The Impact of Remittances and Community Capacity Building on House hold Expenditure Behavior and Human Capital Investment: Evidence from Cambodia

By

LEE, Chan Ju

THESIS

Submitted to
KDI School of Public Policy and Management
in partial fulfillment of the requirements
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Committee in charge:

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ABSTRACT

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As the amount of remittances has been increasing, a perspective that remittances can be an important source of development engine especially in developing countries has emerged. Along with the money inflows, human capital investment is very critical for the sustainable economic development in the long term and it is closely related to the household expenditure behavior. Thus, it is very essential that policy makers should design and implement policies, which induce households to increase human capital investment related expenditure, in various perspectives.

This paper analyzes the impact of remittances on household expenditure behavior by comparing the expenditure behavior differences between households with remittances and without remittances. While most of studies end up with figuring out impact of remittances, this study contributes to the existing study by expanding the scope of research to include supply-side factors, which also can be influential in human capital investment, such as accessibility to services for education and health and existence of education/ health project supported by government or NGOs.

The empirical result finds that the households with remittances are more likely to invest their extra income on human capital investment, especially on health, while reducing

their expenditure on other categories. However, expenditure behavior changes are not observed in the expenditure on health between two household groups. In addition, the capacity building, which is the capability of a community to provide education/ health services, is very critical to induce household expenditure on human capital investment. In the case of education, the effect of remittances disappears when other additional community capacity related variables are added. In addition, in a case of health, remittances have great impact on human capital investment by households, combining with other community capacity related variables. This result shows the efforts on improving the community capacity, such as removing physical barriers, financial barriers, service quality, knowledge of users, and sociocultural barriers in order to improve accessibility to the service, should be added along with securing sufficient household income.

ACKNOWLEDGEMENTS

He will not break off a bent reed nor put out a flickering lamp (Isaiah 42:3).

There was a time when I felt myself a bruised reed and a smoldering wick. But God showed his steadfast love appeared in Isaiah 42:3 and promised me that he would revitalize the bruised reed and save the flickering flames. This is how I went to KDI School and I cannot help being grateful for God who has led my life and has made me what I am today. Despite many flaws and weaknesses which still exist in me, I believe that his hands will continuously shape me to fulfill his purpose for me through my life.

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Words are not always enough to express my gratitude I have towards my parents who have been patient and supporting me whatever I do. Dad, I am very proud to have you as my father! Thank you for your devotion to our family. You are the bravest firefighter as I know. Mom, your encouraging words will remain in me and will make me to overcome all the difficulties lie ahead even when you cannot be with me anymore. My beloved brother, Cheo-il! I believe that you can find what you want. Remember, I have got your back!

Thank you for your prayers: Chang-hwan Kim and Eun-sook Kwon, who always pray for me as my Godfather; Min-geun Kim, thank you for helping me stand firm in the faith; Sam-teo Youth Group, I was happy to have you as my brothers and sisters in Jesus Christ; Selena Han and Yujin Ahn, who are the presents God had prepared for me in Thailand (Thank you, Jeena); Hyesu Kang, thank you for your BIG encouragement; 2011 MPP KDIS

colleagues, I was so much inspired by each of you. You are my brothers and sister; international family and friends (Jim and Mary; Kathy and Ron; Sarthi Acharya, who taught me how to handle statistical data and provided me many opportunities to learn when I worked in Cambodia; Natasa Vujovic, my leo twin; Ami Mita, my roommate; Sabina Rousová, mí amor; Sanjan Haque, you are the one who always comes up my mind whenever I think about the life in Singapore; Jan Seifert, your warm-hearted emails always make me happy; Gayeon Yeo; Sue Suh, bless you; and three friends who visited me in Thailand; my dear friend Hyesu Kang).

I know you know better than I, Jesus!

Praise the Lord, Hallelujah!

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I. Introduction

1.1 Why Do Remittances Matters?

Migration has occurred throughout the history either voluntarily to find a place to survive or sometimes against one's will forced by push factors such as wars. It can be found more often today than any other period in the past as globalization makes easier to travel or work abroad. As much as migration varies in scales and has different types of motivation, goals to achieve through migration are also very various, from obtaining more income to satisfying personal interests such as studying abroad. However, all migrants share the same purpose: to find a better life and better opportunities.

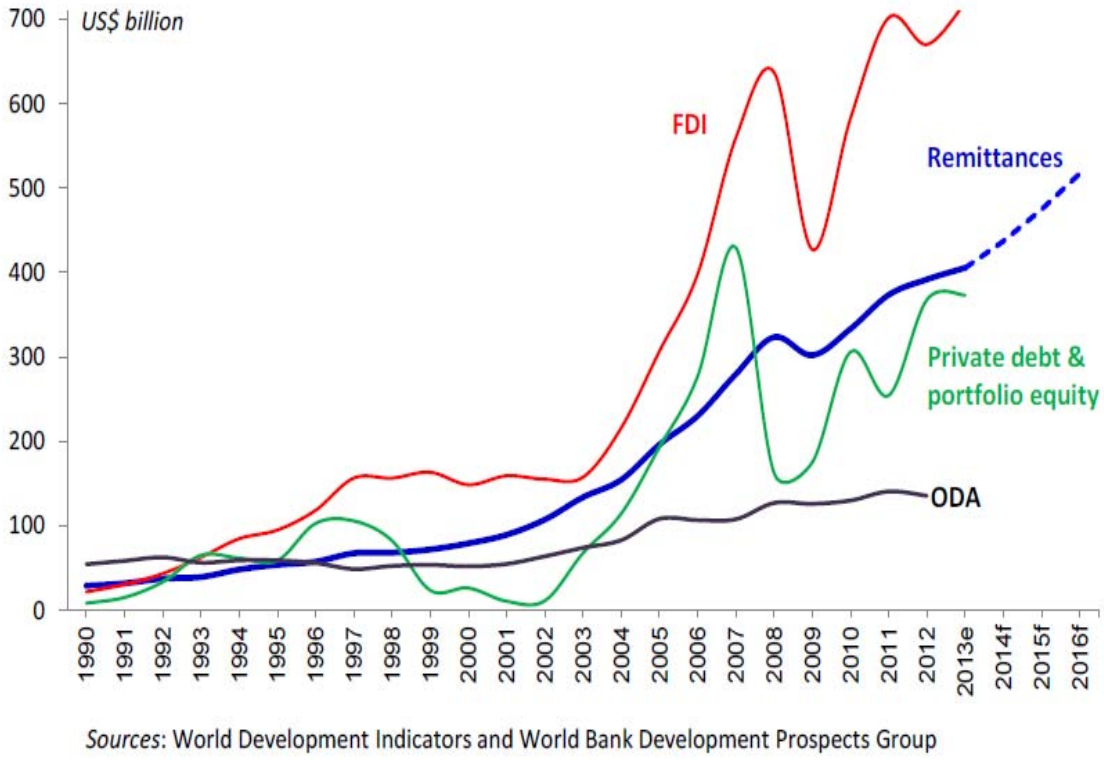
As more people from developing countries have migrated to somewhere, either within a country or abroad, in order to get out of poverty, migration is an important issue in developing countries. The broaden scale of migration with globalization has resulted in many social problems – urban poverty, population, transportation, environment related issues, etc. Therefore, a migration issue, which causes these social problems, can be considered negative. However, it should be dealt in a different perspective because remittances can be a great potential to mitigate the poverty.

Recently, the migration issue has drawn attention since a role of remittances has been increasing in the economy of developing nations. According to *the Mitigation and Development Brief,* no. *20*, prepared by the Migration and Remittance Unit of the World Bank's Development Prospects Group, "[r]emittances to developing countries are estimated at $404 billion in 2013, up 3.5 percent compared with 2012."[1] In addition, "[they] remain a key source of external resource flows for developing countries, far exceeding official

[1] Dilip Ratha, Supriyo De, Ervin Dervisevic, Christian Eigen-Zucchi, Sonia Plaza, Hanspeter Wyss, Soonhwa Yi and Seyed Reza Yousefi, "Migration and Remittances: Recent Developments and Outlook," *Migration and Development Brief* no. 22 (World Bank, 2014): 1, http://siteresources.worldbank.org/INTPROSPECTS/Resources/334934-1288990760745/MigrationandDevelopmentBrief22.pdf.

development and more stable than private debt and portfolio equity flows (Figure 1)."[2] It implies that the increasing amount of remittances can be a great source for the poor family to mitigate the poverty at the individual level and bring macroeconomic benefits in the national level. The Director of the Bank's Development Prospects Group, Hans Timmer (2012), also recognized the importance of remittances, saying that "Although migrant workers are, to a large extent, adversely affected by the slow growth in the global economy, remittance volumes have remained remarkably resilient, providing a vital lifeline to not only poor families but a steady and reliable source of foreign currency in many poor remittances recipient countries."[3]

Figure 1. Remittances and Other Resource Flows to Developing Countries[4]



Sources: World Development Indicators and World Bank Development Prospects Group

[2] Ibid., 2.

[3] "Developing Countries to Receive over $400 Billion in Remittances in 2012, Says World Bank Report," worldbank.org, last modified November 20, 2012, http://www.worldbank.org/en/news/press-release/2012/11/20/developing-countries-to-receive-over-400-billion-remittances-2012-world-bank-report.

[4] Ratha *et al*., Migration and Remittances (2014), 3, Figure 1.

In spite of the importance on remittances, "few studies have examined the impact of international migration and remittances on poverty in the developing world."[5] Recognizing the lack of contributions on the new perspective of migration in academics, this paper is in the extension of the previous studies. Developing the previous studies, it has more specific research questions to figure out: Are there differences on expenditure behavior between household with remittances and without remittances? If there are, how are expenditure behaviors different? What are the other factors which make household expenditure different? It is significant to trace down where the remittances have been used. If it is discovered that they are not used for develop human capital such as education or health, the government can design a policy to induce household expenditure in accordance with its national plans.

1.2 Why Cambodia?

To discover and conduct an in-depth study, this study will focus on a specific country, which is Cambodia. It can produce applicable and practical ideas to take Cambodia as an example when the Cambodian government or other developing countries, whose population and migration characteristics are similar with Cambodia, to design a policy related to the migration and poverty eradication.

Even though it would be very helpful to take a country, which is either the largest recipients of migrant remittances – India (70 billion), China (60 billion), the Philippines (25 billion), and Mexico (22 billion) – or the biggest remittances share of GDP – Tajikistan (52%), Kyrgyz Republic (31%), Nepal (25%) and Moldova (25%)[6] – as a case, there are two reasons why this paper focuses on Cambodia. Based on Table 1, first, East Asia and Pacific countries are expected to record the biggest growth in remittances in 2015. Second, "[g]rowth in

[5] Richard H. Adams Jr. and John Page, "Do International Migration and Remittances Reduce Poverty in Developing Countries?" *World Development* Vol. 33, no. 10 (2005): 1645, doi:10.1016/j.worlddev.2005.05.004.

[6] Ratha *et al*., Migration and Remittances (2014), 4.

remittances to low income countries is projected to be even faster at 12.3 percent during [2013-15]."[7] Anticipating that the remittances will have a great impact on economics of low-income countries in East Asia and Pacific, Cambodia has the significance in remittances studies.

Figure 2. Estimates and Projections for Remittance Flows to Developing Countries[8]

	2009	2010	2011	2012e	2013f	2014f	2015f
				($ billions)			
All developing countries	**316**	**341**	**380**	**401**	**427**	**468**	**515**
East Asia and Pacific	85	95	106	109	117	130	145
Europe and Central Asia	37	37	41	40	43	47	52
Latin America and Caribbean	57	58	62	62	67	73	81
Middle-East and North Africa	34	41	43	49	52	55	58
South Asia	75	83	97	109	117	127	140
Sub-Saharan Africa	28	29	30	31	33	36	39
World	**436**	**464**	**514**	**529**	**559**	**608**	**665**
Low-income countries	22	24	28	33	36	41	46
Middle income	294	317	352	368	391	427	469
High income	120	122	134	128	132	140	149
				(Growth rate, percent)			
All developing countries	**-4.3**	**8.0**	**11.5**	**5.3**	**6.7**	**9.5**	**10.2**
East Asia and Pacific	1.8	10.9	12.3	2.5	7.1	11.2	11.7
Europe and Central Asia	-19.3	-0.1	13.5	-3.9	6.9	10.5	11.4
Latin America and Caribbean	-11.8	0.9	7.3	0.9	7.1	10.0	10.5
Middle-East and North Africa	-6.2	20.9	6.1	14.3	5.1	5.7	6.3
South Asia	4.9	9.8	17.6	12.3	6.9	9.1	10.0
Sub-Saharan Africa	-1.7	4.0	4.9	1.6	5.6	8.6	8.8
World	**-5.9**	**6.2**	**10.9**	**2.8**	**5.7**	**8.7**	**9.4**
Low-income countries	3.9	11.0	17.7	15.6	10.4	13.0	13.4
Middle income	-4.8	7.8	11.0	4.5	6.3	9.2	9.9
High income	-10.0	1.6	9.4	-4.2	2.8	6.3	6.7

e= estimate; f=forecast

Notes and sources: The revised estimates are slightly lower than the figures reported in the Migration and Development Brief 19 (http://goo.gl/vkGt3). Data on remittance flows come from Central Banks and the IMF Balance of Payments statistics, and are the sum, of three items: workers' remittances, compensation of employees, and migrants' transfers. The estimates for 2012 are based on monthly and quarterly data as available, with year-on-year growth for the partial year data used to estimate the remaining periods of 2012. For countries that have not released any data for 2012, as well as projections in the forecast period, a model is used that relies on migrant stocks, remittance inflows, and the growth outlook of the remittance source countries. GDP projections used in the model come from the World Bank's Global Economic Prospects and from the IMF's World Economic Outlook (where data is not available from the former). The remittances data for 2012 are likely to change as countries release actual data for the year.

This paper consists of 5 sections. Section 2 reviews the previous studies on remittances. Section 3 presents the research methodologies and data, including hypotheses. Section 4 analyzes the research results. The last section provides the implication.

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[7] Gemechu Ayana Aga, Christian Eigen-Zucchi, Sonia Plaza and Ani Rudra Silwal, "No Title," *Migration and Development Brief* no. 20 (World Bank, 2013): 1, http://siteresources.worldbank.org/INTPROSPECTS/Resources/334934-1288990760745/MigrationDevelopmentBrief20.pdf.

[8] Ibid., 11, Table 1.

II. Literature Review

2.1 Chronological Review; Development of Remittances Studies

This paper is about remittances rather than migration. However, it is helpful to review with migration studies to understand who the remittances studies have been developed. It is because the issue of remittances emerged from migration studies. It is not very easy to trace down when the migration started and when it started to have a significant implication on a society and economy. Inferring from what "Simmons, Diaz-Briquets and Laquian wrote, [–] The movement of people in developing countries has been intensively studied, and in recent years the results of these studies have been thoroughly reviewed"[9] – it is assumed that migration studies started to be diversified in the 1970's as they wrote the paper in 1977.

Studies conducted between 1960s and 1970s tend to be narrative and qualitative so as to provide explanation about migration phenomena and characters in overall (Caldwell 1968; Simmons and Cardona 1972; Wiest 1973; Papademetriou 1978; Slater 1979). They rarely mentioned about remittances. Instead, "[e]arlier studies focused on the way migrants were being forced out of their rural settings by overpopulation and limited resources, and the heightened rates of hypertension and mental illness they displayed when faced with the presumed complexity and anomie of urban life."[10] The integrated background knowledge on migration became the cornerstone of the research to be studied in 1980s.

In 1980s, migration studies developed the remittances issue. Supplementing the lack of quality and depth that 1960's and 1970's studies had, remittances studies started to be dealt

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[9] Include as much information as possible about the original source: Alan B. Simmons, Sergio Diaz-Briquets and Aprodicio A. Laquian, Social Change and Internal Migration: A Review of Research Findings from Africa, Asia and Latin America (Ottawa: International Development Research Centre, 1977), 5. Quoted in Robert E. B. Lucas, "Chapter 13 Internal Migration in Developing Countries," in Handbook of Population and Family Economic Volume 1, Part B, ed. Mark R. Rosenzweig and Oded Stark (1997), 722, http://www.ssc.wisc.edu/~walker/wp/wp-content/uploads/2012/04/lucas97.pdf.

[10] Nancy B. Graves and Theodore D. Graves, "Adaptive Strategies in Urban Migration," *Annual Review of Anthropology* Vol. 3 (1974): 117.

in academia as being just shortly mentioned in the migration studies and "[they] tended to focus on enumerating the costs and benefits of remittances."[11] It was not substantial enough to yield profound insights into the topic. The quantitative evidences were required "to answer this most crucial of all questions [– what are the economic effects of migration on source and destination areas? –] is almost nonexistent in both the descriptive literature and most econometric studies."[12] And the scope of studies was limited to the realm of descriptive statistics, which supports claims and explanations in the previous qualitative studies (Oberai and Singh 1980; Banerjee 1981; Nabi 1981; Russell 1986; Trager 1984;) and provides shallow analysis about a superficial fact such as "remittances from migrant member to rural households are commonly observed."[13] On the other hand, some studies began to adopt inferential statistics (Banerjee 1984; Goldfarb, Havrylyshyn and Mangum 1984).

Since 1990's, the specified remittances studies started to be so developed that it analyzed the economic effects of remittances, determinants of migrant remittances, social remittances, etc., in 2000's. In addition, international organizations paid attention to the remittances issues (World Bank 2005; Schiopu and Siegfried 2006; Adams, Cuecuecha and Page 2008; OECD 2006; Murrugarra, Larrison and Sasin 2010; Bell and Charles-Edwards 2013). As broaden scale of migration with globalization has been causing social problems, international organizations and academia published research papers on remittances related

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[11] Sharon Stanton Russell, "Remittances from International Migration: A Review in Perspective," *World Development* Vol. 14, no. 6 (1986): 677, doi:10.1016/0305-750X(86)90012-4.

[12] Michael P. Todaro, "Chapter 6 Internal Migration in Developing Countries: A Survey," in *Population and Economic Change in Developing Countries*, ed. Richard A. Easterlin (Chicago: University of Chicago Press, 1980), 377-378, http://www.nber.org/chapters/c9668.pdf.

[13] Include as much information as possible about the original source: M. Ali, W. R. Butcher and C. H. Gotsch, "Temporary Migration of Workers and Return Flows of Remittances in Pakistan," *Economic Development Report* no. 234 (Development Research Group, Harvard University, Cambridge, MA). Quoted in Ijaz Nabi, "An Empirical Analysis of Rural-Urban Migration in Less Developed Economies," *Economics Letters* Vol. 8, no. 2 (1981): 195.

issues combining with other social problems.

The elaborative models invented 1990's and 2000's made the remittances issues diversified and they were adopted and they were adopted in order to find out implications. For example, there are combined studies with remittances: poverty and economic growth (Quartey and Blankson 2004; Adams and Page 2005[a]; Catrinescu, Leon-Ledesma, Piracha and Quillin 2009; Giuliano and Ruiz-Arranz 2009; Gupta, Pattillo and Wagh 2009; Rao and Hassan 2011; Javid, Arif, and Qayyum 2012; Awuse and Tandoh-Offin 2014); inequality (Odozi, Awoyemi and Omonona 2010; Shen, Docquier and Rapoport 2010; Anyanwu 2011; Hobbs and Jameson 2012); education (Mansour, Chaaban and Litchfield 2011; Kroeger and Anderson 2014); health (Kanaiaupuni and Donato 1999; Hildebrandt and McKenzie 2006; Valero-Gil 2008; 2009); women (Mahapatro 2010); agricultural productivity (Rozelle, Taylor and Debrauw 1999), etc.

2.2 Remittances and Expenditure Behavior of Households

Differently from the previous remittances studies on poverty and economic growth conducted at the macro level, this paper will examine whether the remittances are spent on investment goods, which are expected to be helpful to reduce poverty by increasing human and physical capital, rather than durable goods at the micro level. "Since [remittances] have been considered part of the growth and development engine (of rural communities),"[14] it is necessary to see how the remittances users – households – spend their development engine. "But beyond [the] quantitative importance [remittances have], the possible impact of remittances should be viewed in terms of their use in a diverse context since they can have multiplier effects on the local economy and even modify the migration dynamics."[15] It is

[14] José Jorge Mora Rivera and Jesús Arellano González, "Effects of Remittances on Household Expenditure Patterns of Rural Mexico," *Hewlett Foundation, the Macmillan Center at Yale University* (Yale University, 2009): 3.

[15] Ibid., 2-3.

why this study takes supply-side into consideration by adding service availability in village related variables. Functioning as groundwork, this paper is expected to be contributable when to design a policy which can cause changes of household expenditure behavior at the community level in a constructive way to get out of poverty.

There are mainly three different perspectives which are recognized among the studies on remittances and its economic impact (Adams, Cuecuecha and Page 2008; Rivera and González 2009) although "very little attention has been paid to analyzing the impact of [remittances] financial transfers on poverty"[16] due to the lack of poverty and remittances data.[17] First is "a dollar is a dollar" standpoint.[18] It supports an idea that "a dollar of remittances income is treated by the household just like a dollar of wage or farm income, and the contribution of remittances to development will be the same as that from any other source of income."[19] The limit of the studies with 'a dollar is a dollar' perspective is that they have not revealed why a dollar of remittances cannot help having the same effect of a dollar from other income sources.

"The second view takes a more pessimistic position, arguing that receipt of remittances can cause behavioral changes at the household level that may lower their

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[16] Richard H. Jr. Adams, "Remittances and Poverty in Guatemala," *World Bank Policy Research Working Paper* no. 3418 (Washington, 2004): 1, https://openknowledge.worldbank.org/bitstream/handle/10986/13996/3418WPS.pdf?sequence=1.

[17] Ibid.

[18] Paper (draft: For comments only): Richard H. Jr. Adams, "Remittances, Household Expenditure and Investment in Guatemala," *World Bank Policy Research Working Paper* no. 3532 (Washington, 2005[b]): 5, http://elibrary.worldbank.org/doi/pdf/10.1596/1813-9450-3532.

[19] Richard H. Adams, Jr., Alfredo Cuecuecha and John Page, "Remittances, Consumption and Investment in Ghana," *Policy Research Working Paper* no. 4515 (Washington, DC: The World Bank, 2008): 1; and Richard H. Adams, Jr. and Alfredo Cuecuecha, "Remittances, Household Expenditure and Investment in Guatemala," *World Development* Vol. 38, no. 11 (2010): 1626.

development impact relative to receipt of income from other sources."[20] In a study about remittances as a source of capital for development, a model that Chami, Fullenkamp and Jahjah (2005) used "points to the impact of remittances on the incentives of remittances of recipients, where remittances are used as a substitute for labor income."[21] This means that the recipients' increasing dependency on remittances might cause a behavior change as "remittances are used by recipients to reduce their labor supply and labor market participation."[22] And it will result in adversely effects on economic activity.[23]

The last view is reflected in "more recent set of studies uses an econometric approach, adding remittance income as an explanatory variable in a system of household demand equations."[24] Studies with econometric approach have reached a different conclusion. For instance, a study of internal migration, remittances, and teen schooling in India done by Mueller and Shariff (2011) has found a positive result that remittance receipts improve human capital. Valero-Gil (2008), who studied remittances and the household's expenditure on health in Mexico, has also found a statistically significant positive relationship between remittances and the household's expenditure on health for households without access to employment's medical insurance.

This paper has specialties which make different from the existing studies. First, it elaborates the expenditure on human capital investment by categorizing the travel costs occurred to go to school/ medical center into the education and health. Second, on the

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[20] Adams, Cuecuecha and Page, "Remittances, Consumption and Investment in Ghana," *Policy Research Working Paper* no. 4515 (World Bank, 2008): 1, https://openknowledge.worldbank.org/bitstream/handle/10986/8785/wps3842.pdf?sequence=1.

[21] Ralph Chami, Connel Fullenkamp and Samir Jahjah, "Are Immigrant Remittance Flows a Source of Capital for Development?" *IMF Staff Papers* Vol. 52, no. 1 (2005): 77.

[22] Ibid.

[23] Ibid.

[24] J. Edward Taylor and Jorge Mora, "Does Migration Reshape Expenditures in Rural Households?" *World Bank Policy Research Working Paper* no. 3842 (2006): 2.

contrary to the previous studies which have focused on the demand-side factor (remittances), this study tries to discover additional factors by taking service supply into account. To do this, the village data on existence of relevant infrastructure are used. Expanding the scope of research into the service supply will be useful since it can be a clue to induce household expenditure to invest on human capital even when there is no remittances income. These specialties will be helpful for policy makers to design a policy as finding a clue on what Rivera and González (2009) said; "the key question that should be of interest to researchers and policy makers is whether expenditure patterns change differently for households that receive remittances, and if so, why."[25]

[25] Rivera and González, "Effects of Remittances on Household Expenditure Patterns of Rural Mexico," 17.

III. Research Methods and Data

Diagnosing the household expenditure behavior and suggesting appropriate policies, these are the hypotheses that this paper is interested in.

(Hypothesis 1) Households with remittances tend to spend more on investment goods such as education or health than households without remittances.

(Hypothesis 2) In the case of education, households living in a village where the schools exist will spend more on education.

(Hypothesis 3) Government project on education will decrease the household expenditure on education.

(Hypothesis 4) NGO project on education will decrease the household expenditure on education.

(Hypothesis 5) In the case of health, households living in a village where the health centers exist will spend more on health.

(Hypothesis 6) Government project on health will decrease the household expenditure on health.

(Hypothesis 7) NGO project on health will decrease the household expenditure on health.

0.1 Data

To analyze the differences of expenditure behaviors between household with remittances and without remittances, this study uses the Cambodia Socio-Economic Survey (CSES) 2011. "[It] asks questions to a country wide sample of households and household members."[26] The National Institute of Statistics (NIS) of the Ministry of Planning (MoP) has collected the CSES data since 1994 with the purpose of "collect[ing] statistical information

[26] National Institute of Statistics, Ministry of Planning, *Cambodia – Cambodia Socio-Economic Survey 2011*, Data Catalog (21 December, 2013): 2, http://nada.nis.gov.kh/index.php/catalog/24.

about living conditions of the Cambodian population and the extent of poverty"[27] by measuring the 8 main areas of social concern: demographic characteristics; housing; agriculture; education; labor force; health and nutrition; victimization; household income and consumption.[28] The CSES consists of 4 different questionnaires or forms: household listing sheets (Form 1); village questionnaire answered by the village leader (Form 2); household questionnaire with questions for each household member (Form 3); and diary form on daily household expenditure and income (Form 4).[29] Taking "a simple random 50% subsample from the CSES 2009 sample of villages,"[30] which has "a nationwide representative sample of 12,000 households within 720 sampling units (villages),"[31] the CSES 2011 contains the data information on 3,592 households from 360 villages.

This study limits the remittances either transfers or gifts in cash. Depending on a dataset design used in previous studies, each study has adopted different scope of remittances. Adams and Cuecuecha (2010[a]; 2013), Adams, Cuecuecha and Page (2008), Odozi *et al*. (2010), and Hobbs and Jameson (2012) have included in-kind remittances such as food or non-food in the studies; on the other hand, Adams and Cuecuecha (2010[b]) have recognized the cash remittances only. There exists a difference in that the former cases categorizes a household receiving remittance with food or non-food from as a remittance receiving household and the latter case does not. The studies including in-kind remittances insist that "it leads to a more accurate measure of the total flow of remittances to households."[32]

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[27] Ibid.
[28] Ibid., 3.
[29] Ibid., 7.
[30] Ibid., 6.
[31] National Institute of Statistics, Ministry of Planning, *Cambodia – Cambodia Socio-Economic Survey 2009*, Report (December, 2010): 5, http://nada.nis.gov.kh/index.php/catalog/11/download/85.
[32] For examples, see Richard H. Adams Jr. and Alfredo Cuecuecha, "The Economic Impact of International Remittances on Poverty and Household Consumption and Investment in Indonesia," *Policy Research Working Paper* no. 5433 (Washington, 2010): 7,

However, it is important to note that the value estimated by respondents could be possibly overestimated or underestimated.

One of the important notifications regarding to the definition on households with remittances and without remittances in this study, it depends on whether the remittances come from household members or not. Even though a household receives the remittance from relatives, it is not considered as a remittance-receiving household not to mention a case that a migrant does not send remittances to his origin household. This classification is made upon a question – "Have any members of this household received transfers or gifts in cash from [NAME] the last 12 months?"[33] – in the Form 3 questionnaire on current migrants. However, Adams and Cuecuecha (2013) have found that family ties in Ghana are so strong that relatives and close friends send remittances and households receiving remittances from non-family members are defined as households with remittances.[34] Besides the Ghana case study, Odozi *et al*. (2010) and Hobbs and Jameson (2012) acknowledge the remittance-receiving households once a household receives remittances no matter it comes from relatives or household members. On the contrary, case studies for Guatemala and Indonesia that Adams and Cuecuecha (2010[a, b]) have conducted do not accept the remittances received from non-household members. Even though the two different classifications, this paper counts the remittances only from household members considering a fact that migration and remittances

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https://openknowledge.worldbank.org/bitstream/handle/10986/3916/WPS5433.pdf?sequence=1; Richard H. Adams Jr. and Alfredo Cuecuecha, "The Impact of Remittances on Investment and Poverty in Ghana," *World Development* Vol. 50 (2013): 25, http://dx.doi.org/10.1016/j.worlddev.2013.04.009; Richard H. Adams Jr. and Alfredo Cuecuecha and John Page, "Remittances, Consumption and Investment in Ghana," *Policy Research Working Paper* no. 4515 (Washington, DC, 2008): 4, http://elibrary.worldbank.org/doi/pdf/10.1596/1813-9450-4515.

[33] *Cambodia – Cambodia Socio-Economic Survey 2011*, Data Dictionary, Cambodia – NADA [Online] [cited 12 March 2015]; the survey question (the name of variables; q03bc11) is available from: http://nada.nis.gov.kh/index.php/catalog/24/data_dictionary#page=F31&tab=data-dictionary.

[34] Adams, Richard H. Jr. and Alfredo Cuecuecha, "The Impact of Remittances on Investment and Poverty in Ghana," (2013): 26.

are very much dependent.

3.1.A Descriptive Statistics of Independent Variables

Table 1 describes the summary of CESE 2011 and the factors appeared in the table will be used as independent variables. In the case of Adams and Cuecuecha (2013), households having both internal and international remittances were dropped out. However, this Cambodia case study has only two sub-groups – households without remittances and with remittances – and households receiving both internal and international remittances are not excluded. In the CSES 2011 data, while 2,605 out of 3,592 households (72.5%) do not have remittance income source, the rest of them (27.5%) receive either internal remittances or international remittances.

Differences exist between non-remittance and remittance-receiving households. According to Table 1, households with less educated tend to have remittance income. This result does not "accord with human capital theory, which suggests that educated people are more likely to migrate because educated people enjoy greater employment and income opportunities in destination areas."[35] Also, in the perspective of international migration, this result does not coincide with a claim that "educated individuals often migrate from poor countries to rich countries seeking opportunity."[36] However, as this study does not distinguish between internal and international migration, this is the outcome which reflects both internal and international migration types. Considering a fact that the households with remittances have less mean annual income and spend less while living in rural areas in Table 1, the less educated are willing to move to find better opportunity for work. In terms of household characteristics, households with smaller size but having more labor (number of

[35] Richard H. Jr. Adams, "Remittances and Poverty in Guatemala," (2004): 5.

[36] David Lamotte, *Human Capital – A Driving Force for Business Growth*, Working Paper (International Labour Organization, 2012): 6, http://www.ilo.org/wcmsp5/groups/public/---asia/---ro-bangkok/---ilo-suva/documents/publication/wcms_192340.pdf.

household members over age 15), and less dependents (number of children under age 5) show more likeliness to have migrants and receive remittances. Only the ethnicity of household head does not have differences between groups.

3.1.B Dependent Variables

Table 2 represents the dependent variables, which are categorized 6 main items: expenditure on food; consumer goods and durables; housing; education; health; and other. The idea of designing dependent variables is borrowed from Adams and Cuecuecha (2010; 2013) but redefined based on the purpose of study and CSES survey questionnaire. For instance, the scope of health expenses in Adams and Cuecuecha's studies is not wide enough to cover the transportation fees occurred to visit medical center. However, this study classifies transportation fees occurred to commute school and visit medical centers as a part of expenditure on education and health respectively, the data on transportation costs appeared in the household questionnaires in 'health care seeking and expenditure/ education' questionnaire were sorted into the relevant expenditure categories. Meanwhile, due to the narrow scope of data for housing in the Form 3, the housing dependent variable has been made by adding housing related items – purchase of second hand house, building materials for construction and extension of residential house, labor for construction of residential house, house rent – shown in the questionnaire on daily household expenditure and income (Form 4) to the domestic salaries in the Form 3. Also, it is important to note that more than half of missing data on housing is caused by lack of perception on housing among Khmer. The lack of housing concept results in less than .2% of household expenditure on housing in Table 2. Thus, missing data are converted into zero amount of expenditure so that the share of expenditure on each category can be computed.

Table 2 also shows the differences in average budget shares between households with remittances and without remittances. It seems that there is no statistical difference between

two groups in expenditure on food, consumer and durable goods, and other. A fact that two groups of households spend on food more than 60% shows the reality of developing countries. But it shows the difference in housing and human capital investment items, which are education and health. An interesting finding is that households with no remittances have spent more on education.

3.1.C Village Data

In this study, it has been expanded to add extra independent variables at the village level in accordance with the study interest; how the existence of government/ NGO project or school/ medical center affects the household expenditure behavior on education or health (Hypothesis 2, 3, 4 and 5). To verify the hypothesis 2, 3, 4 and 5, which are established to test how the education or health project availability and existence of facilities in village has an effect on household expenditure behavior, it is needed to utilize the village level data. Regarding to the remittances issue, 3,592 household data are available, yet the data on 50 households from 5 villages collected at the village level are absent. It results in 3,542 household sample size for the village level data.

The independent variables extracted from village data are relevant to the household expenditure on education and health only. There are 5 village level variables for education, which are a) existence of primary school in village, b) existence of junior secondary school in village, c) existence of senior secondary school in village, d) existence of government development project on education in village, and e) existence of Non-government Organization (NGO) development project on education. In a case of expenditure on health, 3 village level data are additionally used as independent variables, which are a) existence of medical service in village, b) existence of government development project on health in village and c) existence of NGO development project on health.

3.1.C (a) Village Data; Education

The questionnaire at the village level asks about existence of school available in village. Table 3 shows the availability of school. The tables show that the lower level of school shows the higher availability in village. Only 190 out of 3,542 households are equipped with all different levels of schools. And more than one third of total households do not have any of them in village.

Looking into major problems that different levels of schools in village suffer from, reasons that parents do not send their children to school can be deduced. It is important to know because it is closely connected with reasons why spending less on education.

Seeing the Table 4, there is something in common between the major problems that each level of school has. Too low living standard of teachers and poor living standard in the village appear in the major three problems. In the case of lower secondary school, school budget constraint is also one of them.

Those external problems, which are not problems caused within households such as too low living standard of teachers or budget constraints, do not have a direct causal relationship with not sending children to school. However, they might result in the absence of teachers at school since the teachers, who live in destitution, will be more likely to give little weight teaching and have another job to make more money. It cannot help bringing about poor quality of education. As a matter of opportunity cost, parents prefer sending their children to work. Therefore, the problems of school are estimated that it has great influence on whether to invest on education or not.

3.1.C (b) Village Data; Health

It is important to know country contexts when to carry out a case study and it seems to be necessary to understand the concept of medical service that the Cambodians have had. The country background knowledge will provide variable perspectives to interpret empirical

evidence. Furthermore, it will enable policy makers to develop an effective policy to improve national development.

In this study, not only western medical institutions but also traditional medical service providers are recognized as a part of medical services. There are some reasons to embrace all of them. First, looking into the questionnaire information collected at the village level, traditional Birth Attendant (TBA), Kru Khmer[37] and other traditional healer are on a list to answer for a question which asks availability of medical services. As the questionnaire was designed by contemplating the country context, it can be assumed that the Cambodians visit them on a purpose of receiving medical service. Table 5, which shows frequency to visit what kind of medical service provider for the first time and the last time when someone is ill, supports the assumption. The percentage is calculated with the valid data only after dropping out missing data. It proves the Cambodian often uses shop selling drugs/ market, which is categorized into a not medical sector, after a private pharmacy. It is one of the examples to support the argument that the Cambodians regard the providers in the not medical sector as a medical service provider.

Second is more technical reason; it is impossible to sort how much a household member had spent on every different kind of medical provider respectively. The questionnaire collected at the individual level, which the transportation costs will be borrowed from, clearly defines the medical service providers into three types: public sector; private medical sector; not medical sector. However, this grouping was designed to collect

[37] Kru Khmer is a traditional healer, who "can be a person who specialises in medicinal practice with a spiritual component. Other Kru Khmer specialises in magic with medicinal component such as for snake bite, nervous breakdown, and washing (Sroit Tuk) the patient – Water is thrown over the patient. They always carried out their procedure with prayer and spiritual activities."

The definition of Kru Khmer is excerpted from: Cambodian Australian Welfare Council [CAWC] Inc, *Khmer Culture and Attitude Towards Health*, Paper Published by Non-profitable Organisation (1 January 2010): 17. [cited 13 March 2015]; available from: http://www.cambodianwelfare.org.au/files/Booklet.pdf.

what sort of provider that an individual visited for the first and the last time, not to figure out the amount of money he paid to each provider. It only shows the total amount of money paid regardless of the types of medical services. Therefore, it is impossible to extract the amount of money spent on visiting non-medical centers from health expenditure. Due to the technical problem resulted from the design of questionnaire, it cannot help covering them as a medical service.

3.2 Methodology

Studies done by Adams and Cuecuecha (2010; 2013), which are representative studies on remittances and expenditure behavior in the most recent years, have used a transformed Working-Leser model, which can be written as:

"$C_i/EXP = \beta_i + \alpha_i/EXP + \gamma_i (\log EXP)$ (1)

where C_i/EXP is the share of expenditure on good i in total expenditure EXP [per capita]."[38] It is noted that $\Sigma\, C_i/EXP=1$ if all six expenditure categories are summed up.[39]

The studies are considered representative in that they have carefully chosen the adequate functional form, taking those conditions into account; the functional form to use should "1) provide a good statistical fit to a wide range of goods, including food, consumer durables, housing, health, and education, 2) mathematically allow for rising, falling, or constant marginal propensities to spend over a broad range of goods and expenditure levels, and 3) conform to the criterion of additivity (i.e., the sum of the marginal propensities for all goods should equal unity)."[40]

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[38] Richard H. Adams, Jr., Alfredo Cuecuecha and John Page, "Remittances, Consumption and Investment in Ghana," (2008): 15; Richard H. Jr. Adams, "Remittances, Household Expenditure and Investment in Guatemala," (2010): 1629; Richard H. Adams Jr. and Alfredo Cuecuecha, "The Impact of Remittances on Investment and Poverty in Ghana," (2013): 27.

[39] Ibid.

[40] Richard H. Adams, Jr., Alfredo Cuecuecha and John Page, "Remittances, Consumption and Investment in Ghana," (2008): 15; Richard H. Jr. Adams, "Remittances,

Even though the thoughtful consideration, this paper employs the linear Engel function, which is known as:

$$q_i = a_i + b_i y \qquad (2)^{41}$$

"where q_i is the quantity consumed of good i, y is income, wealth, or expenditures on goods and services."[42] However, in this study, it seems to be adequate to substitute expenditure for income with two reasons that Adams and Cuecuecha (2010; 2013) suggested: "1) [this] analysis is to estimate the impact of remittances on the marginal spending behavior of households; 2) expenditures are often easier to measure than income in developing country situation (like Guatemala/ Ghana) because of the many inherent in defining and measuring income for the self-employed in agriculture, who represent such a large proportion of the labor force."[43] The function (2) rewritten by reflecting the purpose of study is as follows:

$$C_i = \alpha_i + \beta_i (\text{EXP}) \qquad (3)$$

There are some reasons to use the linear Engel function instead of Working-Leser model. First, there is no fundamental difference to use the linear Engel function since the Working-Leser model is originated from the Engel function. Second, under a restriction that "C_i should always equal to zero whenever total expenditure EXP is zero, observing this restriction with the Working-Leser model can lead to poorer statistical fits."[44]

Household Expenditure and Investment in Guatemala," (2010): 1627; Richard H. Adams Jr. and Alfredo Cuecuecha, "The Impact of Remittances on Investment and Poverty in Ghana," (2013): 27.

[41] Arthur Lewbel, *Engel Curves: Entry for the New Palgrave Dictionary of Economics*, 2nd ed. (MacMillan Press, 2006): 2, https://www2.bc.edu/~lewbel/palengel.pdf.

[42] Ibid., 1.

[43] Richard H. Jr. Adams, "Remittances, Household Expenditure and Investment in Guatemala," (2010): 1631; Richard H. Adams Jr. and Alfredo Cuecuecha, "The Impact of Remittances on Investment and Poverty in Ghana," (2013): 35.

[44] Richard H. Adams, Jr., Alfredo Cuecuecha and John Page, "Remittances, Consumption and Investment in Ghana," (2008): 47; Richard H. Jr. Adams, "Remittances, Household Expenditure and Investment in Guatemala," (2010): 1639; Richard H. Adams Jr. and Alfredo Cuecuecha, "The Impact of Remittances on Investment and Poverty in Ghana," (2013): 39.

With the underlying of Engel function, this study employs an equation as merging the left-hand side from equation (1) and right-hand side from equation (2). It can be written as follows:

$$C_i/EXP = \alpha_i + \beta_i\,(\text{EXP}) \quad (4)$$

The substitution of expenditure share on good *i* for the absolute value of expenditure on good *i* is expected to estimate where a household gives weight to as the amount of expenditure increases.

To the equation (4), household characteristics, human capital, and other factors are controlled with a key dummy variable on whether receiving remittances or not. As mentioned earlier, the village independent variables are additionally included when to run a regression of expenditure on education and health. Referring control variables suggested in Adams and Cuecuecha's studies (2004; 2005[a]; 2005[b]; 2008; 2010; 2013), these independent variables are to be applied in this study: human capital (number of household members with primary, junior secondary, senior secondary, and university education), household characteristics (Age, gender, ethnicity of household head dummy, whether the household has children below age 5, number of household males and females over age 15), and urban/rural dummy. These control variables will show how the remittances have an influence on household expenditure when other conditions are the same. It is noted that the ethnicity of household head dummy is included under an assumption that the likelihood of migration might be higher if the head of household is not Khmer with an expectation that non-indigenous people have broader networks to get help when they immigrate.

This is the equation to be measured as follows:

$$\begin{aligned} C_i/EXP = {} & \alpha_i + \beta_{i1}\,(\text{EXP}) + \beta_{i2}\,(\text{REMI}) + \beta_{i3}\,(\text{REMI*EXP}) + \beta_{i4}\,(\text{HS}) + \beta_{i5}\,(\text{AGEHD}) \\ & + \beta_{i6}\,(\text{SEX HD}) + \beta_{i7}\,(\text{ETH}) + \beta_{i8}\,(\text{CHILD5}) + \beta_{i9}\,(\text{MALE15}) + \beta_{i10}\,(\text{EDPRIM15}) \\ & + \beta_{i11}\,(\text{EDJSS15}) + \beta_{i12}\,(\text{EDSSS15}) + \beta_{i13}\,(\text{EDUNIV15}) + \beta_{i14}\,(\text{AR}) \end{aligned} \quad (5)$$

"where [C_i] is annual per capita household expenditure on one of six expenditure categories *i* defined above (food, consumer goods/durables, housing, education, health or other), (…), EXP is total annual per capita household expenditure,"[45] REMI is whether a household receives remittances or not dummy, REMI*EXP is the interaction between REMI and expenditure, HS (household size) is number of household members, "AGEHD is age of household head, SEX HD is gender of household health (MALE = 1), ETH is ethnicity of household head [(Khmer = 1)], CHILD5 is number of children below age 5, MALE 15 is number household males above age 15, (…), [EDPRIM15] is number of household members over age 15 with primary education, [EDJSS15] is number of household member over age 15 with junior secondary education, [EDSSS15] is number of household members over age 15 with senior secondary education, [EDUNIV15] is number of household members over age 15 with university education,"[46] and AR is urban or rural areas dummy (urban = 1).

As this study is especially interested in household expenditure on human capital investment, an in-depth study will be conducted by taking advantage of village level data; existence of primary/ junior secondary/ senior secondary school or medical center, and existence of government projects/ NGO projects in village on education/health. It will be helpful to find what else, besides the remittance-receiving status, affects household expenditure behavior so that researchers or policy makers could get an idea to design policies which encourage households to spend the budget on human capital investment.

The equation to be used for the in-depth study on education can be written as:

$$C_{EDU/EXP} = \alpha_{EDU} + \beta_{EDU1}\,(\text{EXP}) + \beta_{EDU2}\,(\text{REMI}) + \beta_{EDU3}\,(\text{REMI*EXP})$$

[45] Richard H. Adams, Jr., Alfredo Cuecuecha and John Page, "Remittances, Consumption and Investment in Ghana," (2008): 17; Richard H. Jr. Adams, "Remittances, Household Expenditure and Investment in Guatemala," (2010): 1631; Richard H. Adams Jr. and Alfredo Cuecuecha, "The Impact of Remittances on Investment and Poverty in Ghana," (2013): 29.

[46] Richard H. Adams Jr. and Alfredo Cuecuecha, "The Impact of Remittances on Investment and Poverty in Ghana," (2013): 29.

$$+ \beta_{EDU4}(\text{EXPRIM}) + \beta_{EDU5}(\text{EXJSS}) + \beta_{EDU6}(\text{EXSSS})$$
$$+ \beta_{EDU7}(\text{GOVEDU}) + \beta_{EDU8}(\text{NGOEDU}) + \beta_{EDU9}(\text{HS})$$
$$+ \beta_{EDU10}(\text{AGEHD} + \beta_{EDU11}(\text{SEX HD}) + \beta_{EDU12}(\text{ETH})$$
$$+ \beta_{EDU13}(\text{CHILD5}) + \beta_{EDU14}(\text{MALE15}) + \beta_{EDU15}(\text{EDPRIM15})$$
$$+ \beta_{EDU16}(\text{EDJSS15}) + \beta_{EDU17}(\text{EDSSS15}) + \beta_{EDU18}(\text{EDUNIV15})$$
$$+ \beta_{EDU19}(\text{AR}) \quad (6)$$

where C_{EDU} is annual per capita household expenditure on education, EXPRIM is existence of primary school in village, EXJSS is existence of junior secondary school in village, EXSSS is existence of senior secondary school in village, GOVEDU is existence of education project by government functioning in village, and NGOEDU is existence of education project by NGO functioning in village (YES=1).

Likewise, the supplementary independent variables are added to the equation on health and it can be written as:

$$C_{HTH/EXP} = \alpha_{HTH} + \beta_{HTH1}(\text{EXP}) + \beta_{HTH2}(\text{REMI}) + \beta_{HTH3}(\text{REMI*EXP})$$
$$+ \beta_{HTH4}(\text{MEDICEN}) + \beta_{HTH5}(\text{GOVHTH}) + \beta_{HTH6}(\text{NGOHTH})$$
$$+ \beta_{HTH7}(\text{HS}) + \beta_{HTH8}(\text{AGEHD} + \beta_{HTH9}(\text{SEX HD}) + \beta_{HTH10}(\text{ETH})$$
$$+ \beta_{HTH11}(\text{CHILD5}) + \beta_{HTH12}(\text{MALE15}) + \beta_{HTH13}(\text{EDPRIM15})$$
$$+ \beta_{HTH14}(\text{EDJSS15}) + \beta_{HTH15}(\text{EDSSS15}) + \beta_{HTH16}(\text{EDUNIV15})$$
$$+ \beta_{HTH17}(\text{AR}) \quad (7)$$

where C_{HTH} is annual per capita household expenditure on health, MEDICEN is existence of medical center in village, GOVHTH is existence of health project by government functioning in village, and NGOHTH is existence of health project by NGO functioning in village (YES=1).

Those functions from (5) to (7) will demonstrate that what impact on household expenditure the key variables – REMI, REMI*EXP, EXPRIM, EXJSS, EXSSS, GOVEDU,

NGOEDU, MEDICEN, GOVHTH, and NGOHTH – have. Also, this analysis will show how the effect of each variable can be different when all those factors exist and interact with one another.

IV. Analysis and Findings

4.1 Results in Overall

(Hypothesis 1) Households with remittances tend to spend more on investment goods such as education or health than households without remittances.
• Partly true. Table 7 tells that households with remittances spend more on health but not on education as interacting with the amount of household expenditure.

(Hypothesis 2) In the case of education, households living in a village where the schools exist will spend more on education.
• Partly true. This hypothesis is applicable for primary and junior secondary schools. Existence of senior secondary school has negative effects on household expenditure on education.

(Hypothesis 3) Government project on education will decrease the household expenditure on education.
• True. The government project on education reduces household expenditure on education. However, this negative impact disappears when a village is equipped with proper education infrastructure such as school.

(Hypothesis 4) NGO project on education will decrease the household expenditure on education.
• False. A NGO project on education does not have any influence.

(Hypothesis 5) In the case of health, households living in a village where the health centers exist will spend more on health.
• False. Availability of medical service in village decreases the household expenditure on health.

(Hypothesis 6) Government project on health will decrease the household expenditure on health.
• True. The government project on health, not only itself but also together with existence of medical service variable, has an effect on reducing household expenditure on health.

(Hypothesis 7) NGO project on health will decrease the household expenditure on health.
• Partly true. The NGO project reduces the household expenditure on health but its effect is not strong enough to remain when medical service exists.

According to the analysis result, households with remittances tend to invest in human capital, specifically in health while reducing their expenditure on other items such as food, consumer goods, durables, housing and others. Receiving remittances, alone, may not influential enough to promote households' human capital investment. However, Table 7 suggests that the combined influence of remittances with expenditure is so significant that it brings out the expenditure behavior of households with remittances. The result supports the assumption that the households can distinguish the income with the remittances which is an additional income in household. This is against 'a dollar is a dollar' and pessimistic perspectives mentioned in the literature review.

4.2 Education

A thing to pay attention is that the remittances do not have an influence on education spending whereas they do on health spending. To figure out what else, besides remittances, could be influential on households' human capital investment, an additional regression using school accessibility variables was conducted. Interestingly, the effect of remittances disappears as other additional community capacity related variables are added.

The analysis indicates that households tend to spend more on education if there is a primary or junior secondary school in village. Based on the result appeared in Table 8, which shows the result of the additional regression with existence of each level of school, existence of government and NGO project on education, it tells that existence of school in village is an important determinant to encourage households' expenditure on education.

Intriguingly, the outcome on the secondary school has turned out to be apposite to the phenomena found in the primary or junior secondary school. The contrasting result can be interpreted that the existence of senior secondary school in village has a negative effect on education spending. It is complicated to provide adequate explanation of why households located in a village where it is equipped with senior secondary school spend less on education.

Table 8 shows households located in the village where the senior secondary school exists in village spend less on education. It is assumed that the expenses, generated from education related expenses such as allowances for children studying away from home or transportation cost, occur less if there is a school in village. This interpretation is plausible when thinking about the educational context in Cambodia. First, the number of lycee – which is grade from 10 to 12 – is very few in Cambodia. The number of lyceee is recorded only 352, on the other hand, the number of schools for college is 1,112.[47] Therefore, households

[47] Ministry of Education, Youth and Sport, EMIS Office, Department of Planning, *Education Statistics & Indicators 2013/2014* (Phnom Penh, Cambodia: February 2014): 11,

located in a village where secondary high schools exist spend less because the transportation fees and other living expenses while living away from home for studying occur less, comparing to the households located without upper secondary schools. Setting aside a problem of teachers' too low standard of living, upper secondary schools in Cambodia are suffering from budget constraint. Under the financial constraint, which causes not only from enough supplies but also class not held regularly (see Table 4-c), parents, who have willingness to invest money for their children's education, will send them to other villages where quality of education is available. In this scenario, if there is no school in village, transportation fee occurred for the purpose of education reduces but the education related costs are extremely high. This is what Table 9-c demonstrates. Therefore, households in a village, where the upper secondary schools do not exist, cannot help spending more while the education related fees for the other households located in a village where the upper secondary schools exist occur less.

Second reason is an education environment status related to the limited upper secondary education opportunity. "As regards the admission to upper secondary education, students are required to take a natioanl entrance examination."[48] The transition rate from primary to lower secondary school and from lower to upper seocndary school in 2010/11 is 79.3% and 69.8% respectively.[49] Meanwhile, only 426 upper secondary schools existed in

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accessed March 1, 2015, https://docs.google.com/file/d/0B1ekqZE5ZIUJWkxvZHdrQ0ZfYk0/edit?usp=drive_web.

[48] United Nations Educational, Scientific and Cultural Organization [UNESCO], *World Data on Education*, 7th ed., 2010/11, IBE/2011/CP/WDE/CB (2011). [Online] [cited 11 March 2015]; Available from: http://www.ibe.unesco.org/fileadmin/user_upload/Publications/WDE/2010/pdf-versions/Cambodia.pdf.

[49] Ministry of Education, Youth and Sport, EMIS Office, Department of Planning, *Education Statistics & Indicators 2011/2012* (Phnom Penh, Cambodia: February 2012): 41, accessed March 1, 2015, http://www.moeys.gov.kh/images/moeys/indicator-and-statistic/185/emis-2011-2012-en.pdf.

2011/12[50] and even the gross enrollment rate for upper secondary school has recorded 30.6% in 2011/12 for the whole country.[51] Under the restricted circumstance, the opportunity cost of going to upper secondary school cannot help being high and parents will be more likely to send their children for work although a school exists in village. It appears with negative education expenditure behavior of households located in village without schools.

In terms of government and NGO project on education, they are not that influential under the environment where schools exist. About this result, Mr. Sopheak Chhim, who is a lecturer at University of Cambodia, explained that the projects run by government or NGOs are not that influential because "they lack of lack knowledge and skills of management (finance, project, resources, language, proposals...) [and] [s]econd[ly] sometimes there is corruption. [P]rojects are only in reports."[52]

However, specification (2), when the variables on existence of schools in village are not controlled, in Table 8 demonstrates that government project on education reduces household's spending on education. One of the representative support programmes led by government, which might directly give influence on household's expenditure behavior, is the Priority Action Programme (PAP). "The [PAP] was introduced in 2000 as a pilot project in the primary schools of 10 provinces."[53] "In 2001, PAP expanded its coverage to all provinces/towns and all levels of education in order to lessen the financial burden on families

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[50] *Education Statistics & Indicators 2013/2014* (Phnom Penh, Cambodia: February 2014): 66, accessed March 1, 2015, https://docs.google.com/file/d/0B1ekqZE5ZIUJWkxvZHdrQ0ZfYk0/edit?usp=drive_web.

[51] Ministry of Education, Youth and Sport, *Education Statistics & Indicators 2011/2012*, 42.

[52] Sopheak Chhim, [chhim.sopheak69@gmail.com], "Re: Friends from Cambodia," email to Chan Ju Lee, [cjlee815@gmail.com], 30 March 2015: line 19-20.

[53] United Nations Educational, Scientific and Cultural Organization [UNESCO], *Secondary Education Regional Information Base: Country Profile – Cambodia* (Bangkok, 2008): 10, http://unesdoc.unesco.org/images/0016/001618/161851e.pdf.

and to ensure access to secondary schooling.[54]" After the PAP, reformed programmes were introduced: the Public Financial Management Reform Programme (PEMRP) in 2004;[55] Program Based Budgeting (PB) in 2007.[56] The introduction of PAP enabled for the government to cancel start-up fees[57] as well as "provide(s) scholarships to poor students, especially those from rural areas,"[58] and it "lessen[ed] the financial burden on families and (to) ensure[d] access to secondary schooling."[59] However, the effect of government project on education disappears when variables on existence of schools are added.

4.3 Health

The further study on health also shows an expenditure pattern of households depending on whether they live in a village equipped with medical service provider or not. According to Table 10, it is obvious that households with remittances spend more on health under the same condition. However, existence of medical service in village reduces the households' spending on health. Taking into account a fact that the household expenditure data consists of transportation fee occurred to visit a medical service provider and service fee itself, the medical costs decreases as the accessibility increases. Table 11, which shows the household mean expenditure on health by existence of medical service in village, supports this argument.

Table 11 tells that households without health service provider in village spend more on treatment even though it is not statistically different. It requires an explanation on why

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[54] Ibid.

[55] Sanjugta Vas Dev, Rhonda Sharp and Monica Costa, *Gender-responsive Budgeting in the Asia-Pacific Region*, Hawke Research Institute (2010): 6, http://www.unisa.edu.au/Documents/EASS/HRI/gender-budgets/cambodia.pdf.

[56] Ministry of Education, Youth and Sport, *Education Strategic Plan 2009-2013* (September 2010): 9, http://planipolis.iiep.unesco.org/upload/Cambodia/Cambodia_Education_Strategic_Plan_2009-2013.pdf.

[57] UNESCO, *Secondary Education Regional Information Base*, 10.

[58] Ibid.

[59] Ibid.

households spend more on treatment when there is not health service provider in village. The different treatment costs are cause by what kind of health service an individual uses. In Table 5, an individual visits shop selling drugs/market (25.6% for the first provider and 24.8% for the last provider) second frequently after private pharmacy (20.14% for the first provider and 32.5% for the last provider). If a situation that an individual living in a village without medical services becomes severely ill and must visit a medical center occurs, he is more likely to use hospitals or clinics rather than pharmacies. If adding the traveling fees to the treatment costs, it should cost more compared to households living in a village where all kinds of adequate medical service are reachable at the right time.

A circumstance in Cambodia, where health services are provided officially free of charge in public health facilities[60] and "[patients] voluntarily provide the fees as a traditional way of Cambodian people to acknowledge receiving health services from them,"[61] brings about "an inherent tension in a facility seeking to operate a viable exemption scheme and a viable salary incentive scheme."[62] However, the free of charge in public health facilities system engenders poor quality of health service and becomes a barrier for patients to use the service at the end.

To remove barriers to access the health services, the government has implemented various projects on health. The negative impact of health project by government shows that

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[60] Hidechika Akashia, Takako Yamada, Eng Huot, KoumKanal and Takao Sugimoto, "User Fees at a Public Hospital in Cambodia: Effects on Hospital Performance and Provider Attitudes," *Social Science & Medicine* 58, no. 3 (2004): 554.

[61] Ibid.

[62] Include as much information as possible about the original source: Wilkinson D, Holloway J, and Fallavier P., *The impact of user fees on access, equity and health provider practices in Cambodia*, WHO Health Sector Reform Phase III Project Report (Phnom Penh: Cambodian Ministry of Health/Health Economics Task Force, 2001). Quoted in World Bank, *Waivers, Exemptions, and Implementation Issues under User Fees for Health Care: Equity Funds and Other Waiver Systems in Cambodia* (Washington, DC, 2002): 2, http://siteresources.worldbank.org/SAFETYNETSANDTRANSFERS/Resources/281945-1131468287118/1876750-1135194819338/Waivers_Cambodia_Bitran.pdf.

these projects have achieved a goal: "to reduce unofficial charges and household out-of-pocket expenditure."[63] Health Equity Fund (HEF) is a well-known example of government project on health. Even though "most HEFs have been implemented through local and international NGOs as third-party schemes purchasing health services from district health facilities and national hospitals on behalf of the poor,"[64] they can be regarded as a government project with the help of international organizations and donors in that the Ministry of Health (MOH) is highly involved in the four stages from receiving "an application for approval of health financing (its) charter"[65] submitted by the health facility "[to] quantif[ying] the budget for the health facility in principle taking into account the provider's expected ability to generate complementary revenue from users."[66] Other than EFs, introducing user fees and contracting schemes at district referral hospitals delivered by a non-government operator working under contract to the MOH are considered government-led health projects. According to a report produced by World Bank, "increasing the per capita allocation of public resources in the poorest provinces of Cambodia would enable the health facilities substantially to lower their user fees, or to remove them completely."[67] On the other hand, NGO projects on health, which might be numerous and all different sorts of health

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[63] Ricardo Bitran *et al*., "Preserving Equity in Health in Cambodia: Health Equity Funds and Prospects for Replications," *Online Journal of the World Bank Institute* (Washington, DC: 2003): 2. [cited 12 March, 2015]; available from: http://info.worldbank.org/etools/docs/library/48614/oj_bitran.pdf.

[64] Peter Annear, "A Comprehensive Review of the Literature on Health Equity Funds in Cambodia 2001-2010 and Annotated Bibliography," *Working Paper Series* no. 9 (2010): iii. [cited 12 March, 2015]; available from: http://ni.unimelb.edu.au/__data/assets/pdf_file/0010/385948/HPHF_Hub_WP_9A_comprehensive_review_of_the_literature_on_health_equity_funds_in_cambodia_2001-2010.pdf.

[65] Ricardo Bitran *et al*., *Preserving Equity in Health in Cambodia: Health Equity Funds and Prospects for Replications*, 4.

[66] Ibid.

[67] Ricardo Bitrán and Ursula Giedion, "Waivers and Exemptions for Health Services in Developing Countries," *Social Protection Discussion Paper Series* no. 0308 (2003): 68, http://siteresources.worldbank.org/SOCIALPROTECTION/Resources/SP-Discussion-papers/Safety-Nets-DP/0308.pdf.

projects based on each organization's interest, are not that successful in reducing household out-of-pocket expenditure.

V. Conclusion

Households with remittances are more likely to invest their extra income on human capital investment, specifically on health. Increased expenditure on health for remittances receiving households is the evidence while expenditure on the other four items – food, consumer goods and durables, housing and other – decreases. However, there is no difference in expenditure behavior on education, no matter whether households receive remittances or not.

Also, under the condition when the remittances variable is controlled, existence of relevant service provider in village has a significant effect on education/ health expenditure. In education, government project reduces the financial burden on education when schools do not exist in village. But it is not influential enough when schools exist. In health sector, while NGO projects on health do not have an effect on changing household expenditure behavior, government-led health projects along with existence of health service provider has a negative impact.

There are several things to think about the interpreting the quantitative empirical result before suggesting policies. First is about how to define human capital investment. Being accepted that human capital is a significant factor to enhance economic growth, it is positively considered to invest in human capital. Nevertheless, it is very ambiguous to distinguish the boundary between what is investment in human capital and what is not. For example, consuming food in order to having sufficient nutrition is essential to maintain health. Thus, households' expenditure on food cannot be construed that they are indifferent to human capital investment.

Second, it is not necessarily to follow that the reduced expenditure on education or health has a negative impact on human capital investment. Taking an example of health expenditure, accessibility to medical service in village has a negative impact by reducing

transportation fees. It is critical in that the increased accessibility enables more people to have a benefit of medical service. Also, government projects on health such as HEF contribute to expansion of health service beneficiary by adjusting the service price at an affordable level. Accordingly, the fact that a variable has a negative impact on education or health expenditure should not be interpreted in a pessimistic way.

Third, to improve the awareness of education, the government needs to ensure the quality of education with salary system improvement. As mentioned above, all levels of school have trouble with too low living standard of teachers, school budget constraint, poor standard in the village and not enough supplies. These are the difficulties which hinder supply of education service. Especially, school budget constraint is the main hindrance of continuing regular classes and teachers' too low living standard hamper the quality of education service. It implies that removing those barriers is very essential not to mention improving accessibility. When there is no schools in village, the government projects can complement to eliminating barriers by providing cost reduction benefit to the poor.

Forth, health service users have difficulty in physical barriers, financial barriers, quality of care, knowledge of users, and sociocultural barriers.[68] Not enough medicines and drugs, health services are too expensive and long distance to have better quality care are the specific reasons of unmet needs which cause from physical and financial barriers and quality of care. Seeing the physical and financial barriers first, they can be solved by increasing household income and access to health services. If these problems get solved, what would happen apparently appeared in the regression Table 10. When households have extra income from remittances, they tend to spend more on health as expenditure increases. At the same

[68] Maryam Bigdeli and Peter Leslie Annear, World Health Organization, "Barriers to Access and the Purchasing Function of Health Equity Funds: Lessons from Cambodia," *Bulletin of the World Health Organization* Vol .87, no.7 (2009): 561, doi:10.2471/BLT.08.053058.

time, as the accessibility to health services diminishes opportunity costs as dwindling transportation costs (Table 11). Therefore, spending less on health, due to the increased accessibility, should be interpreted in the positive perspective. Moreover, apart from the treatment cost, "other costs – such as transport, time, food, informal charges and drugs – may constitute even higher barriers for the poor than the user fees themselves (Abel-Smith and Rawal 1992; Hjortsberg and Mwikisa 2002; Khe *et al*. 2002)"[69] and it is very necessary to reduce the cost.

Along with those problems, staff related problems also need to be solved in order to provide better quality of health services to users. The quality of service is definitely influential in service users' behavior. Sauerborn and Diesfeld found that "patients residing in the peripheral zone did not hesitate to go farther than necessary, bypassing their nearest health care facilities."[70] The response rate on what kind of service provider that an individual visited extracted from the CSES data support the idea as well. Although "the expenditure for treatment at private clinics run by government staff [is] 7.5 [or 20] times more expensive than care at the [public] health centre,"[71] Table 5 shows that service users visit private medical sector more often. This is a behavioral issue related to the service quality rather than the

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[69] Include as much information as possible about the original source: Abel-Smith B and Rawal P., "Can the Poor Afford 'Free' Health Services? A Case Study of Tanzania," *Health Policy and Planning* Vol. 7 (1992); Hjortsberg CA and Mwikisa CN, "Cost of Access to Health Services in Zambia," *Health Policy and Planning* Vol. 17 (2002); Khe ND, Toan NV, Xuan LT, Eriksson B, Höjer B and Diwan VK, "Primary Health Concept Revisited: Where Do People Seek Health Care in a Rural Area of Vietnam?" *Health Policy* Vol. 61 (2002). Quoted in Wim Hardeman, Wim Van Damme, Maurits Van Pelt, Ir Por, Heng Kimvan and Bruno Meessen, "Access to Health Care for All? User Fees Plus a Health Equity Fund in Sotnikum, Cambodia," *Health Policy and Planning* Vol. 19, no.1 (2004): 22, doi: 10.1093/heapol/czh003.

[70] A. Develay, R. Sauerborn and H. J. Diesfeld, "Utilization of Health Care in an African Urban Area: Results from a Household Survey in Ouagadougou, Burkina-Faso," *Social Science & Medicine* Vol. 43, no. 11 (1996): 1617, doi:10.1016/S0277-9536(96)00061-5.

[71] S. Yanagisawa, V. Mey and S. Wakai, "Comparison of Health-seeking Behaviour between Poor and Better-off People after Health Sector Reform in Cambodia," *Public Health* Vol. 118, no. 1 (2004): 27.

service price.

As a solution, introducing service fees can be helpful to improve the service quality. According to the World Bank paper about the equity funds and other waiver systems in Cambodia, "user fees help to finance staff and non-staff costs in government health facilities, and therefore make provision possible."[72] And other paper has mentioned that "fees have the *potential* to improve access to better quality services: if the extra revenue generated from fees is re-invested into the health system (for instance, to improve drug availability), or if fee payment allows consumers to insist successfully on better service, demand is likely to increase, partially or fully offsetting the negative price effect."[73]

On the other hand, there are many papers and case studies which insist that user fees result in negative effect at the end as much as papers with positive perspective exist. Thus, "analysis should move on from broad evaluations of user fees towards exploring in specific contexts how best to dismantle the multiple barriers to access"[74] since "removing user fees has the potential to improve access to health services, especially for the poor, but it is not appropriate in all contexts."[75] Introducing user fees with HEFs and Community Based Health Insurance (CHBI), which is district-based "voluntary premiums and additional external subsidies,"[76] can be one of the ways to overcome the drawbacks caused by introducing user fees. Meanwhile, those schemes are implemented by NGOs. Sometimes those projects are successfully delivered and many people bet benefit but some cases are not. Therefore, by

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[72] World Bank, *Waivers, Exemptions, and Implementation Issues under User Fees for Health Care*, 1.

[73] Christopher James *et al*., "To Retain or Remove User Fees? *Reflections on the Current Debate*," (n.d.): 3, [cited 14 March, 2015]; available from: http://www.ungei.org/SFAIdocs/resources/To_Remove_or_Retain_User_Fees.pdf.

[74] Ibid., 13.

[75] Ibid.

[76] Peter Leslie Annear, Maryam Bigdeli and Bart Jacobs, "A Functional Model for Monitoring Equity and Effectiveness in Purchasing Health Insurance Premiums for the Poor: Evidence from Cambodia and the Lao PDR," *Health Policy* Vol. 102, no. 2 (2011): 296.

sharing the best project cases between NGOs, strategic implementation is as critical as a good health project itself.

This empirical study on Cambodia has shown that households with remittances in Cambodia tend to differentiate the different income sources and spend more on health as the expenditure increases. It is individual's freedom to make a decision where o spend. But the government at least should expand the scope of individual's choice by building an environment where it is equipped with the basic infrastructure. Shown in the regression analysis tables, service supply can play an important role to induce households' expenditure while reducing service users' financial burden. The influence that the remittances have sometimes disappears when other variables are considered and community capacity related variables have an effect. Thus, the government has to design elaborate policies for community capacity building in different sectors so that human capital investment at household level can be made with the whole nation's effort.

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Tables[77]

Table1. Summary data on households with remittances and without remittances, Cambodia, 2011

	Receive no remittances (N=2,605)	Receive remittances (N=987)	t-test
Human Capital			
Number of household members over age 15 with primary school	2.22	2.37	-3.02***
	(1.39)	(1.47)	
Number of household members over age 15 with junior secondary school	0.07	0.07	0.07*
	(0.30)	(0.28)	
Number of household members over age 15 with senior secondary school	0.20	0.15	2.39***
	(0.54)	(0.46)	
Number of household members over age 15 with university	0.15	0.09	3.65***
	(0.51)	(0.35)	
Household Characteristics			
Household size	4.65	4.27	5.41***
	(1.83)	(1.92)	
Age of household head (years)	42.14	59.02	-38.13***
	(12.31)	(10.53)	
Number of household males over age 15	1.42	1.50	-2.18**
	(0.92)	(1.03)	
Number of children under age 5	0.48	0.24	10.49***
	(0.64)	(0.51)	
AR	0.43	0.24	10.27***
	(0.49)	(0.43)	
Ethnicity of household head	0.97	0.98	-0.18
	(0.16)	(0.15)	
Mean annual per capita expenditure	2,876,738	2,495,881	5.67***
	(1,920,189)	(1,415,623)	
Mean annual per capita income	7,408,379	4,547,746	3.44***
	(24,300,000)	(15,700,000)	

Notes: N= 3,592
* Significant at the 0.10 level.
** Significant at the 0.05 level.
*** Significant at the 0.01 level.

[77] This table is produced by borrowing tables from Adams (2005); Adams and Cuecuecha (2008; 2010[a]; 2010[b]; 2013).

Table 2 Dependent variables; the Definition and scope of expenditure categories

Category	Description	Examples	Average budget shares (%)		
			Receive no remittances (N=2,605)	Receive remittances (N=987)	t-test
Food	Purchased food	Cereals, fish, meat & poultry, eggs, dairy products, oil and fats, fresh vegetables, tuber, pulses and legumes, prepared and preserved vegetables, fruit, dried nuts and edible seeds, sugar, salt and spices, tea, coffee, cocoa, non-alcoholic beverages, alcoholic beverages, tobacco products, other food products, food taken away from home, prepared meals bought outside and eaten at home	65.05	64.71	0.67
	Own production, wages in kind, gifts, free collections		(13.74)	(14.32)	
Consumer goods, durables	Consumer goods	Personal care, clothing and footwear, furniture, furnishing and household equipment and operation, personal effects	7.52	7.29	1.28
	Household durables		(5.14)	(4.62)	
Housing	Domestic salary	Servant's salary, hired labor for cleaning, laundry, cooking etc	0.13	0.03	3.34***
	Investment on housing	Purchase of second hand house, building materials for construction/ extension of residential house, labor for construction of residential house, house rent	(0.95)	(0.26)	
Education	Educational expenses	School fees, textbooks, private tutoring charges, etc	4.61	3.90	2.67***
	Transport cost	Transport cost occurred to go to school	(7.05)	(7.24)	
Health	Medical care	Doctors' fees, other medical services, drugs, hospital charges, other medical supplies, etc	5.32	6.50	-3.16***
	Transport cost	Transport cost occurred to visit medical center	(9.73)	(10.92)	
Other	Other	Transportation, communication, recreation within Cambodia, recreation abroad, gambling, miscellaneous items	17.36	17.57	-0.58
			(9.66)	(9.65)	
			100	100	

* Significant at the 0.10 level.
** Significant at the 0.05 level.
*** Significant at the 0.01 level.

Table 3 The Availability of Schools in Village

Table 3-a The Availability of Primary School in Village

Primary School	Frequency	Percent (%)
Yes	1,945	54.91
No	1,597	45.09
Total	3,542	100

Table 3-b The Availability of Middle School in Village

Middle School	Freq.	Percent (%)
Yes	649	18.32
No	2,893	81.68
Total	3,542	100

Table 3-c The Availability of High School in Village

High School	Freq.	Percent (%)
Yes	280	7.91
No	3,262	92.09
Total	3,542	100

Table 4 The Major Problems with Schools in Village

Table 4-a The Major Problems with Primary School in Village

Primary School	1st Problem		2nd Problem		3rd Problem	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
School too far	20	1.03	20	1.03	50	2.65
Poor school building	199	10.23	70	3.60	30	1.59
Living standard of teachers is too low	718	36.92	398	20.46	239	12.68
School budget constraint	110	5.66	399	20.51	229	12.15
Not enough places/desks	140	7.20	199	10.23	70	3.71
Not enough supplies	60	3.08	259	13.32	378	20.05
Poor quality of teachers	79	4.06	110	5.66	60	3.18
Not enough teachers	219	11.26	160	8.23	130	6.90
Classes not held regularly	70	3.60	140	7.20	130	6.90
Poor living standard in the village	300	15.42	180	9.25	539	28.59
Other (specify)	30	1.54	10	0.51	30	1.59
Total	1,945	100	1,945	100	1,885	100

Table 4-b The Major Problems with Lower Secondary School in Village

Lower Secondary School	1st Problem		2nd Problem		3rd Problem	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
School too far	-	-	10	1.59	-	-
Poor school building	40	6.16	-	-	10	1.70
Living standard of teachers is too low	339	52.23	150	23.85	30	5.09
School budget constraint	70	10.79	169	26.87	40	6.79
Not enough places/desks	60	9.24	30	4.77	40	6.79
Not enough supplies	-	-	70	11.13	159	26.99
Poor quality of teachers	10	1.54	40	6.36	20	3.40
Not enough teachers	30	4.62	60	9.54	10	1.70
Classes not held regularly	10	1.54	30	4.77	20	3.40
Poor living standard in the village	80	12.33	70	11.13	240	40.75
Other (specify)	10	1.54	-	-	20	3.40
Total	649	100	629	100	589	100

Table 4-c The Major Problems with Upper Secondary School in Village

Upper Secondary School	1st Problem		2nd Problem		3rd Problem	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
School too far	-	-	-	-	-	-
Poor school building	20	7.69	-	-	-	-
Living standard of teachers is too low	60	23.08	50	20.83	30	12.50
School budget constraint	60	23.08	40	16.67	10	4.17
Not enough places/desks	30	11.54	20	8.33	20	8.33
Not enough supplies	10	3.85	50	20.83	40	16.67
Poor quality of teachers	-	-	-	-	20	8.33
Not enough teachers	-	-	20	8.33	20	8.33
Classes not held regularly	20	7.69	30	12.50	20	8.33
Poor living standard in the village	50	19.23	30	12.50	70	29.17
Other (specify)	10	3.85	-	-	10	4.17
Total	260	100	240	100	240	100

Table 5 The response rate on what kind of service provider that an individual visited

(Unit: %)

Public sector	First provider	Last provider
National hospital	2.32	3.2
Provincial hospital	2.01	1.4
District hospital	1.69	1.8
Health center	7.84	4.4
Health post	0.16	0.1
Provincial rehabilitation center or Community based rehabilitation	0.04	0
Other public	0.32	0.3
Private medical sector		
Private hospital	1.69	1.8
Private clinic	13.2	14.7
Private pharmacy	30.14	32.5
Home/Office of trained health worker/nurse	9.18	9.1
Visit of trained health worker/nurse	0.12	0.1
Other private medical	4.69	3.7
Not medical sector		
Shop selling drugs/market	25.06	24.8
Kru Khmer/ Magician	0.91	1.8
Monk/religious leader	0.04	0
Traditional birth attendant	0.04	0.1
Other	0.51	0.3
Do not know	0.04	0
Total	100	100.0

Table 6 Problems of Health Services in Village

Problems of Health Services in Village	Most Important Problem		Second Most Important Problem		Third Most Important Problem	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
Lack of beds in hospital, equipment etc.	31	8.81	9	2.61	13	3.90
Not enough medicines, drugs	111	31.53	52	15.07	36	10.81
Poor quality of services	13	3.69	31	8.99	30	9.01
No physician or qualified medical assistant available	6	1.70	30	8.70	14	4.20
No secondary nurse/ midwife available	3	0.85	6	1.74	-	-
Health facility is not open 24 hours	17	4.83	23	6.67	10	3.00
Health services are too expensive	65	18.47	102	29.57	49	14.71
Long distance to better quality care	59	16.76	37	10.72	62	18.62
Unsanitary health facilities	1	0.28	1	0.29	4	1.20
Staff are unhelpful	22	6.25	30	8.70	58	17.42
Staff are not friendly	19	5.40	21	6.09	55	16.52
Other (Specify)	5	1.42	3	0.87	2	0.60
Total	352	100	345	100	333	100

Table 7 OLS Regression Result of Households with Remittances and without Remittances

Variables	Food	Consumer goods, durables	Housing	Education	Health	Other
Total annual per capita household expenditure (EXP)	-3.581***	0.321***	0.028***	0.240***	1.820***	1.172***
	(22.70)	(5.01)	(2.70)	(3.35)	(13.95)	(9.50)
Remittances (REMI)	0.109	1.127***	0.022	0.391	-4.036***	2.386***
	(0.13)	(3.37)	(0.41)	(1.04)	(5.90)	(3.69)
(REMI)*(EXP)	-0.816***	-0.406***	-0.027*	0.038	1.634***	-0.423**
	(3.30)	(4.05)	(1.66)	(0.34)	(7.99)	(2.19)
Household size (HS)	-1.724***	-0.033	-0.008	1.051***	0.806***	-0.092
	(10.71)	(0.50)	(0.74)	(14.38)	(6.05)	(0.73)
Sex of the household head dummy	-1.262**	-0.191	0.014	-0.058	-0.981**	2.477***
	(2.41)	(0.90)	(0.41)	(0.24)	(2.27)	(6.06)
Age of household head (AGEHD)	0.052***	-0.008	-0.001	-0.039***	0.033**	-0.038***
	(2.86)	(1.06)	(0.73)	(4.73)	(2.22)	(2.65)
Number of males in household over 15 years (MALE15)	1.149***	-0.494***	0.031	-0.601***	-0.244	0.158
	(3.28)	(3.48)	(1.36)	(3.78)	(0.84)	(0.58)
Number of children in household less than 5 years (CHILD5)	1.784***	0.002	-0.014	-2.250***	0.807***	-0.328
	(5.01)	(0.01)	(0.59)	(13.91)	(2.74)	(1.18)
Number household members with primary education (EDPRIM15)	-1.057***	0.458***	-0.02	0.024	-0.368**	0.963***
	(5.04)	(5.39)	(1.44)	(0.25)	(2.12)	(5.87)
Number household members with junior secondary education (EDJSS15)	-2.894***	0.271	0.027	2.189***	-1.942***	2.350***
	(3.99)	(0.92)	(0.56)	(6.65)	(3.24)	(4.14)
Number household members with senior secondary education (EDSSS15)	-5.006***	-0.067	-0.003	6.471***	-2.160***	0.764*
	(9.58)	(0.31)	(0.09)	(27.27)	(4.99)	(1.87)
Number household members with university education (EDUNIV15)	-1.596***	0.422*	0.045	1.001***	-2.801***	2.929***
	(2.63)	(1.72)	(1.13)	(3.64)	(5.59)	(6.18)
Area dummy (AR)	4.188***	0.3	0.126***	0.299	-4.849***	-0.064
	(7.35)	(1.30)	(3.39)	(1.16)	(10.28)	(0.14)
Head of household's non-indigenity dummy	-2.579**	-1.653***	0.047	0.253	2.526**	1.406
	(2.16)	(3.42)	(0.60)	(0.47)	(2.56)	(1.51)
_cons	85.058***	8.218***	0.001	0.548	-3.399**	9.574***
	(52.87)	(12.60)	(0.01)	(0.75)	(2.55)	(7.61)
R^2	0.3	0.03	0.02	0.34	0.14	0.11
N	3,591	3,591	3,591	3,591	3,591	3,591

Table 8 An Additional OLS Regression Result of Household Expenditure on Education

Variables	Education (1)	Education (2)	Education (3)
Total annual per capita household expenditure (EXP)	0.246***	0.247***	0.252***
	(3.43)	(3.40)	(3.47)
Remittances (REMI)	0.352	0.436	0.384
	(0.93)	(1.15)	(1.01)
(REMI)*(EXP)	0.016	0.024	0.012
	(0.14)	(0.21)	(0.10)
Existence of primary school in village	0.382**		0.371*
	(1.99)		(1.90)
Existence of junior secondary school in village	0.829***		0.832***
	(3.00)		(2.99)
Existence of senior secondary school in village	-1.345***		-1.268***
	(3.26)		(3.05)
Government project on education		-0.878*	-0.613
		(1.89)	(1.31)
NGO project on education		-0.483	-0.585
		(0.73)	(0.88)
Household size (HS)	1.046***	1.042***	1.046***
	(14.19)	(14.06)	(14.11)
Sex of the household head dummy	-0.068	-0.065	-0.069
	(0.28)	(0.27)	(0.29)
Age of household head (AGEHD)	-0.037***	-0.040***	-0.038***
	(4.53)	(4.75)	(4.58)
Number of males in household over 15 years (MALE15)	-0.610***	-0.605***	-0.602***
	(3.80)	(3.74)	(3.72)
Number of children in household less than 5 years (CHILD5)	-2.245***	-2.223***	-2.221***
	(13.79)	(13.52)	(13.55)
Number household members with primary education (EDPRIM15)	0.045	0.029	0.031
	(0.47)	(0.30)	(0.32)
Number household members with junior secondary education (EDJSS15)	2.171***	2.192***	2.152***
	(6.57)	(6.61)	(6.51)
Number household members with senior secondary education (EDSSS15)	6.541***	6.609***	6.647***
	(27.38)	(27.29)	(27.42)
Number household members with university education (EDUNIV15)	0.973***	0.963***	0.909***
	(3.49)	(3.42)	(3.23)
Area dummy (AR)	0.408	0.246	0.351
	(1.54)	(0.93)	(1.31)
Head of household's non-indigenity dummy	0.331	0.237	0.291
	(0.61)	(0.43)	(0.53)
_cons	0.109	0.651	0.209
	(0.15)	(0.88)	(0.28)
R^2	0.35	0.34	0.35
N	3,541	3,511	3,501

Table 9 Household Expenditure on Education by Existence of Schools in Village

Table 9-a Household Mean Expenditure on Education by Existence of Primary School in Village

(Unit: Riels)

	Yes	No
Transportation	8,979.568	15,785.66
Education	132,830.6	165,530.9
N	1,945	1,597

Table 9-b Household Mean Expenditure on Education by Existence of Junior Secondary School in Village

(Unit: Riels)

	Yes	No
Transportation	8,714.415	12,796.16
Education	137,497.7	149,834.9
N	649	2,893

Table 9-c Household Mean Expenditure on Education by Existence of Senior Secondary School in Village

(Unit: Riels)

	Yes	No
Transportation	13,389.18	11,933.17
Education	139,470.8	148,269.9
N	280	3,262

Table 10 An Additional OLS Regression Result of Household Expenditure on Health

Variables	Health (1)	Health (2)	Health (3)
Total annual per capita household expenditure (EXP)	1.819***	1.806***	1.815***
	(13.90)	(13.70)	(13.76)
Remittances (REMI)	-4.082***	-4.228***	-4.199***
	(5.93)	(6.12)	(6.06)
(REMI)*(EXP)	1.659***	1.688***	1.683***
	(8.09)	(8.19)	(8.16)
Existence of medical service in village	-1.196**		-1.159**
	(2.32)		(2.24)
Government project on health		-1.351***	-1.414***
		(2.74)	(2.87)
NGO project on health		-0.910*	-0.862
		(1.65)	(1.56)
Household size (HS)	0.793***	0.782***	0.793***
	(5.91)	(5.81)	(5.88)
Sex of the household head dummy	-1.005**	-1.041**	-1.038**
	(2.30)	(2.38)	(2.37)
Age of household head (AGEHD)	0.034**	0.034**	0.034**
	(2.27)	(2.26)	(2.26)
Number of males in household over 15 years (MALE15)	-0.218	-0.148	-0.13
	(0.75)	(0.50)	(0.44)
Number of children in household less than 5 years (CHILD5)	0.782***	0.828***	0.818***
	(2.63)	(2.77)	(2.73)
Number household members with primary education (EDPRIM15)	-0.385**	-0.394**	-0.422**
	(2.20)	(2.24)	(2.39)
Number household members with junior secondary education (EDJSS15)	-1.931***	-1.991***	-1.995***
	(3.20)	(3.30)	(3.29)
Number household members with senior secondary education (EDSSS15)	-2.220***	-2.316***	-2.374***
	(5.11)	(5.25)	(5.37)
Number household members with university education (EDUNIV15)	-2.804***	-2.944***	-2.970***
	(5.54)	(5.75)	(5.80)
Area dummy (AR)	-4.792***	-5.025***	-4.970***
	(10.08)	(10.45)	(10.31)
Head of household's non-indigenity dummy	2.432**	2.671***	2.579***
	(2.46)	(2.70)	(2.60)
_cons	-2.183	-2.910**	-1.812
	(1.54)	(2.16)	(1.27)
R^2	0.14	0.15	0.15
N	3,541	3,511	3,501

Table 11 Household Expenditure on Health by Existence of Medical Service Provider in Village

(Unit: Riels)

	No	Yes	t-test
Transportation	1,066.942	712.7123	1.499*
Treatment	234,950.8	184,205.5	0.836
N	350	3,192	