and IMF's 2005 World Economic Outlook highlights the lack of correlation between these variables respectively. But, the finding that remittances help to alleviate poverty is proven in cross country studies. IMF (2005) World Economic Outlook reported that remittances have a statistically significant impact on alleviating poverty through employing 101 countries' data over the period of 1970-2003. The finding is consistent with Adam and Page (2005) empirical study of 74 low and middle-income developing countries.

The studies that analyze the impact of remittances on education such as Kroeger and Anderson (2013) for the case of Kyrgyzstan during revolution and financial crisis period 2005-2009, Banzak and Brian (2009) for the case of Nepal school-age boys and girls find that young children benefit more from remittance compared to older

ones and the benefits, controlling for absenteeism, tend to be stronger for male children: girls in remittances' receiving households are more likely to be malnourished. Papers argued that household absenteeism pressures children to contribute the time to household work and market work rather than education. Interestingly, Kroeger and Anderson (2013) find that education for boys aged 14-18 is negatively affected by remittances' receipt and they logically explained the result as "...Since migration in Kyrgyzstan is male-dominated, boys in particular maybe motivated to leave school to start working abroad, where expected wages are higher." They also explained their failure to find a positive relationship between remittances and human capital investment is because transfers are first invested in physical not human capital. Abdullaev (2011) shows remittances have no impact on physical capital accumulation, but positive impact on human capital accumulation which is opposite of the Kroeger and Anderson's (2013) explanation in the case of Kyrgyzstan. Another study by Koska, O.A., et al. (2013), for the case of Egyptian children based on nationally-representative survey reveal "A significant association between remittances and human capital formation: the higher the probability of receipt remittances, the higher the probability of school enrollment, and the older age of the first participation in the labor force."

The most recent empirical study in impact of remittances on human capital formation in 89 developing countries from year 1970 to 2010 by Abubakar and Normaz (2013) suggests as follows:

On average, an increase in migrant remittance inflows by 1% is associated with a 2% rise in years of schooling at both the secondary and tertiary levels. This suggests that migrant remittances have the potential to relax liquidity constraints and generate spillover effects that facilitate more schooling opportunities

in remittance-receiving countries. (p.106)

As previously reviewed, much work has been done on impact of remittance in human capital formation and accumulation, however, most of them are restricted to specific country and household survey studies. The paper aims to fill in this gap by empirically testing the effect of remittances on human capital formation based on panel data. Acosta *et.al* (2007) in the study named “The Impact of Remittances on Poverty and human Capital: Evidence from Latin American Household Surveys” argued that even though remittances have positive impact on education and health, this impact is restricted to the specific group.

Among the aspects that have been identified in the paper that may lead to varying outcomes across countries is the percentage of households reporting remittances income, the share of remittances recipient households belonging to the lowest quintiles of the income distribution, and the relative importance of remittances flows with respect to GDP. While remittances tend to have positive effects on education and health, this impact is often restricted to specific groups of the population.

Thus to investigate remittances impact on human capital, more specified group of the people who benefit from it should be defined and examined further. That is one of the reasons we are taking one country as an example to study. The case study of Mongolia will conduct in-depth analysis of (1) do remittances really have the potential generate spillover effects that facilitate more schooling opportunities in reality? (2) if this impact is only restricted to the specific group or not.

### **2.3 Financial Development, Impact on Economic Growth and Human Capital**

A notable part of literature has noticed the important role of the financial sector in promoting economic growth and development of the country.

... there is no absolute consensus about the McKinnon-Shaw hypothesis that the

removal of financial repression; characterized by caps or ceilings on interest rates, restrictions on entry to the financial industry, government ownership or control of domestic banks and financial institutions, directing credit to certain industries, accelerates in significant enhancement for long-run growth prospects, the dominant result from various empirical studies is that financial sector development usually impacts positively on economic growth. (Adenutsi, 2011, p.74)

To take an example, Levine (1997), Obstfeld (1994), Khan and Senhadji (2000), and King and Levine (1993) document how financial development is associated with greater growth across countries through different mechanisms. Also Adenutsi (2011) concludes that financial development does not directly promote economic growth but through its capacity to attract increased international migrant remittances to Ghana. However, there is also certain empirical works show no significant impact of financial development on growth by failing to provide evidence for the McKinnon-Shaw hypothesis. As reviewed above, a considerable amount of literatures investigate financial development's impact on economic growth as a broader range but not on human capital accumulation. However, the study aims to fill gaps in the literature through highlighting the relationship between financial development and human capital as a vital channel of economic growth.

#### **2.4 Financial Development and Remittances**

There is a hypothesis that financial sector development promotes the economic growth of the country by attracting international remittance inflows. Adenutsi (2011) worked on this hypothesis in the case of Ghana and suggests that even though financial development is directly detrimental to endogenous growth, it is important for mobilizing remittances from international migrants: "...This implies that, financial development *per se* is detrimental to growth in a low-income developing country like Ghana, unless it succeeds in attracting non-debt foreign capital in the form of migrant

remittances” (p.81) The empirical studies showing the impact of remittances on growth can depend on the level of financial sector development in a country presents inconsistent conclusions. Mundaca (2005) conducts a research using a panel data from 1970 to 2003 to see the effect of workers’ remittances on growth in countries in Central America, Mexico, and Dominican Republic. The author concludes that financial development potentially leads to better use of remittances thereby boost economic growth. However, the study results of Guiliano and Ruiz-Arranz (2005) using a panel of over 100 countries for the period 1975-2003 concludes that remittance help promote growth in less financially developed countries. The authors argue that this is evidence of agents compensating for the lack of local financial markets’ development by using remittances to facilitate liquidity constraints and to channel resources towards productive uses that foster economic growth. The result is consistent with the research result of Aggarwal, R. *et al.* (2006), using a balance payments data on remittance flows to 99 countries for the period 1975-2003 showing that remittances have a significantly positive impact on bank deposits and credit to GDP. They claim that this result is robust to using different estimation techniques and accounting for endogeneity biases thereby supporting for the notion that remittances promote financial development in developing countries. One of the purposes of this paper is to reveal the relationship between remittances and financial development as concluded differently in latter literature.

As discussed above, many works done in this field researching remittance impact on human capital in Asian countries, former Soviet Union countries, Egypt and African countries case, no study has been done reflecting cross country empirical

results into the country's case and for the further insight of Mongolian case. This research will first focus on remittance, financial sector development, and its influence on human capital for developing countries, and then take Mongolia as an example for further insight of the issue.

### **3. RESEARCH METHODOLOGY**

The study will be based on mixed methods; quantitative panel data regression analysis

and survey from migrants from Mongolia to South Korea since the research takes Mongolia as an example.

#### **3.1 Quantitative Method**

##### **3.1.1 Data Regression Analysis: Fixed Effect Model**

This study empirically investigates international migrant personal remittances, financial sector development, and their impact on human capital accumulation for the upper-middle, lower-middle, and low income 88 developing countries during the period 1995-2011. The main purpose of this research is to show personal remittances and financial development influence on human capital of the countries by focusing on three education level enrollment as a percentage of GDP: primary school enrolment (PRI\_EN), secondary school enrolment (SEC\_EN), and tertiary enrolment (TER\_EN). The study uses fixed effect model for the panel data analysis by taking remittances as percentage of GDP (PREM), three proxies for the financial development: domestic credit provided by banking sector (DCBC), domestic credit to private sector (DCPS), liquid liabilities (LIQ\_LIAB) all as a percentage of GDP as independent variables, and other control variables such as real GDP per capita (GDPPC1), government expenditure (GOV\_EXP), inflation (INF), trade (TRADE), fertility rate (FRATE), and

population growth (POPG) to capture all significant dimensions of the dependent variable, human capital. As it is mentioned in the previous chapter, fertility rate, population growth; school enrollment; remittances and financial development indicators are consistent with quality component part of human capital as Schultz (1961) had mentioned in his paper as follows: “(1) health facilities and services including all expenditures that affect the life expectancy, strength and stamina; ... (3) formally organized education at the elementary, secondary, and higher levels; ... (5) migration of individuals and families to adjust to changing job opportunities.”

For the human capital, we have three separate dependent variables as follow: primary, secondary, and tertiary level school enrollment. School enrollment rate has been chosen as a measure of human capital in this paper by following common practice. We do regression on each dependent variable, and proxies for financial development variables separately to show the relation of each with the human capital.

### 3.1.2 Data

Data basically collected from World Development Index of The World Bank (remittances, domestic credit provided by banking sector, domestic credit to private sector, GDP per capita, government expenditure, inflation, trade, fertility rate, and population growth ) and Global Financial Development of The World Bank (liquid liability). The sample size of the countries may differ in each level of education depending on availability of data.<sup>3</sup> In this context, econometric general model of human capital is specified as:

$$HC_{it} = \beta_0 + \beta_1 * \ln PREM_{it} + \beta_2 * \ln Finance_{it} + \beta_3 * Finance_{it} * PREM_{it} + \delta W_{it} + U_{it}$$

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<sup>3</sup> refer to the TABLE A1: Descriptive Statistics.

Specifically, we use four different models in each education level: full log model and full lag model without time dummy and with time dummy. Lag model and time dummies are used to deal with multicollinearity and endogeneity problems respectively. Each table has 3 panels: PANEL A, B, C according to the three proxies of financial sector development.<sup>4</sup>

$$(1) \text{ PRI\_EN} = \beta_0 + \beta_1 * \text{lprem}_{it} + \beta_2 * \text{ldcbc}_{it} + \beta_3 * \text{Lpremdcbc} + \beta_4 * \text{gdppc1} \\ + \beta_5 * \text{gov\_exp} + \beta_6 * \text{inf} + \beta_7 * \text{trade} + \beta_8 * \text{frate} + \beta_9 * \text{popg} + \delta W_{it} + U_{it} + (\text{time} \\ \text{dummies})$$

$$(2) \text{ PRI\_EN} = \beta_0 + \beta_1 * \text{lagpremit} + \beta_2 * \text{lagdcbc}_{it} + \beta_3 * \text{lagLpremdcbc} + \beta_4 * \text{gdppc1} \\ + \beta_5 * \text{gov\_exp} + \beta_6 * \text{inf} + \beta_7 * \text{trade} + \beta_8 * \text{frate} + \beta_9 * \text{popg} + \delta W_{it} + U_{it} + (\text{time} \\ \text{dummies})$$

---

<sup>4</sup> refer to the TABLE 2-13.

**Table 1** displays summary of all the employed study data together with their abbreviations and sources.

### 3.2. Qualitative method: Survey

The study took Mongolia as a study country to employ a cross country

**TABLE1: DATA AND THEIR RELATED SOURCES**

No.	Variable	Index	Type	Measurement	Source
1.	Primary Education	PRI_EN	Dependent	Enrolment, % of GDP	WDI, The World Bank
2.	Secondary Education	SEC_EN	Dependent	Enrolment, % of GDP	WDI, The World Bank
3.	Tertiary Education	TER_EN	Dependent	Enrolment, % of GDP	WDI, The World Bank
4.	Personal Remittances	PREM	Independent	% of GDP	WDI, The World Bank
5.	Domestic credit provided by banking sector	DCBC	Independent	% of GDP	WDI, The World Bank
6.	Domestic credit to private sector	DCPS	Independent	% of GDP	WDI, The World Bank
7.	Liquid liability	LIQ_LIAB	Independent	% of GDP	Global Financial Development, The World Bank
8.	Real GDP per capita	GDPPC1	Control	Constant US\$, thousand dollars	WDI, The World Bank
9.	Government consumption	GOV_EXP	Control	% of GDP	WDI, The World Bank
10.	Inflation	INF	Control	CPI, %	WDI, The World Bank
11.	Trade	TRADE	Control	% of GDP	WDI, The World Bank
12.	Fertility rate	FRATE	Control	Birth per woman	WDI, The World Bank
13.	Population growth	POPG	Control	Annual %	WDI, The World Bank

empirical

results into real case. In this part, we have conducted survey from 40 Mongolian workers living in Republic of Korea. The survey sample has been chosen as a person has children age of six or more reflecting the lowest human capital proxy of

elementary school enrollment.<sup>5</sup> The case study of Mongolia based on primary data from survey will conduct in-depth analysis of (1) do remittances really have the potential generate spillover effects that facilitate more schooling opportunities in reality? (2) if this impact is only restricted to the specific group or not.

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<sup>5</sup> Refer to the Survey questionnaire in appendix part.

#### 4. EMPIRICAL FINDINGS AND ANALYSES

This section presents and analyzes the empirical results. Throughout the section, tables contain four different model specifications and three different panels. Model 1 presents full log model of each independent and dependent variables except controls. Model 2 presents full log model with time dummies of 1995-2011 to avoid endogeneity bias. Model 3, 4 are illustrates full lag model of each independent and dependent variables except controls without and with time dummy variables of 1995 to 2011 to deal with multicollinearity.

We used three main proxies for financial sector development. The first one is Domestic credit provided by banking sector (DCBC), second one is domestic credit to private sector (DCPS), and the third is liquid liability (LIQ\_LIAB). Also the paper took three different indicators of human capital accumulation: Primary, secondary, and tertiary level education enrollment rate as a percentage of GDP. Sample size differs in each education level depending on data availability.

##### 4.1 Primary Level Education

As expected, positive (PREM), positive (FIN\_DEV), negative (PREM\*FIN\_DEV) signs are consistent throughout most countries and education levels. **Table 2** shows the primary education level regression results. The table shows that for the primary level education, trade and population growth have positively significant effect on human capital accumulation through all three financial sector development proxies, while GDP per capita and fertility rate have negatively significant impact on it. Four models in Panel B, domestic credit to private sector, of **Table 2** presents statistically significant result of remittance and financial sector

development's positive impact on human capital and their negative and significant relationship to each other.

<b>TABLE2: PRIMARY EDUCATION</b>				
<b>PANEL A: Finance1: Domestic Credit Provided by Banking Sector</b>				
	Model1: Log	Model2: Log	Model3: Lag	Model4: Lag
lprem	0.028 (0.012)**	0.028 (0.013)**		
ldcbc	0.018 (0.008)**	0.005 (0.009)		
Lprem_dcdbc	-0.008 (0.004)**	-0.011 (0.004)***		
lagprem			0.012 (0.011)	0.005 (0.011)
lagdcbc			-0.005 (0.006)	-0.010 (0.006)
lagLprem_dcdbc			-0.001 (0.003)	-0.002 (0.003)
gdppc1	-0.032 (0.006)***	-0.080 (0.009)***	-0.027 (0.006)***	-0.075 (0.009)***
gov_exp	0.002 (0.001)**	0.004 (0.001)***	0.002 (0.001)**	0.004 (0.001)***
inf	-0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
trade	0.001 (0.000)***	0.001 (0.000)***	0.001 (0.000)***	0.001 (0.000)***
frate	-0.170 (0.009)***	-0.088 (0.015)***	-0.169 (0.009)***	-0.090 (0.015)***
popg	0.021 (0.006)***	0.015 (0.006)***	0.023 (0.006)***	0.017 (0.006)***
_cons	5.082 (0.046)***	4.995 (0.053)***	5.140 (0.044)***	5.034 (0.051)***
R <sup>2</sup>	0.27	0.30	0.26	0.30
N	1,400	1,322	1,399	1,321
<b>PANEL B: Finance2: Domestic Credit to Private Sector</b>				
	Model1: Log	Model2: Log	Model3: Lag	Model4: Lag
lprem	0.022 (0.008)***	0.019 (0.008)**		
ldcps	0.040 (0.007)***	0.026 (0.008)***		
Lprem_dcps	-0.008 (0.003)***	-0.010 (0.003)***		
lagprem			0.029 (0.008)***	0.025 (0.008)***
lagdcps			0.016 (0.006)***	0.006 (0.006)
lagLprem_dcps			-0.009 (0.003)***	-0.009 (0.003)***
gdppc1	-0.043 (0.007)***	-0.081 (0.009)***	-0.034 (0.006)***	-0.075 (0.009)***
gov_exp	0.002 (0.001)**	0.004 (0.001)***	0.002 (0.001)**	0.004 (0.001)***

inf	-0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
trade	0.000 (0.000)***	0.001 (0.000)***	0.001 (0.000)***	0.001 (0.000)***
frate	-0.166 (0.009)***	-0.095 (0.014)***	-0.172 (0.009)***	-0.098 (0.014)***
popg	0.017 (0.006)***	0.013 (0.006)**	0.022 (0.006)***	0.016 (0.006)***
_cons	5.046 (0.043)***	4.960 (0.050)***	5.108 (0.041)***	5.009 (0.049)***
R <sup>2</sup>	0.28	0.30	0.27	0.30
N	1,437	1,357	1,436	1,355
<b>PANEL C: Finance3: Liquid Liability</b>				
	<b>Model1: Log</b>	<b>Model2: Log</b>	<b>Model3: Lag</b>	<b>Model4: Lag</b>
lprem	0.027 (0.016)*	0.027 (0.016)*		
lliq_liab	0.048 (0.013)***	0.010 (0.014)		
Lprem_liq_liab	-0.008 (0.005)*	-0.010 (0.005)**		
lagprem			0.043 (0.014)***	0.033 (0.014)**
lagliq_liab			0.009 (0.009)	-0.011 (0.010)
lagLprem_liqliab			-0.011 (0.004)**	-0.010 (0.004)**
gdppc1	-0.037 (0.006)***	-0.076 (0.009)***	-0.030 (0.006)***	-0.073 (0.009)***
gov_exp	0.002 (0.001)*	0.004 (0.001)***	0.002 (0.001)**	0.004 (0.001)***
inf	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
trade	0.000 (0.000)***	0.001 (0.000)***	0.001 (0.000)***	0.001 (0.000)***
frate	-0.159 (0.009)***	-0.088 (0.014)***	-0.168 (0.008)***	-0.092 (0.014)***
popg	0.019 (0.006)***	0.015 (0.006)***	0.022 (0.006)***	0.016 (0.006)***
_cons	4.958 (0.059)***	4.961 (0.065)***	5.099 (0.049)***	5.040 (0.056)***
R <sup>2</sup>	0.27	0.29	0.27	0.30
N	1,437	1,357	1,435	1,354
Time dummies	No	Yes	No	Yes

**Notes:** In all cases \*\*\*, \*\*, and \* indicate statistical significance at levels 1%, 5%, and 10% respectively. The numbers in parentheses are t-statistics. Log and lag transformations are not applied to control variables but independent and dependent variables.

## 4.2 Secondary Level Education

Secondary level education regression results are given by **Table 3** below. As it comes to the secondary schooling, statistical significance of trade and population growth on human capital accumulation has decreased in time dummy models.

However, remittance and financial development proxies' effect on human capital are positively and statistically significant at 1% and 5% in each panel compared to only one panel in primary level as well as negatively significant relation of latter two variables.

<b>TABLE3: SECONDARY EDUCATION</b>				
<b>PANEL A: Finance1: Domestic Credit Provided by Banking Sector</b>				
	Model1: Log	Model2: Log	Model3: Lag	Model4: Lag
lprem	0.070 (0.021)***	0.032 (0.020)		
ldcbc	0.056 (0.014)***	0.024 (0.015)*		
Lprem_dcbc	-0.019 (0.006)***	-0.016 (0.006)***		
lagprem			0.062 (0.018)***	0.022 (0.017)
lagdcbc			0.029 (0.011)***	0.015 (0.011)
lagLprem_dcbc			-0.017 (0.005)***	-0.012 (0.005)**
gdppc1	0.016 (0.011)	-0.147 (0.016)***	0.023 (0.011)**	-0.142 (0.016)***
gov_exp	0.000 (0.002)	0.004 (0.002)*	0.001 (0.002)	0.004 (0.002)**
inf	-0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)
trade	0.001 (0.000)**	0.001 (0.000)	0.001 (0.000)***	0.001 (0.000)
frate	-0.419 (0.016)***	-0.138 (0.026)***	-0.419 (0.016)***	-0.141 (0.026)***
popg	0.034 (0.011)***	0.018 (0.010)*	0.035 (0.011)***	0.020 (0.010)**
_cons	5.061 (0.083)***	4.806 (0.092)***	5.113 (0.079)***	4.827 (0.088)***
R <sup>2</sup>	0.44	0.51	0.43	0.51
N	1,358	1,282	1,357	1,281
<b>PANEL B: Finance2: Domestic Credit to Private Sector</b>				
	Model1: Log	Model2: Log	Model3: Lag	Model4: Lag
lprem	0.041 (0.014)***	0.025 (0.014)*		
ldcps	0.041 (0.014)***	-0.016 (0.014)		
Lprem_dcps	-0.013 (0.004)***	-0.015 (0.004)***		
lagprem			0.051 (0.014)***	0.028 (0.013)**
lagdcps			0.024 (0.011)**	-0.015 (0.011)
lagLprem_dcps			-0.016 (0.004)***	-0.015 (0.004)***
gdppc1	0.008	-0.139	0.015	-0.140

gov_exp	(0.012) 0.001	(0.016)*** 0.004	(0.012) 0.001	(0.016)*** 0.005
inf	(0.002) -0.000	(0.002)** 0.000	(0.002) -0.000	(0.002)** 0.000
trade	(0.000)* 0.001	(0.000)* 0.001	(0.000)*** 0.001	(0.000) 0.001
frate	(0.016)*** -0.419	(0.025)*** -0.137	(0.016)*** -0.425	(0.025)*** -0.136
popg	(0.011)*** 0.038	(0.010)** 0.022	(0.010)*** 0.039	(0.010)** 0.020
_cons	(0.079)*** 5.141	(0.087)*** 4.913	(0.076)*** 5.180	(0.085)*** 4.911
R <sup>2</sup>	0.44	0.51	0.44	0.51
N	1,393	1,316	1,392	1,314
<b>PANEL C: Finance3: Liquid Liability</b>				
	Model1: Log	Model2: Log	Model3: Lag	Model4: Lag
lprem	0.042 (0.025)*	0.014 (0.024)		
lliq_liab	0.154 (0.024)***	0.028 (0.025)		
Lprem_liq_liab	-0.013 (0.007)*	-0.010 (0.007)		
lagprem			0.064 (0.023)***	0.017 (0.022)
lagliq_liab			0.089 (0.016)***	0.034 (0.017)**
lagLprem_liqliab			-0.018 (0.006)***	-0.010 (0.006)
gdppc1	-0.005 (0.012)	-0.142 (0.015)***	0.010 (0.011)	-0.141 (0.015)***
gov_exp	0.000 (0.002)	0.004 (0.002)*	0.001 (0.002)	0.004 (0.002)*
inf	-0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)
trade	0.001 (0.000)**	0.001 (0.000)	0.001 (0.000)***	0.000 (0.000)
frate	(0.016)*** -0.389	(0.025)*** -0.134	(0.015)*** -0.416	(0.025)*** -0.138
popg	(0.010)*** 0.030	(0.010)* 0.019	(0.010)*** 0.039	(0.010)** 0.020
_cons	(0.109)*** 4.679	(0.114)*** 4.771	(0.088)*** 4.927	(0.096)*** 4.757
R <sup>2</sup>	0.45	0.51	0.44	0.51
N	1,393	1,316	1,391	1,313
Time dummies	No	Yes	No	Yes

**Notes:** In all cases \*\*\*, \*\*, and \* indicate statistical significance at levels 1%, 5%, and 10% respectively. The numbers in parentheses are t-statistics. Log and lag transformations are not applied to control variables but independent and dependent variables.

### 4.3 Tertiary Level Education

**Table 4** below shows tertiary level education regression results. Tertiary level schooling shows similar findings as secondary education: remittance and financial development proxies' effect on human capital are positively and statistically significant at 1% and 5% in Panel A and C as well as negatively significant relation of latter two variables. Panel B shows same signs but at 10% significance level.

<b>TABLE4: TERTIARY EDUCATION</b>				
<b>PANEL A: Finance1: Domestic Credit Provided by Banking Sector</b>				
	Model1: Log	Model2: Log	Model3: Lag	Model4: Lag
lprem	0.139 (0.035)***	0.097 (0.036)***		
ldcbc	0.097 (0.025)***	0.035 (0.026)		
Lprem_dcbc	-0.037 (0.010)***	-0.034 (0.010)***		
lagprem			0.114 (0.031)***	0.065 (0.030)**
lagdcbc			0.081 (0.020)***	0.045 (0.019)**
lagLprem_dcbc			-0.030 (0.009)***	-0.025 (0.008)***
gdppc1	0.229 (0.020)***	0.022 (0.029)	0.231 (0.020)***	0.018 (0.029)
gov_exp	0.000 (0.003)	0.008 (0.004)**	0.001 (0.003)	0.008 (0.004)**
inf	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
trade	0.002 (0.000)***	0.003 (0.001)***	0.002 (0.000)***	0.004 (0.001)***
frate	-0.683 (0.028)***	-0.309 (0.045)***	-0.683 (0.028)***	-0.305 (0.045)***
popg	-0.129 (0.020)***	-0.153 (0.019)***	-0.124 (0.020)***	-0.149 (0.019)***
_cons	3.939 (0.142)***	3.462 (0.162)***	3.949 (0.136)***	3.421 (0.153)***
R <sup>2</sup>	0.56	0.59	0.56	0.59
N	1,248	1,180	1,248	1,180
<b>PANEL B: Finance2: Domestic Credit to Private Sector</b>				
	Model1: Log	Model2: Log	Model3: Lag	Model14: Lag
lprem	0.043 (0.024)*	0.027 (0.024)		
ldcps	0.149 (0.024)***	0.039 (0.025)		
Lprem_dcps	-0.015 (0.008)**	-0.017 (0.007)**		
lagprem			0.046	0.026

			(0.024)*	(0.023)
lagdcps			0.113	0.039
			(0.020)***	(0.021)*
lagLprem_dcps			-0.015	-0.016
			(0.007)**	(0.007)**
gdppc1	0.169	-0.007	0.190	-0.009
	(0.022)***	(0.028)	(0.021)***	(0.028)
gov_exp	0.000	0.008	0.001	0.008
	(0.003)	(0.004)**	(0.003)	(0.004)**
inf	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
trade	0.002	0.003	0.002	0.003
	(0.000)***	(0.001)***	(0.000)***	(0.001)***
frate	-0.662	-0.288	-0.687	-0.288
	(0.028)***	(0.045)***	(0.028)***	(0.045)***
popg	-0.123	-0.144	-0.114	-0.142
	(0.020)***	(0.019)***	(0.019)***	(0.019)***
_cons	3.865	3.450	3.971	3.450
	(0.136)***	(0.153)***	(0.130)***	(0.149)***
R <sup>2</sup>	0.56	0.59	0.56	0.59
N	1,285	1,215	1,285	1,214

PANEL C: Finance3: Liquid Liability

	Model1: Log	Model2: Log	Model3: Lag	Model4: Lag
lprem	0.127	0.100		
	(0.042)***	(0.042)**		
lliq_liab	0.357	0.147		
	(0.040)***	(0.045)***		
Lprem_liq_liab	-0.038	-0.036		
	(0.012)***	(0.012)***		
lagprem			0.128	0.077
			(0.039)***	(0.038)**
lagliq_liab			0.190	0.082
			(0.029)***	(0.031)***
lagLprem_liqliab			-0.036	-0.028
			(0.011)***	(0.010)***
gdppc1	0.152	-0.003	0.195	-0.003
	(0.021)***	(0.028)	(0.020)***	(0.028)
gov_exp	0.000	0.007	0.000	0.007
	(0.003)	(0.004)**	(0.003)	(0.004)*
inf	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
trade	0.002	0.003	0.002	0.003
	(0.000)***	(0.001)***	(0.000)***	(0.001)***
frate	-0.606	-0.294	-0.670	-0.287
	(0.029)***	(0.045)***	(0.027)***	(0.044)***
popg	-0.135	-0.149	-0.110	-0.142
	(0.019)***	(0.019)***	(0.019)***	(0.019)***
_cons	2.943	3.052	3.585	3.263
	(0.185)***	(0.199)***	(0.152)***	(0.169)***
R <sup>2</sup>	0.57	0.59	0.56	0.59
N	1,285	1,215	1,284	1,213
Time dummies	No	Yes	No	Yes

**Notes:** In all cases \*\*\*, \*\*, and \* indicate statistical significance at levels 1%, 5%, and 10% respectively. The numbers in parentheses are t-statistics. Log and lag transformations are not applied to control variables but independent and dependent variables.

#### 4.4. Countries' Income Specific Result

##### UPPER MIDDLE INCOME COUNTRIES

Tables 5, 6, and 7 below illustrate the empirical results for the different education levels. For upper-middle income countries, impact of remittances associated with human capital in primary and secondary level education shows mixed results but not statistically significant except lag time dummy model in Panel A of Table 5. Tertiary education shows significance in model with time dummies controlling for endogeneity.

<b>TABLE5: UPPER MIDDLE INCOME COUNTRIES: PRIMARY EDUCATION</b>				
<b>PANEL A: Finance1: Domestic Credit Provided by Banking Sector</b>				
	Model1: Log	Model2:Log	Model3: Lag	Model4: Lag
lprem	0.004 (0.013)	-0.005 (0.014)		
ldcbc	-0.012 (0.007)*	-0.004 (0.008)		
Lprem_dcbs	-0.001 (0.004)	0.002 (0.004)		
lagprem			-0.024 (0.012)**	-0.031 (0.012)***
lagdcbs			-0.004 (0.005)	0.001 (0.005)
lagLprem_dcbs			0.006 (0.003)**	0.008 (0.003)**
_cons	4.678 (0.043)***	4.588 (0.054)***	4.641 (0.042)***	4.548 (0.050)***
R <sup>2</sup>	0.04	0.08	0.04	0.09
N	570	537	568	535
<b>PANEL B: Finance2: Domestic Credit to Private Sector</b>				
	Model1: Log	Model2:Log	Model3:Lag	Model4:Lag
lprem	0.010 (0.008)	0.004 (0.008)		
ldcps	-0.000 (0.007)	0.005 (0.007)		
Lprem_dcps	-0.004 (0.003)	-0.002 (0.003)		
lagprem			-0.000 (0.008)	-0.005 (0.008)
lagdcps			-0.003 (0.005)	0.001 (0.005)
lagLprem_dcps			-0.000 (0.002)	0.001 (0.002)
_cons	4.663	4.585	4.661	4.586

$R^2$	(0.041)*** 0.02	(0.049)*** 0.07	(0.040)*** 0.02	(0.048)*** 0.07
$N$	589	555	588	554
<b>PANEL C: Finance3: Liquid Liability</b>				
	Model1: Log	Model2: Log	Model3: Lag	Model4: Lag
lprem	0.022 (0.017)	0.022 (0.017)	-0.001 (0.004)	-0.002 (0.004)
lliq_liab	-0.032 (0.011)***	-0.019 (0.013)		
Lprem_liq_liab	-0.007 (0.005)	-0.007 (0.005)		
lagprem			-0.006 (0.016)	-0.004 (0.017)
lagliq_liab			-0.013 (0.008)	-0.006 (0.008)
lagLprem_liqliab			0.001 (0.004)	0.001 (0.005)
_cons	4.763 (0.054)***	4.657 (0.063)***	4.699 (0.046)***	4.617 (0.055)***
$R^2$	0.04	0.08	0.02	0.07
$N$	589	555	586	552
Time dummies	No	Yes	No	Yes

**Notes:** In all cases \*\*\*, \*\*, and \* indicate statistical significance at levels 1%, 5%, and 10% respectively. The numbers in parentheses are t-statistics. Log and lag transformations are not applied to control variables but independent and dependent variables.

**TABLE6: UPPER MIDDLE INCOME COUNTRIES: SECONDARY EDUCATION**

**PANEL A: Finance1: Domestic Credit Provided by Banking Sector**

	Model1: Log	Model2:Log	Model3:Lag	Model4:Lag
lprem	0.007 (0.019)	-0.008 (0.020)		
ldcbc	0.031 (0.012)***	0.006 (0.014)		
Lprem_dcdbc	-0.003 (0.005)	-0.000 (0.005)		
lagprem			0.027 (0.018)	0.018 (0.018)
lagdcdbc			0.014 (0.008)*	0.002 (0.009)
lagLprem_dcdbc			-0.008 (0.005)*	-0.006 (0.005)
_cons	4.461 (0.074)***	4.548 (0.089)***	4.506 (0.072)***	4.592 (0.085)***
$R^2$	0.50	0.52	0.50	0.52
$N$	571	539	569	537

**PANEL B: Finance2: Domestic Credit to Private Sector**

	lsec_en	lsec_en	lsec_en	lsec_en
lprem	-0.006 (0.014)	-0.017 (0.014)		
ldcps	0.028 (0.012)**	0.016 (0.012)		
Lprem_dcps	0.000 (0.004)	0.002 (0.004)		
lagprem			0.024 (0.013)*	0.016 (0.013)

lagdcps			0.022 (0.009)**	0.011 (0.009)
lagLprem_dcps			-0.008 (0.004)**	-0.006 (0.004)*
_cons	4.513 (0.072)***	4.545 (0.082)***	4.566 (0.070)***	4.622 (0.081)***
R <sup>2</sup>	0.50	0.53	0.51	0.53
N	590	557	589	556
<b>PANEL C: Finance3: Liquid Liability</b>				
	Model1: Log	Model2: Log	Model3: Lag	Model4: Lag
lprem	0.042 (0.023)*	0.007 (0.024)		
lliq_liab	0.036 (0.019)*	-0.014 (0.021)		
Lprem_liq_liab	-0.012 (0.006)**	-0.005 (0.006)		
lagprem			0.065 (0.022)***	0.041 (0.022)*
lagliq_liab			0.016 (0.013)	-0.002 (0.013)
lagLprem_liqliab			-0.018 (0.006)***	-0.012 (0.006)**
y16				0.194 (0.034)***
_cons	4.460 (0.093)***	4.641 (0.106)***	4.558 (0.080)***	4.460 (0.090)***
R <sup>2</sup>	0.51	0.53	0.51	0.53
N	590	557	588	555
Time dummies	No	Yes	No	Yes

**Notes:** In all cases \*\*\*, \*\*, and \* indicate statistical significance at levels 1%, 5%, and 10% respectively. The numbers in parentheses are t-statistics. Log and lag transformations are not applied to control variables but independent and dependent variables.

To notice that for the countries with higher income, hypothesis illustrating positive effect of remittances and financial development on human capital and their negative relation is rejected. **Table 7** shows that remittances have statistically negatively correlated with tertiary education enrollment at 1% and 5% level and financial development. The insignificant coefficient between prem and finance implies that the impact of prem (finance) on human capital does not depend on finance (prem). And financial development keeps its positively significant correlation with human capital in higher income countries.

**TABLE7: UPPER MIDDLE INCOME COUNTRIES: TERTIARY EDUCATION**

**PANEL A: Finance1: Domestic Credit Provided by Banking Sector**

	Model1: Log	Model2: Log	Model3: Lag	Model4: Lag
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lprem	-0.010 (0.055)	-0.127 (0.051)**		
ldcbc	0.036 (0.034)	-0.013 (0.035)		
Lprem_dcdbc	-0.000 (0.014)	0.021 (0.013)		
lagprem			-0.010 (0.053)	-0.070 (0.050)
lagdcdbc			0.119 (0.024)***	0.091 (0.022)***
lagLprem_dcdbc			0.000 (0.014)	0.013 (0.013)
_cons	3.082 (0.209)***	2.852 (0.231)***	2.778 (0.197)***	2.600 (0.219)***
R <sup>2</sup>	0.59	0.67	0.60	0.67
N	495	469	493	467
<b>PANEL B: Finance2: Domestic Credit to Private Sector</b>				
	Model1: Log	Model2: Log	Model3: Lag	Model4: Lag
lprem	-0.053 (0.037)	-0.136 (0.033)***		
ldcps	-0.022 (0.035)	-0.033 (0.031)		
Lprem_dcps	0.011 (0.010)	0.026 (0.009)***		
lagprem			-0.047 (0.036)	-0.102 (0.033)***
lagdcps			0.090 (0.025)***	0.081 (0.023)***
lagLprem_dcps			0.010 (0.010)	0.022 (0.009)**
_cons	3.151 (0.202)***	2.784 (0.207)***	2.906 (0.195)***	2.634 (0.206)***
R <sup>2</sup>	0.58	0.68	0.58	0.68
N	514	487	513	486
<b>PANEL C: Finance3: Liquid Liability</b>				
	Model1: Log	Model2: Log	Model3: Lag	Model4: Lag
lprem	0.028 (0.063)	-0.154 (0.058)***		
lliq_liab	0.174 (0.056)***	-0.040 (0.055)		
Lprem_liq_liab	-0.010 (0.016)	0.027 (0.014)*		
lagprem			0.090 (0.061)	-0.021 (0.056)
lagliq_liab			0.179 (0.035)***	0.140 (0.035)***
lagLprem_liqliab			-0.026 (0.015)*	-0.000 (0.014)
y16				0.744 (0.091)***
_cons	2.558 (0.264)***	2.936 (0.271)***	2.584 (0.216)***	1.694 (0.229)***
R <sup>2</sup>	0.58	0.68	0.59	0.67
N	514	487	512	485
Time dummies	No	Yes	No	Yes

**Notes:** In all cases \*\*\*, \*\*, and \* indicate statistical significance at levels 1%, 5%, and 10% respectively. The numbers in parentheses are t-statistics. Log and lag transformations are not applied to control variables but independent and dependent variables.

*LOWER MIDDLE INCOME COUNTRIES*

Lower-Middle income countries, for tertiary level education remittances significantly positively related with school enrollment which was expected before. Primary and secondary level does not show 1% or significant. Here we can see another tendency in the model with second proxy of financial development (dcps). Remittances and financial development are not significant in the PANEL B. Unlike previous upper middle income countries, the expected signs are kept as positive signs of remittances and FD, and negative of between these two.

<b>TABLE8: LOWER MIDDLE INCOME COUNTRIES: PRIMARY EDUCATION</b>				
<b>PANEL A: Finance1: Domestic Credit Provided by Banking Sector</b>				
	lpri_en	lpri_en	lpri_en	lpri_en
lprem	0.004 (0.016)	0.018 (0.016)		
ldcbc	-0.006 (0.011)	-0.017 (0.012)		
Lprem_dcbs	-0.001 (0.005)	-0.006 (0.005)		
lagprem			-0.006 (0.014)	-0.005 (0.014)
lagdcbs			-0.003 (0.010)	-0.008 (0.010)
lagLprem_dcbs			0.003 (0.004)	0.002 (0.004)
_cons	4.933 (0.060)***	4.843 (0.086)***	4.954 (0.059)***	4.881 (0.081)***
R <sup>2</sup>	0.33	0.35	0.34	0.35
N	556	525	556	526
<b>PANEL B: Finance2: Domestic Credit to Private Sector</b>				
	lpri_en	lpri_en	lpri_en	lpri_en
lprem	-0.024 (0.010)**	-0.022 (0.010)**		
ldcps	0.026 (0.010)***	0.018 (0.010)*		
Lprem_dcps	0.008 (0.004)**	0.008 (0.004)**		
lagprem			-0.011 (0.009)	-0.008 (0.009)
lagdcps			0.017	0.010

lagLprem_dcps			(0.008)**	(0.009)
			0.005	0.004
			(0.003)	(0.003)
y1				-0.035
				(0.032)
_cons	4.889	4.823	4.916	4.873
	(0.056)***	(0.081)***	(0.056)***	(0.066)***
R <sup>2</sup>	0.34	0.35	0.34	0.34
N	574	542	573	541
<b>PANEL C: Finance3: Liquid Liability</b>				
	lpri_en	lpri_en	lpri_en	lpri_en
lprem	0.005	0.011		
	(0.018)	(0.019)		
lliq_liab	0.028	-0.006		
	(0.019)	(0.021)		
Lprem_liq_liab	-0.002	-0.004		
	(0.006)	(0.006)		
lagprem			0.023	0.028
			(0.017)	(0.017)
lagliq_liab			0.014	-0.002
			(0.014)	(0.015)
lagLprem_liqliab			-0.006	-0.008
			(0.005)	(0.005)
y1				0.003
				(0.021)
_cons	4.848	4.822	4.896	4.835
	(0.077)***	(0.093)***	(0.064)***	(0.083)***
R <sup>2</sup>	0.33	0.34	0.33	0.34
N	574	542	573	541
Time dummies	No	Yes	No	Yes

**Notes:** In all cases \*\*\*, \*\*, and \* indicate statistical significance at levels 1%, 5%, and 10% respectively. The numbers in parentheses are t-statistics. Log and lag transformations are not applied to control variables but independent and dependent variables.

<b>TABLE9: LOWER MIDDLE INCOME COUNTRIES: SECONDARY EDUCATION</b>				
<b>PANEL A: Finance1: Domestic Credit Provided by Banking Sector</b>				
	Model1: Log	Model2: Log	Model3: Lag	Model4: Lag
lprem	-0.039	-0.026		
	(0.026)	(0.025)		
ldcbc	-0.015	0.008		
	(0.019)	(0.019)		
Lprem_dcbs	0.019	0.005		
	(0.008)**	(0.008)		
lagprem			-0.020	-0.020
			(0.023)	(0.022)
lagdcbs			-0.005	-0.000
			(0.017)	(0.016)
lagLprem_dcbs			0.010	0.002
			(0.007)	(0.007)
_cons	5.376	4.438	5.320	4.453
	(0.107)***	(0.150)***	(0.107)***	(0.138)***
R <sup>2</sup>	0.58	0.66	0.57	0.66
N	510	481	510	482
<b>PANEL B: Finance2: Domestic Credit to Private Sector</b>				

	Model1: Log	Model2: Log	Model3: Lag	Model4: Lag
lprem	-0.022 (0.017)	-0.032 (0.016)**		
ldcps	0.039 (0.018)**	0.030 (0.016)*		
Lprem_dcps	0.015 (0.006)**	0.006 (0.006)		
lagprem			-0.005 (0.016)	-0.010 (0.014)
lagdcps			0.034 (0.014)**	0.017 (0.014)
lagLprem_dcps			0.005 (0.006)	-0.003 (0.005)
y1				-0.470 (0.053)***
_cons	5.293 (0.103)***	4.403 (0.140)***	5.303 (0.101)***	4.883 (0.111)***
R <sup>2</sup>	0.59	0.67	0.58	0.67
N	526	497	525	496
<b>PANEL C: Finance3: Liquid Liability</b>				
	Model1: Log	Model2: Log	Model3: Lag	Model4: Lag
lprem	-0.038 (0.031)	-0.018 (0.029)		
lliq_liab	0.126 (0.039)***	0.062 (0.039)		
Lprem_liq_liab	0.014 (0.009)	-0.000 (0.009)		
lagprem			0.003 (0.029)	0.008 (0.026)
lagliq_liab			0.085 (0.024)***	0.059 (0.023)**
lagLprem_liqliab			0.001 (0.009)	-0.008 (0.008)
_cons	5.019 (0.143)***	4.292 (0.163)***	5.135 (0.113)***	4.290 (0.144)***
R <sup>2</sup>	0.59	0.67	0.59	0.67
N	526	497	525	496
Time dummies	No	Yes	No	Yes

**Notes:** In all cases \*\*\*, \*\*, and \* indicate statistical significance at levels 1%, 5%, and 10% respectively. The numbers in parentheses are t-statistics. Log and lag transformations are not applied to control variables but independent and dependent variables.

<b>TABLE10: LOWER MIDDLE INCOME COUNTRIES: TERTIARY EDUCATION</b>				
<b>PANEL A: Finance1: Domestic Credit Provided by Banking Sector</b>				
	Model1: Log	Model2: Log	Model3: Lag	Model4: Lag
lprem	0.190 (0.060)***	0.195 (0.064)***		
ldcbc	0.104 (0.044)**	0.054 (0.048)		
Lprem_dcbs	-0.050 (0.018)***	-0.048 (0.020)**		
lagprem			0.112 (0.053)**	0.111 (0.056)**
lagdcbs			0.073 (0.039)*	0.041 (0.041)

lagLprem_dcbc			-0.027 (0.016)*	-0.024 (0.017)
_cons	3.977 (0.239)***	3.905 (0.364)***	4.062 (0.240)***	3.898 (0.287)***
R <sup>2</sup>	0.57	0.58	0.56	0.57
N	468	442	469	444
<b>PANEL B: Finance2: Domestic Credit to Private Sector</b>				
	Model1: Log	Model2: Log	Model3: Lag	Model4: Lag
lprem	0.020 (0.038)	0.030 (0.040)		
ldcps	0.096 (0.043)**	0.035 (0.045)		
Lprem_dcps	0.000 (0.014)	0.005 (0.014)		
lagprem			0.017 (0.036)	0.033 (0.037)
lagdcps			0.060 (0.035)*	0.012 (0.038)
lagLprem_dcps			0.002 (0.013)	0.001 (0.013)
_cons	4.076 (0.229)***	4.253 (0.345)***	4.130 (0.229)***	4.031 (0.276)***
R <sup>2</sup>	0.56	0.57	0.56	0.57
N	486	459	486	459
<b>PANEL C: Finance3: Liquid Liability</b>				
	Model1: Log	Model2: Log	Model3: Lag	Model4: Lag
lprem	0.163 (0.068)**	0.146 (0.071)**		
lliq_liab	0.457 (0.079)***	0.394 (0.090)***		
Lprem_liq_liab	-0.051 (0.021)**	-0.038 (0.022)*		
lagprem			0.132 (0.065)**	0.130 (0.067)*
lagliq_liab			0.199 (0.055)***	0.139 (0.060)**
lagLprem_liqliab			-0.036 (0.020)*	-0.030 (0.021)
_cons	2.979 (0.299)***	3.517 (0.379)***	3.721 (0.256)***	3.791 (0.354)***
R <sup>2</sup>	0.59	0.59	0.57	0.58
N	486	459	486	459
Time dummies	No	Yes	No	Yes

**Notes:** In all cases \*\*\*, \*\*, and \* indicate statistical significance at levels 1%, 5%, and 10% respectively. The numbers in parentheses are t-statistics. Log and lag transformations are not applied to control variables but independent and dependent variables.

### *LOW INCOME COUNTRIES*

For low income countries, the very first thing is remittances and financial sector developments are significantly negatively related at 1% confidence level for

every education stage. And remittances show 0.01 and 0.05 level significance of positive relationship with human capital accumulation indicating that remittances are becoming the main source for human capital accumulation.

<b>TABLE11: LOW INCOME COUNTRIES: PRIMARY EDUCATION</b>				
<b>PANEL A: Finance1: Domestic Credit Provided by Banking Sector</b>				
	Model1: Log	Model2: Log	Model3: Lag	Model4: Lag
lprem	0.027 (0.036)	-0.032 (0.033)		
lgdppc	0.891 (0.235)***	1.069 (0.206)***		
Lprem_dcbs	-0.020 (0.012)	-0.010 (0.011)		
lagprem			0.001 (0.037)	-0.028 (0.034)
lagdcbs			-0.024 (0.020)	-0.030 (0.024)
lagLprem_dcbs			-0.001 (0.012)	-0.000 (0.011)
_cons	1.124 (1.258)	-0.286 (1.100)	5.707 (0.217)***	4.982 (0.248)***
R <sup>2</sup>	0.56	0.72	0.52	0.65
N	274	260	275	260
<b>PANEL B: Finance2: Domestic Credit to Private Sector</b>				
	Model1: Log	Model2: Log	Model3: Lag	Model4: Lag
lprem	0.050 (0.026)*	-0.004 (0.026)		
ldcbs	0.000 (0.024)	-0.012 (0.022)		
Lprem_dcps	-0.033 (0.010)***	-0.024 (0.010)**		
lagprem			0.059 (0.026)**	0.038 (0.025)
lagdcps			0.009 (0.020)	0.004 (0.025)
lagLprem_dcps			-0.025 (0.009)***	-0.025 (0.009)***
_cons	5.861 (0.217)***	5.446 (0.208)***	5.686 (0.211)***	4.861 (0.222)***
R <sup>2</sup>	0.55	0.70	0.53	0.66
N	274	260	275	260
<b>PANEL C: Finance3: Liquid Liability</b>				
	Model1: Log	Model2: Log	Model3: Lag	Model4: Lag
lprem	-0.016 (0.014)	-0.041 (0.013)***		
lliq_liab	0.066 (0.049)	0.025 (0.046)		
prem_liq_liab	-0.000 (0.000)*	-0.000 (0.000)**		
lagprem			0.024 (0.053)	0.052 (0.047)
lagliq_liab			-0.018	-0.066

lagLprem_liqliab			(0.029)	(0.036)*
			-0.008	-0.024
			(0.017)	(0.015)
_cons	5.616	5.270	5.696	5.111
	(0.244)***	(0.236)***	(0.220)***	(0.254)***
R <sup>2</sup>	0.54	0.70	0.52	0.66
N	274	260	275	260
Time dummies	No	Yes	No	Yes

**Notes:** In all cases \*\*\*, \*\*, and \* indicate statistical significance at levels 1%, 5%, and 10% respectively. The numbers in parentheses are t-statistics. Log and lag transformations are not applied to control variables but independent and dependent variables.

**TABLE12: LOW INCOME COUNTRIES: SECONDARY EDUCATION**

**PANEL A: Finance1: Domestic Credit Provided by Banking Sector**

	Model1: Log	Model2: Log	Model3: Lag	Model4: Lag
lprem	0.374 (0.079)***	0.173 (0.081)**		
ldcbc	0.156 (0.053)***	0.063 (0.052)		
Lprem_dcdbc	-0.148 (0.026)***	-0.106 (0.026)***		
lagprem			0.146 (0.064)**	0.001 (0.060)
lagdcdbc			0.049 (0.038)	0.058 (0.046)
lagLprem_dcdbc			-0.050 (0.019)***	-0.028 (0.018)
_cons	5.504 (0.430)***	5.339 (0.428)***	4.956 (0.446)***	4.437 (0.445)***
R <sup>2</sup>	0.54	0.67	0.48	0.62
N	277	262	278	262

**PANEL B: Finance2: Domestic Credit to Private Sector**

	Model1: Log	Model2: Lag	Model3: Lag	Model4: Lag
lprem	0.374 (0.079)***	0.173 (0.081)**		
ldcbc	0.156 (0.053)***	0.063 (0.052)		
Lprem_dcdbc	-0.148 (0.026)***	-0.106 (0.026)***		
lagprem			0.146 (0.064)**	0.001 (0.060)
lagdcdbc			0.049 (0.038)	0.058 (0.046)
lagLprem_dcdbc			-0.050 (0.019)***	-0.028 (0.018)
_cons	5.504 (0.430)***	5.339 (0.428)***	4.956 (0.446)***	4.437 (0.445)***
R <sup>2</sup>	0.54	0.67	0.48	0.62
N	277	262	278	262

**PANEL C: Finance3: Liquid Liability**

	Model1: Log	Model2: Log	Model3: Lag	Model4: Lag
lprem	0.396 (0.103)***	0.284 (0.097)***		
lliq_liab	0.460 (0.093)***	0.259 (0.091)***		

Lprem_liq_liab	-0.161 (0.034)***	-0.144 (0.032)***		
lagprem			0.092 (0.080)	-0.015 (0.074)
lagliq_liab			0.146 (0.053)***	0.150 (0.068)**
lagLprem_liqliab			-0.035 (0.023)	-0.025 (0.021)
_cons	4.917 (0.464)***	4.229 (0.485)***	4.745 (0.447)***	4.233 (0.455)***
R <sup>2</sup>	0.55	0.67	0.49	0.62
N	277	262	278	262
Time dummies	No	Yes	No	Yes

**Notes:** In all cases \*\*\*, \*\*, and \* indicate statistical significance at levels 1%, 5%, and 10% respectively. The numbers in parentheses are t-statistics. Log and lag transformations are not applied to control variables but independent and dependent variables.

<b>TABLE13: LOW INCOME COUNTRIES: TERTIARY EDUCATION</b>				
<b>PANEL A: Finance1: Domestic Credit Provided by Banking Sector</b>				
	Model1: Log	Model2: Log	Model3: Lag	Model4: Lag
lprem	0.186 (0.087)**	0.107 (0.087)		
ldcbc	-0.031 (0.059)	-0.122 (0.057)**		
Lprem_dcbs	-0.088 (0.028)***	-0.079 (0.028)***		
lagprem			0.065 (0.068)	-0.009 (0.062)
lagdcbs			-0.029 (0.045)	-0.131 (0.052)**
lagLprem_dcbs			-0.037 (0.021)*	-0.034 (0.019)*
_cons	3.101 (0.480)***	2.417 (0.526)***	2.606 (0.479)***	2.072 (0.526)***
R <sup>2</sup>	0.70	0.77	0.70	0.77
N	285	269	286	269
<b>PANEL B: Finance2: Domestic Credit to Private Sector</b>				
	Model1: Log	Model2: Log	Model3: Lag	Model4: Lag
lprem	0.156 (0.059)***	0.129 (0.060)**		
ldcps	0.124 (0.066)*	-0.180 (0.068)***		
Lprem_dcps	-0.090 (0.022)***	-0.093 (0.022)***		
lagprem			0.051 (0.052)	0.031 (0.049)
lagdcps			0.034 (0.045)	-0.182 (0.054)***
lagLprem_dcps			-0.036 (0.017)**	-0.050 (0.015)***
_cons	3.113 (0.469)***	2.208 (0.515)***	2.549 (0.465)***	1.884 (0.484)***
R <sup>2</sup>	0.71	0.78	0.70	0.78

<i>N</i>	285	269	286	269
<b>PANEL C: Finance3: Liquid Liability</b>				
	Model1: Log	Model2: Log	Model3: Lag	Model4: Lag
lprem	0.349 (0.119)***	0.366 (0.112)***		
lliq_liab	0.112 (0.113)	-0.189 (0.112)*		
Lprem_liq_liab	-0.137 (0.039)***	-0.152 (0.036)***		
lagprem			0.041 (0.088)	0.067 (0.080)
lagliq_liab			0.023 (0.065)	-0.265 (0.086)***
lagLprem_liqliab			-0.028 (0.026)	-0.049 (0.023)**
_cons	3.025 (0.530)***	2.823 (0.560)***	2.460 (0.490)***	2.398 (0.549)***
<i>R</i> <sup>2</sup>	0.70	0.77	0.69	0.77
<i>N</i>	285	269	286	269
Time dummies	No	Yes	No	Yes

**Notes:** In all cases \*\*\*, \*\*, and \* indicate statistical significance at levels 1%, 5%, and 10% respectively. The numbers in parentheses are t-statistics. Log and lag transformations are not applied to control variables but independent and dependent variables.

As reviewed the empirical results above, personal remittances and financial sector development are positively and significantly related to human capital indicating that increase in remittances and more developed financial sector the country has human capital accumulation increases which is consistent with Koska, O.A., et al., and Abdullaev. Positive (PREM), positive (FIN\_DEV), negative (PREM\*FIN\_DEV) signs are consistent throughout most countries and education levels, as expected. We should mention that significance level is increasing for higher education: secondary and tertiary, compared to primary education. On the other hand, financial development and remittances are negatively and significantly related showing that if a country has less developed financial sector, then remittances from abroad become the main source of investment in human capital and vice versa supporting the findings of Giuliano, and Arranz .

## 5. CASE STUDY: Mongolian Migrant Workers to South Korea

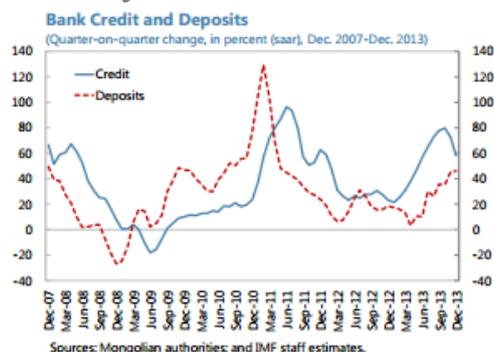
### A. Country Economic Overview

Recently, Mongolia has become one of the most rapidly growing economies in the world showing 12.4% GDP growth in 2012 and 11.7% in 2013. “Growth was boosted by highly expansionary fiscal and monetary policies to compensate for the marked slowdown in coal exports and mine development financed through foreign direct investment (FDI), which have been the drivers of growth in recent years. Strong economic growth has helped reduce the poverty rate by more than 11 percentage points in the past 2 years, to 27% in 2012” (ADB, 2014). The mining sector’s share in GDP increased from 14 to 25 percent. The main export commodities are copper, gold and coal mainly supplied by Oyu Tolgoi and Tavan tolgoi mining. With the economy’s rapid expansion over the last few years, the World Bank classifies Mongolia as a lower middle income country. Following table and graphs show the key figures of Mongolian economy (NSO, 2014).

Key Figures		
GDP growth	7.4%	1 <sup>st</sup> Quarter 2014
Unemployment rate	9.4%	1 <sup>st</sup> Quarter 2014
Inflation rate	12.3%	April 2014
General government balance	-105,646.9 mln.tug	April 2014
External Trade total balance	-93.7 million USD	1 <sup>st</sup> Quarter 2014

**Figure2.**

*The growth of private sector credit decelerated in December but remains high.*



**Figure3.**

*New regulations to strengthen bank capitalization have been phased in amid low reported NPLs.*



“Capitalization and liquidity in the banking system have improved, but vulnerabilities remain. Weakness in bank supervision, inadequate provisioning, high loan concentration (especially in construction), dollarization, and a high and rising ratio of credit to deposits (at 103% in February 2014) have heightened the risk of bank distress. Corporate governance needs to be strengthened in the banking sector” (IMF, 2014). Education system in Mongolia has gone through the major changes in the past century. The reforms were based on Soviet Union education systems and expanded access to education for Mongolian population. Literacy in Mongolia was largely expanded as most of the population benefited free primary schooling. However, the country’s unique characteristics of nomadic lifestyle and sparse population density in remote areas always have been the difficulties in education system. Despite the fact

that Mongolian people have always valued education over other attributes and have habitually made it their priority to educate their children Tsolmon and Salmon (2011). This can be verified by that statistics of school enrollment in each level in the country.

*A. Background Information About Current Situation: Migrants and Remittance*

The fall of the Soviet Union in 1991, the toppling of the Mongolian socialist government a year earlier, and transition to a market economy opened a new door to citizens. People started to migrate abroad outside the communist countries such as the Republic of Korea, the US, Japan, Germany, the UK, Poland, Hungary, Australia, and the Netherlands. As the World Bank data shows, “Mongolia’s remittances as percentage of GDP has reached its peak as 10.7 percent of GDP in 2004 and now it is \$289 million in 2012.” According to MAD Investment Solutions Mongolia, “Mongolia has become one of the top ten remittance recipient countries of US with remittance percentage of GDP constituted 4.6% in 2009.” Figures from Ministry of Finance, Mongolia (2011) claim that approximately 150000 Mongolians live abroad; however, the number is only official one; unofficial sources estimate that number might be near 250000. Overseas remittance has become one of the main sources to cope with poverty in Mongolia. Approximately 47 to 61% of remittances are used for basic consumption (MOF, 2011). According to the World Bank data, 60 to 70% of the overseas migrants are young generation aged between 20 to 35 years. The labor migration especially to South Korea is one of the main factors for increase in outbound migration of Mongolia.

According to the Ministry of Justice (2014), total 24,057 (legal 16,455, illegal 7,602)

Mongolians are living in Korea out of total 1,609,670 foreigners as of April 2014.

Contract workers	Students (including language school)	Marriage immigrants	
		Female	Male
5,698	3,892	2,291	79

The following table shows the mean values of each variable for Mongolia.

Mongolia	pri_en	sec_en	ter_en	prem	FIN_DEV		
					dcbc	dcps	liq_liab
	100.86	78.15	36.73	3.48	19.8	22.80	29.22

The case study of Mongolia will conduct in-depth analysis of (1) do remittances really have the potential generate spillover effects that facilitate more schooling opportunities in reality? (2) if this impact is only restricted to the specific group or not.

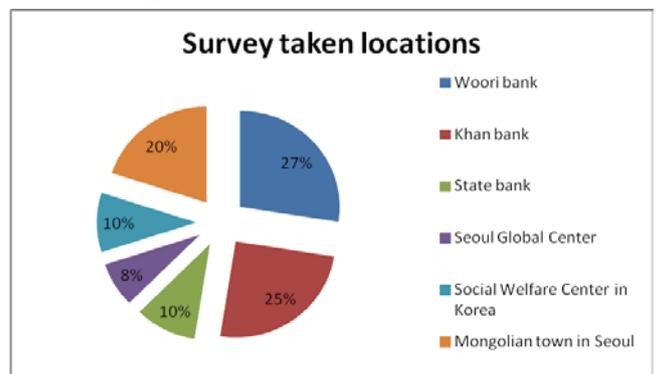
### B. Survey Results

The survey sampling was selected as a person with six or more than six years old child to match with the least level of school enrollment. The fact should be considered that as the World Bank claims, majority of the overseas migrants are

young generation so people with school-age children are not that big part of total population of migrants in Korea. Recent years specially, high-school graduates' numbers are increasing among contract workers of Mongolia.

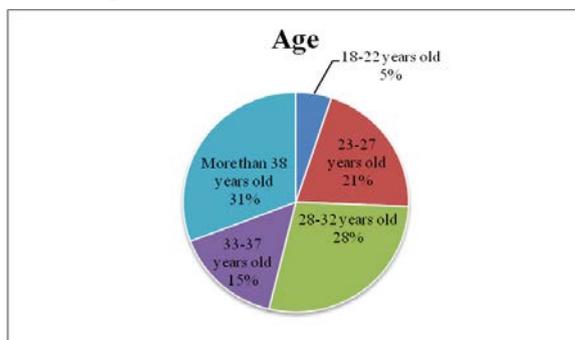
The survey was conducted in the following six different locations under the

**Figure4.**



consideration of places where Mongolian people served and visit so often; consisting of 40 respondents from Seoul, Incheon, Daegu, Daejeon, and other cities as shown in the **Figure4** and **Figure5**.<sup>6</sup> Seoul Global center, Social Welfare center, and Mongolian town in Seoul, and three banks are involved since the study is to investigate about remittances. The respondents' characteristics are given by the **Figure6-11**.<sup>7</sup>

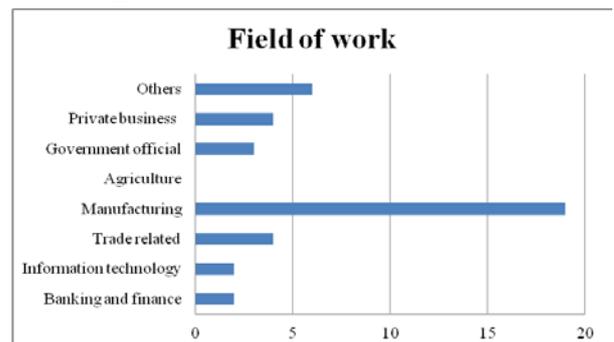
The majority of people have stayed in Korea 3-5 years (33%) or more than 5 years



(28%) and 1-6 more years planning to stay respondents were dominant. For their age, based on the restriction of having a child more than six years old, people more than 38 years old are 31%, 28-32 years old 28%, 23-27 years old

21%, and 33-37 years old 15% respectively. Also 54% of respondents are male since the majority of Mongolian working population in Korea consists of males. Education level of the respondents is mostly higher education showing only 5% are secondary school graduates. The type of the respondents' in terms of working field and visa qualification are as follows: 37% of them are contract workers mainly

**Figure11**



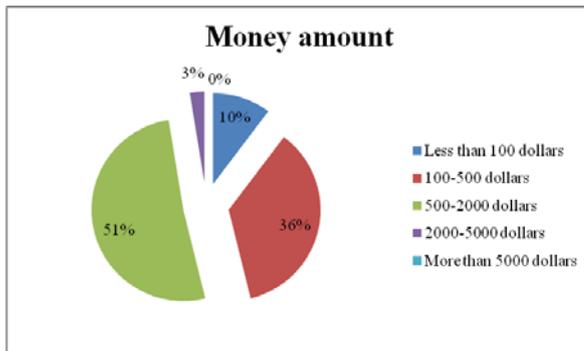
<sup>6</sup> Refer to the appendix Figure5.

<sup>7</sup> Refer to the appendix Figure6,8,9,10.

working in a manufacturing and 63% are others including private business owners, doing trade related jobs, government officials and illegal sojourners as shown in the **Figure10<sup>8</sup> and 11.**

The survey result shows that mainly

**Figure13**

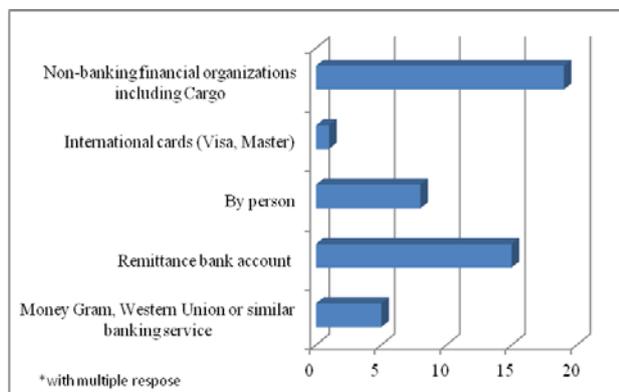


migrant workers in Korea send 500-2000 dollars (51%), 100-500 dollars (36%) home each time with the frequency of 1-2 times in a month (48%) or 1-2 times in three months (27%) from total earning of average 1-2

million won salary in a month as **Figure 12-14** illustrate.<sup>9</sup>

We also find that money-sending channel is dominated by the non-banking financial organizations including cargo (40%) followed by remittance bank account of Mongolian and Korean banks (31%), and by person (17%) showing that people prefer easy ways in terms of documentation and identification such as known person or cargos instead of banks to send money home. This is shown in **Figure 15.**

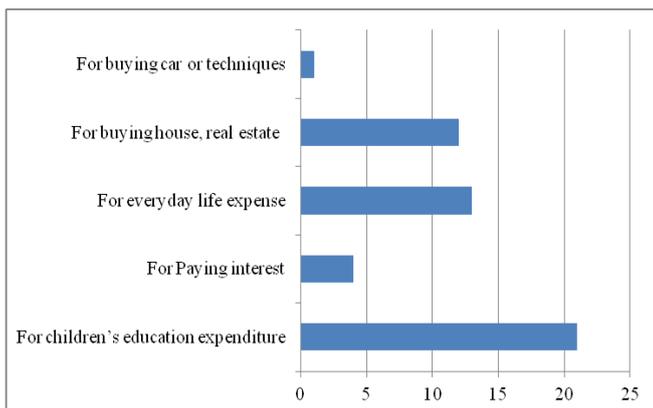
**Figure15: Money sending channels**



<sup>8</sup> Refer to the appendix Figure10.

<sup>9</sup> Refer to the appendix Figure12,14.

**Figure17**



**Figure 16**<sup>10</sup> shows number of children respondents have. People having primary school aged one child are dominant as we can see from the chart. Secondary and tertiary school

childrens are 26% each. Finally, in **Figure 17** people answered that remittance mostly spent for children's education expenditure (41%) followed by for everyday life expenses (25%), and buying house, real estate (24%). For the question of "What percentage of your remittance do you think is spent for your children's education expenditure?", the majority of the respondents answered 10-50% while more than 50% consists 16% of the whole sample as shown in **Figure18**.<sup>11</sup>

### *C. Conclusion*

As the World Bank data shows, "Mongolia's remittances as percentage of GDP has reached its peak as 10.7 percent of GDP in 2004 and it is \$289 million in 2012." Figures from Ministry of Finance, Mongolia (2011) claim that approximately 150000 Mongolians live abroad; however, the number is only official one; unofficial sources estimate that number might be near 250000 (MAD, 2012). Overseas remittance has become one of the main sources to cope with poverty in Mongolia. According to the World Bank data, 60 to 70% of the overseas migrants are young generation aged between 20 to 35 years. The labor migration especially to South Korea is one of the

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<sup>10</sup>Refer to the appendix Figure16.

<sup>11</sup> Refer to the appendix Figure18.

main factors for increase in outbound migration of Mongolia. According to the Ministry of Justice, total 24,057 (legal 16,455, illegal 7,602) Mongolians are living in Korea out of total 1,609,670 foreigners as of April 2014.<sup>12</sup> The case study of Mongolia will conduct in-depth analysis of (1) do remittances really have the potential to generate spillover effects that facilitate more schooling opportunities in reality? (2) if this impact is only restricted to the specific group or not.

The survey result shows that people send large amount of their earnings home with high frequency of 1-2 times each month through different channels mainly by cargo, person, or remittance bank account. The channel dominance by non-financial organizations such as cargo and by individuals claims the need to improve local financial market so that people would prefer to use them often. Furthermore, over 40% of remittance spending for children's education at home country showing that remittances facilitate investment in human capital accumulation through education in Mongolia; however, this positive effect is only for remittance receiving houses supporting Acosta *et.al.*(2007). However, the importance of remittances for houses to maintain the living should not be ignored as it has drawn from the survey that 25% of money spends for everyday life expenditure.

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<sup>12</sup> Statistics, Ministry of Justice, Republic of Korea, [www.moj.go.kr](http://www.moj.go.kr)

## 6. SUGGESTIONS AND CONCLUSION

### 6.1 Policy Implications

There is a large literature on the economic growth effect of migrant issues, remittance and financial sector development. However, less emphasis has been laid on the response of human capital accumulation and relation between financial sector development and remittances. This paper directs attention to effect of both remittance and financial sector development on human capital accumulation. It employs the fixed effect model to investigate how personal remittances from abroad to home country and its financial sector development level affect human capital accumulation with proxies of different education level enrollment rate and relationships of latter two variables while controlling for the potential endogeneity and multicollinearity.

After all factors are carefully weighed and considered, a careful review of the evidence from cross-country data analysis encompassing a sample of 88 countries for the period of 1995 through 2011 verifies that personal remittances and financial sector development are positively and significantly related to human capital indicating that increase in remittances and more developed financial sector the country has human capital accumulation increases which is consistent with Koska, O.A., et al.(2013), and Abdullaev (2009). Positive (PREM), positive (FIN\_DEV), negative (PREM\*FIN\_DEV) signs are consistent throughout most countries and education levels, as expected. We should mention that significance level is increasing for higher education: secondary and tertiary, compared to primary education. On the other hand, financial development and remittances are negatively and significantly related showing that if a country has less developed financial sector, then remittances from

abroad become the main source of investment in human capital and vice versa supporting the findings of Giuliano, and Arranz (2005).

For Mongolian case, people send large amount of their earnings home with high frequency of 1-2 times each month through different channels. The channel dominance by non-financial organizations such as cargo and by individuals claims the need to improve local financial market so that people would prefer to use often. Furthermore, over 40% of remittance spending for children's education at home country showing that remittances facilitate investment in human capital accumulation in Mongolia; however, this positive effect is only for remittance receiving houses supporting Acosta *et.al.* (2007). This result verifies our findings in cross country data analysis part: if a country has less developed financial sector, then remittances from abroad become the main source of investment in human capital.

## **6.2 Recommendations For Further Research**

With data scarcity many researchers face difficulties conducting research in less developed countries' case; data availability should enable future studies to improve them so that to get a full picture of how remittances and financial development effect human capital accumulation and how they are related with each other.

Most importantly, remittances and financial developments potential to affect human capital accumulation are approved, but its significance varies according to a country's level of economic development and education level. The need to narrowing down the question and look through deep inside of the issues.

## **Annotated Bibliography**

Stark, O and R. Lucas. "Migration, Remittances and the Family." *Economic Development and Cultural Change*, 36, no.3 (1988): 465-81.

Robert Emerson Lucas, Jr. is an American economist, consistently ranked among the top ten economists in the Research Papers in Economics rankings, teaching at the University of Chicago. He received the Nobel Memorial Prize in Economic Sciences in 1995. He led to the development of New Keynesian economics and the drive towards microeconomic foundations for macroeconomic theory by challenging the foundations of macroeconomic theory arguing that a macroeconomic model should be built as an aggregated version of microeconomic models.<sup>13</sup> In the "Migration, Remittances and the Family", his analysis focuses on distribution of gains between migrants and their family. Stark and Lucas (1988) claims that "Remittances may be seen as one component of a longer-term understanding between a migrant and his or her family, an understanding that may involve many aspects including education of the migrant, migration itself, coinsurance, and inheritance." By taking Botswana as an example, he argues that if the migrant having been educated by the family, remittances in the future in turn become repayment and migration itself is mutual interdependence rather than individual independence. The study agrees with my other sources (Andres' "Remittances by Emigrants: Issues and Evidence.") proving that one of the microeconomic motivation for the emigrants remittances is 'Implicit family contract loan repayment'. The author says remittance is a type of

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<sup>13</sup> Wikipedia, Robert Lucas, Jr. accessed August 01, 2013, [http://en.wikipedia.org/wiki/Robert\\_Lucas,\\_Jr](http://en.wikipedia.org/wiki/Robert_Lucas,_Jr).

education fee repayment earned before leaving the country. Lucas's analysis would particularly help my research to determine incentives of workers' from Mongolia to South Korea for sending money back home.

## APPENDIX

**TABLE A1: DESCRIPTIVE STATISTICS: FULL SAMPLE**

<b>PANEL A: SUMMARY STATISTICS</b>													
	PRI_E N	SEC_E N	TER_E N	PRE M	DCB C	DCPS	LIQ_LIA B	GDPPC 1	GOV_EX P	INF	TRAD E	FRAT E	POP G
OBS	1490	1411	1308	1491	1495	1495	1492	1496	1491	1491	1490	1496	1479
MEAN	101.13	62.26	19.02	5.07	42.18	32.91	42.14	2.18	14.25	11.90	82.63	3.39	1.57
STD	20.21	26.90	16.66	7.41	35.37	28.86	28.01	1.95	5.68	40.45	39.69	1.50	1.12
MEDIAN	105.06	67.58	15.36	2.68	34.68	24.21	34.93	1.54	13.33	6.11	75.34	2.96	1.57
MIN	28.80	1.27	-2.45	-2.45	-72.99	-1.56	4.26	0.13	-0.81	-17.63	14.77	1.09	-2.66
MAX	161.90	148.64	85.17	61.99	201.5 7	167.5 3	170.62	11.53	39.50	1058.3 7	282.32	7.71	10.26
<b>PANEL B: CORRELATION MATRIX</b>													
	PRI_E N	SEC_E N	TER_E N	PRE M	DCB C	DCPS	LIQ_LIA B	GDPPC 1	GOV_EX P	INF	TRAD E	FRAT E	POP G
PRI_EN	1.00												
SEC_EN	0.37	1.00											
TER_EN	0.18	0.71	1.00										
PREM	0.05	0.08	-0.05	1.00									
DCBC	0.06	0.33	0.26	-0.03	1.00								
DBPS	0.07	0.32	0.27	0.01	0.88	1.00							
LIQ_LIA B	0.01	0.21	0.12	0.05	0.80	0.81	1.00						
GDPPC1	0.20	0.56	0.50	-0.18	0.33	0.37	0.23	1.00					

GOV_EX	0.0001	0.12	0.007	0.30	-0.004	0.08	0.15	0.13	1.00				
P													
INF	-0.003	0.06	0.09	-0.006	0.03	-0.005	-0.04	0.008	-0.002	1.00			
TRADE	0.02	0.19	0.14	0.24	0.21	0.31	0.27	0.16	0.34	0.01	1.00		
FRATE	-0.26	-0.80	-0.68	-0.02	-0.37	-0.34	-0.26	-0.53	-0.03	-0.08	-0.22	1.00	
POPG	-0.11	-0.05	0.13	-0.20	-0.000	0.04	-0.08	0.05	-0.13	0.05	0.05	-0.12	1.00

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\*samples differ in each education level depending on availability of data. I will combine these three tables into one as a main summary statistic table. Primary education has the biggest sample in terms of basic and public education in most countries.

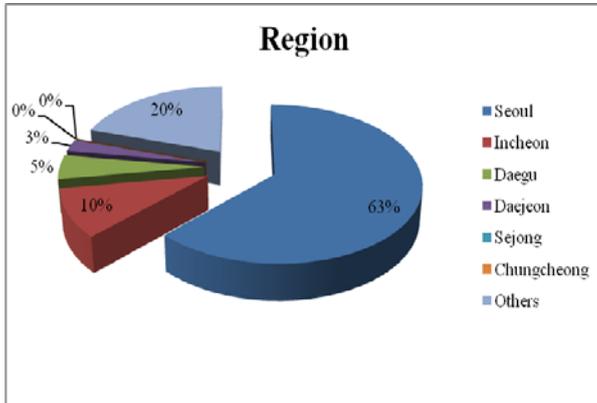
**TABLE A2: A LIST OF SAMPLE COUNTRIES (88)**

TABLE A2: A LIST OF SAMPLE COUNTRIES (88)																								
UPPER MIDDLE INCOME									LOWER MIDDLE INCOME									LOW INCOME						
No	Country	pri_en	sec_en	ter_en	pre_m	FIN_DEV			Countries	pri_en	sec_en	ter_en	pre_m	FIN_DEV			Countries	pri_en	sec_en	ter_en	pre_m	FIN_DEV		
						dcb_c	dcps	liq_liab						dcb_c	dcps	liq_liab						dcb_c	dcps	liq_liab
1.	Albania	106.78	78.27	21.40	14.48	53.83	15.80	61.72	Armenia	99.83	89.70	34.19	7.68	14.04	12.62	15.47	Bangladesh	46.25	46.25	7.30	6.76	47.57	31.81	44.45
2.	Algeria	106.93	75.47	19.90	1.26	19.99	10.01	47.56	Bolivia	109.82	78.48	35.06	3.03	56.52	47.90	51.85	Benin	100.66	35.13	6.20	3.09	10.83	14.43	27.50
3.	Argentina	114.21	84.58	58.57	0.13	35.24	17.09	26.87	Cameroon	100.90	31.84	6.55	0.45	13.13	9.59	16.42	Burkina Faso	53.18	12.68	1.86	1.80	13.10	13.78	22.06
4.	Azerbaijan	95.07	86.81	16.68	2.14	13.74	9.07	14.94	Cape Verde	119.37	77.17	6.86	13.35	68.74	42.54	70.81	Cambodia	115.75	30.20	4.81	2.18	10.32	11.98	19.03
5.	Belarus	100.86	93.54	59.90	1.19	24.70	18.11	16.66	Congo, Rep.	104.36	47.64	3.76	0.24	4.37	5.44	15.63	Ethiopia	70.49	22.38	2.84	0.82	39.75	18.96	38.22
6.	Belize	113.46	72.18	15.21	4.06	57.51	50.57	57.28	Cote d'Ivoire	75.19	27.37	8.38	1.15	22.32	15.90	26.02	Guinea-Bissau	103.79	30.23	2.53	4.45	10.26	6.36	22.47
7.	Botswana	106.48	75.91	6.73	0.74	-27.77	18.20	30.68	Djibouti	41.61	20.57	1.62	2.84	35.35	30.16	71.03	Kenya	102.01	46.32	3.12	2.93	41.89	28.71	40.51
8.	Brazil	138.97	115.52	21.53	0.30	77.40	39.67	47.64	Egypt, Arab Rep.	100.31	78.71	30.25	4.50	86.24	45.06	81.09	Kyrgyz Republic	98.81	84.95	36.90	9.78	15.99	11.69	19.43
9.	Bulgaria	102.88	90.90	45.84	3.43	45.76	40.71	49.80	El Salvador	108.91	58.34	21.62	14.53	51.90	41.38	4.89	Malawi	135.79	33.69	2.53	0.45	19.26	11.09	20.82
10.	China	113.34	67.94	14.94	0.49	126.22	111.73	135.04	Georgia	96.92	81.56	38.09	8.07	21.99	15.31	14.03	Mali	63.40	22.53	2.97	3.96	14.41	17.08	24.39
11.	Colombia	117.84	79.81	28.02	1.78	46.77	33.01	26.06	Ghana	90.00	45.94	7.80	0.55	27.92	12.23	23.91	Mozambique	88.92	12.36	1.71	1.29	10.84	15.06	25.90
12.	Costa Rica	109.51	73.92	27.67	1.48	39.33	31.33	25.50	Guatemala	105.61	43.83	-	7.20	31.44	23.27	30.65	Nepal	121.12	39.74	6.03	10.72	46.10	34.18	51.09
13.	Dominican Republic	108.43	66.12	30.38	7.63	33.60	24.75	24.03	Guyana	98.32	85.12	11.19	10.03	89.59	47.01	79.39	Niger	44.44	9.03	1.16	1.30	9.69	7.11	12.91

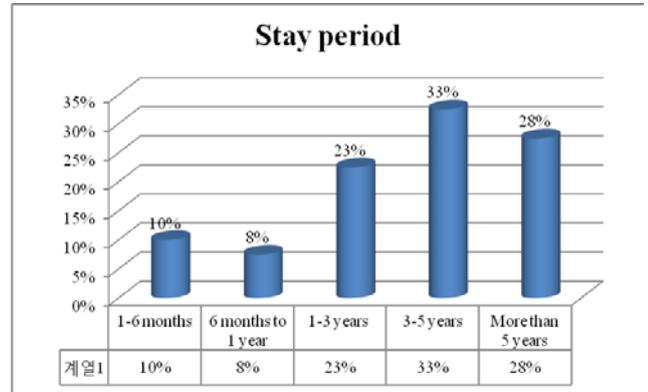
14.	Ecuador	115.74	64.02	20.83	4.57	21.40	22.45	24.93	Honduras	112.76	61.29	16.20	11.95	38.16	40.49	42.41	Rwanda	117.14	15.95	2.42	0.88	9.35	10.45	16.60	
15.	Fiji	106.89	84.54	19.25	4.20	85.63	56.63	47.76	India	103.24	51.72	11.07	2.85	56.68	34.94	57.54	Tajikistan	97.98	80.83	20.28	23.33	29.51	24.94	10.86	
16.	Grenada	95.29	105.06	-	8.13	77.71	68.03	85.75	Indonesia	111.72	61.57	16.41	0.91	48.88	32.11	43.73	Tanzania	88.63	-	1.21	0.14	13.72	9.30	22.12	
17.	Hungary	100.54	96.43	47.96	1.04	66.58	44.11	49.00	Lao PDR	115.13	38.46	7.33	0.78	12.86	10.85	20.05	Togo	122.07	40.07	5.20	6.61	22.73	18.26	28.13	
18.	Iran, Islamic Rep.	103.84	78.37	25.73	0.57	34.42	23.79	37.28	Lesotho	106.95	35.65	3.02	43.73	-6.25	14.05	32.87	Uganda	119.20	22.31	3.51	4.50	9.74	9.06	15.87	
19.	Jordan	98.44	86.29	32.37	19.93	92.51	75.84	112.74	Moldova	96.96	84.99	34.31	19.29	31.94	21.24	31.11									
20.	Kazakhstan	104.53	94.04	38.64	0.35	24.02	26.18	21.59	Mongolia	100.86	78.15	36.73	3.48	19.86	22.80	29.22									
21.	Macedonia, FYR	96.94	82.57	27.61	2.97	25.68	26.79	28.78	Morocco	97.75	47.51	11.44	6.92	79.83	49.90	83.01									
22.	Malaysia	95.65	66.67	28.94	0.47	134.13	123.05	120.06	Nicaragua	108.59	59.37	15.99	7.25	65.40	21.43	39.46									
23.	Mauritius	82.58	82.58	17.73	2.34	88.16	67.33	86.65	Pakistan	78.08	27.16	4.23	3.61	46.33	24.93	42.68									
24.	Mexico	111.58	77.18	22.18	2.00	38.15	20.83	26.94	Paraguay	110.93	60.91	22.35	3.33	24.69	24.40	28.40									
25.	Namibia	113.20	61.80	7.54	0.25	49.04	46.53	39.88	Philippines	107.67	80.15	28.43	10.19	55.49	35.62	56.85									
26.	Panama	108.68	69.59	41.41	0.86	85.02	88.50	76.05	Senegal	76.14	23.03	4.96	7.15	23.49	20.23	28.29									
27.	Peru	116.98	84.75	33.58	1.50	19.30	22.49	28.93	Sri Lanka	104.00	-	-	7.36	41.91	29.61	40.73									
28.	Romania	100.78	85.23	38.62	1.70	27.53	21.75	28.87	Sudan	57.68	31.80	-	4.54	12.83	6.98	13.24									
29.	South Africa	107.25	91.40	-	0.23	168.96	136.79	50.79	Swaziland	101.32	48.19	4.89	3.59	12.95	17.61	22.02									
30.	St. Lucia	108.62	79.90	14.41	3.33	87.89	84.70	79.19	Syrian Arab Republic	113.56	57.96	-	2.23	36.28	13.21	62.58									
31.	St. Vincent and the Grenadines	113.49	90.40	-	5.14	60.48	51.30	71.31	Ukraine	105.72	92.35	61.45	1.77	41.46	30.81	29.73									

32.	Suriname	116.03	73.90	-	0.31	24.14	17.51	36.11	Vanuatu	118.85	40.85	4.38	5.46	44.20	43.30	99.68										
33.	Thailand	94.19	65.67	37.60	1.02	139.82	120.80	104.89	Vietnam	105.68	56.22	13.07	6.34	62.51	58.82	59.57										
34.	Tonga	111.62	95.65	4.84	23.68	39.89	43.03	37.46	Yemen, Rep.	79.50	41.99	9.63	11.50	15.31	5.92	30.97										
35.	Tunisia	112.63	79.32	25.16	4.12	66.83	61.95	55.01																		
36.	Turkey	101.79	77.55	32.62	0.92	45.78	24.81	34.56																		

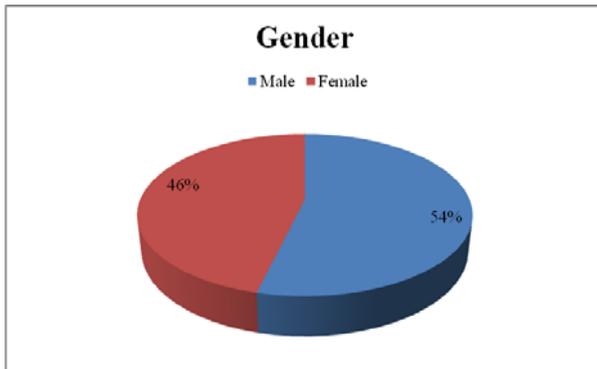
**Figure5: Respondents' region**



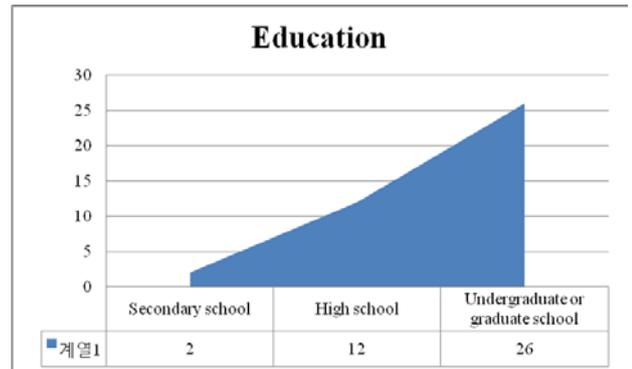
**Figure6: Respondents' stay period in Korea**



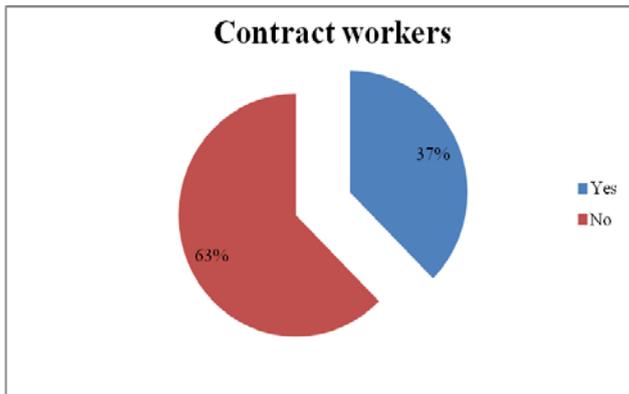
**Figure8: Respondents' gender**



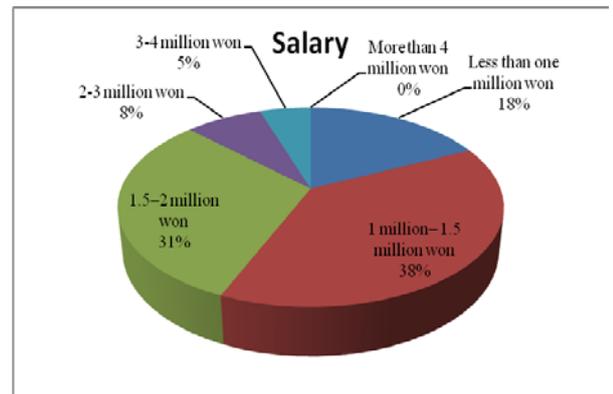
**Figure9: Respondents' education**



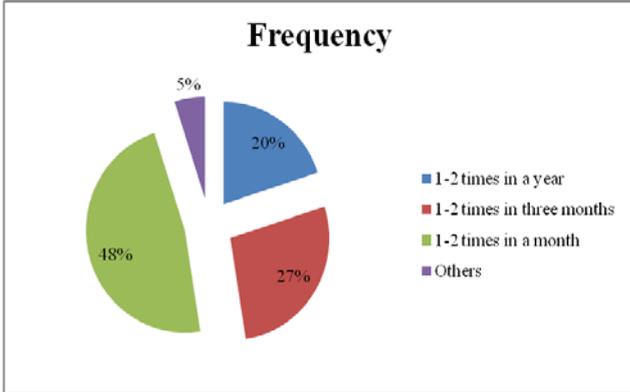
**Figure10:**



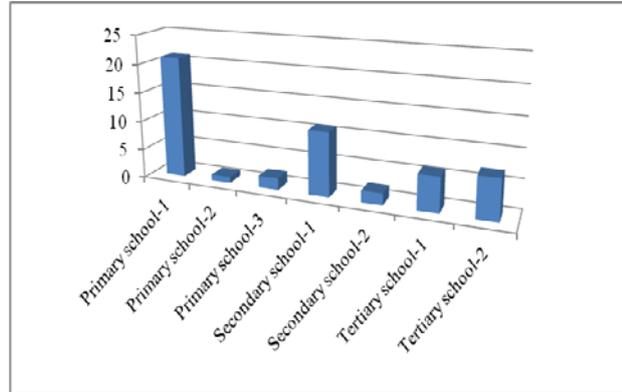
**Figure12**



**Figure14**

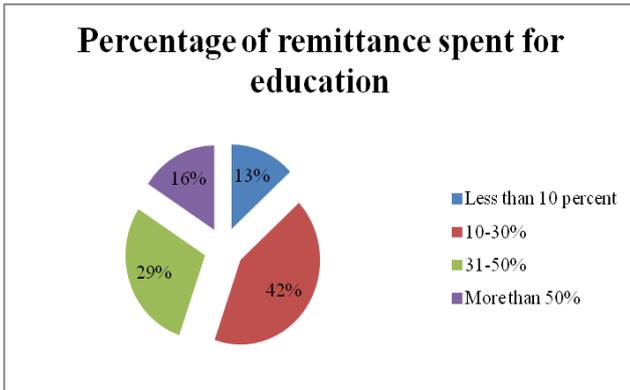


**Figure16: Number of children respondent has from each education level**



Note: Primary school-1 means that respondent has primary school aged one child, Primary school-2 respondent has primary school aged two children, Tertiary-2 respondent has tertiary school aged 2 children etc.,

**Figure18.**



## **SURVEY ON REMITTANCES OF MONGOLIAN MIGRANTS TO REPUBLIC OF KOREA**

The survey aims to determine the amount of remittances of Mongolian migrants to South Korea and its impact on the country's economy; specifically on human capital accumulation in Mongolia. We truly appreciate your time and help on this research.

We claim that your response and comments to this survey will not be publicly opened and used as different purposes rather than in the research of remittances of Mongolian migrants to Republic of Korea.

**Thank you for your time and support.**

**DORJPAGAM JAGDAL**

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**Please refer to the following question to continue the survey.**

**Do you have a child more than 6 years old (primary school student)?**

- Yes ☞ Continue the survey
- No ☞ Stop the survey

/Sorry, the survey aims to reveal the impact of remittances on human capital accumulation in Mongolia. And we consider education is the main criteria of it. /

**1. Which city do you live in?**

- 1) Seoul
- 2) Incheon
- 3) Daegu
- 4) Daejeon
- 5) Sejong
- 6) Chungcheong
- 7) Others \_\_\_\_\_

**2. How many years have you been in Korea?**

- 1) 1-6 months
- 2) 6 months to 1 year
- 3) 1-3 years
- 4) 3-5 years
- 5) More than 5 years

**3. How many more years are you planning to stay as a worker or student in Korea?**

Please write here: \_\_\_\_\_

**4. How old are you?**

- 1) 18-22 years old
- 2) 23-27 years old
- 3) 28-32 years old
- 4) 33-37 years old
- 5) More than 38 years old

**5. What is your education level?**

- 1) Secondary school
- 2) High school
- 3) Undergraduate or graduate school

**6. Do you work as a contract worker in Korea?**

- 1) Yes
- 2) No (Please specify.) \_\_\_\_\_

**7. What kind of job do you do?**

- 1) Banking and finance
- 2) Information technology
- 3) Trade related
- 4) Manufacturing
- 5) Agriculture
- 6) Government official

- 7) Private business
- 8) Others\_\_\_\_\_

**8. What is your average salary in a month?**

- 1) Less than one million won
- 2) 1– 1.5 million won
- 3) 1.5 – 2 million won
- 4) 2 – 3 million won
- 5) 3– 4 million won
- 6) More than 4 million won

**9. Do you send money home?**

- 1) Yes
- 2) No

**10. If so, how much amount of money do you send at one time?**

- 1) Less than 100 dollars
- 2) 100-500 dollars
- 3) 500-2000 dollars
- 4) 2000-5000 dollars
- 5) More than 5000 dollars

**11. How about the frequency?**

- 1) 1-2 times in a year
- 2) 1-2 times in three months
- 3) 1-2 times in a month
- 4) Others\_\_\_\_\_

**12. How do you send your money? \*You may check more than one answer.**

- 1) Money Gram, Western Union or similar banking service
- 2) Remittance bank account (Khan bank, State bank, TDB)
- 3) By person
- 4) International cards (Visa, Master etc)
- 5) Non-banking financial organizations including Cargo

**13. Are you married?**

- 1) Yes
- 2) No

**14. Could you please give more detailed information about your children including number of children in each education level and gender?**

No.		Number of children	Gender
1	Elementary school age		
2	Secondary		
3	Tertiary		

**15. What percentage of your remittance do you think is spent for your children's education expenditure?**

- 1) Less than 10%
- 2) 10-30%
- 3) 31-50%
- 4) More than 50%

**16. On which purpose do you think is your remittance spent mostly?**

- 1) For children's education expenditure
- 2) For Paying interest
- 3) For everyday life expense
- 4) For buying house, real estate
- 5) For buying car or techniques

**17. What is your gender?**

- 1) Male
- 2) Female

**18. Where did you get the information about this survey? \_\_\_\_\_**

\*(Woori bank, Khan bank, State bank, Seoul Global Center, Social Welfare Center in Korea, Mongolian town )ад

ад суралцаж буй Монгол

**Thank you for your precious time.**

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