Determinants of remittances in rural Bangladesh:An econometric analysis of the educational attainments of the households

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Determinants of remittances in rural Bangladesh: An econometric analysis of the educational attainments of the household members

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Abstract

Educational attainment of the household member is one of the micro-economic determinant of remittances remains an unclear in terms of level of education. This paper analyse household microeconomic survey data. Employ three stages multivariate analysis carry out two regressions equations on 300 rural households. The empirical findings provide that the education is not significant determinant remittances while unit analysis shows that the significance relationship depends on the level of education of the migrant and the household head. Such level of education is also move with the cycle of socio-demographic and socio-economic characteristics of the migrant, household head and household composition.

Key Words: migration, remittances, education, households head, household compositions, determinants

1. Introduction

Globalisations not only discuss free trade of goods and services but also one of the major issues of movement of labour across countries. According to the International Organization for Migration (IOM), there are an accounted 191 million global migrants in 2005, up from 176 million in 2000. Migrants include 3.0 per cent of the worldwide population. For the period 2000-10, the world migrant stock increased double as fast than during the last decade. In 1990s, the global migrant stock increased at an average of about 2 million migrants per year. During the period 2000-10, the outgrowth in the migrant stock accelerated to about 4.6 million migrants annually. There are 232 million international migrants are staying in the world today (UN, 2013). Since 1990, the number of international migrants in the global North grew by about 53 million (65%), on the other hand the migrant population in the global South increased by about 24 million (34%). Nowadays, around six out of every ten international migrants stay in the developed nations (UN, 2013).

There are approximately 30 to 40 million undocumented global migrants, comprising around 15 to 20 percent of the global migrant stock (UN, 2013). In 2006, there were 24.5 million internally displaced persons (IDPs) in at least 52 countries as a result of conflict compared to 23.7 million IDPs in 50 countries the year before (UNCHR, 2012). In 2006, the global number of refugees reached an accounted 9.9 million persons. At the end of 2012, the Office of the United Nations High Commissioner for Refugees (UNHCR), the United Nations' refugee agency, reported that there were 15.4 million refugees worldwide. By contrast there were 28.8 million (around double as many) IDPs at the end of 2012.

In 2006, remittance flows are accounted to have go beyond USD 276 billion globally, USD 206 billion of which sent to developing countries. According to World Bank database (2014) the global remittance flow, which has touched $550 billion last year, is expected to grow by 8 per cent per annum in the next few of years. Of the total

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remittance fund, $414 billion were received by developing countries, especially Bangladesh, China, India, Mexico, the Philippines, and Pakistan.

Officially, Bangladesh has been recorded migration data since 1976. This official recording process started only for those who have been migrated contract employment to the Middle East. However, after independent in 1971, immediately were migrated due to political reason and this migration process to the neighbouring countries as well as European region such as UK, Germany and so on. Nowadays migration is the livelihood strategy and an interesting setting for Bangladesh.

Migration from Bangladesh to other destinations dominated by short-term and unskilled or semiskilled labour pattern of migration, likely to Middle East or South East Asian regions. However, either lacks of Bangladesh government migration data recording or beyond control of other way migration process do not reflect actual migration data for Bangladeshi nationalities at all the destination countries.

The official record of remittances inflow indicates the existence and expected number of Bangladeshi migrants' worldwide although insufficient database in Bangladesh as well as destination countries.

These foreign remittances accelerate the growth of economic development, reduce the pressure of unemployment, boost the capacity to make essential import payment and also help to increase consumption, savings, and investment both at micro and macro level. The dependent household members of the migrant can fulfil their basic need, can use the amount to meet their educational expenses, purchase of land, houses and incur medical expenses by the use of foreign remittances. This amount also increases the social recognition and standard of living of the dependent family members of the migrant in their home country.

2. Micro-determinants of remittances

International remittance defines Schrieder and Knerr (2000) as the part of international migrants incomes send back from the destination country to the origin country and where the remitter indirectly compensate by a counter of goods and services. However, Van Doorn (2001) explains that such remittances includes in kind as the migrant usually send in cash to their left behind household members as well communities at the origin country. Moreover, Levitt (2001) explains that international remittances have implications in social capital, concepts, ideas, practices and identities from destination country to the originating place which may impact household economic, political, race, class, gender, relationship and also religion involvement.

The empirical literature on micro-level studies indicates that the education level of migrants (Agrawal and Horowitz, 1999) is linkage to the income of the migrant and the major determinant of remittance (Fonchamnyo, 2012) Lucas and Stark (1985) and Stark and Lucas (1988) show remittances as elements of a co-operative agreement, self-enforcing, agreement between the migrant and household and also remittances repayment for the cost of migration and educational expenses. According to McDonald and Valenzuela (2012), the higher the level of education of the migrant, the higher will be the level of remittances. Rapoport and Docuier (2005) explain that the education level of the migrant do not play vital role under the altruistic and exchange motives as educated migrants have lower propensities to return but have a positive impact on remittances under the investment motive.

The investment motive views remittances as a repayment for household's investment in the migrant (Garip, 2012), in terms of loans to cover costs of education or migration at the destination (Cox and Jimenez, 1998; Porine, 1997) therefore remittances increase with migrants' education which also support several empirical studies (Ahlburg and Brown, 1998; Hoddinott, 1994; Lucas and Stark, 1985; Regmi and Tisdell, 2002). There is also evidence that the education level and remittances behavior varies migrants' country of origin although the same destination (Hagen-Zanker and Siegel, 2008).

Higher education levels of the household head may reflect better household resources and income opportunities and so less economic need from overseas income, therefore the educational attainment of the household head not significant with remittance amount and such provide some support the altruism motive (McDonald and Valenzuela, 2012).

Migrant age (Osili, 2007) is one of the important determinant influencing remittance behaviour. There is a relationship between age of the migrants and the length of stay at the destination (Menjivar et al., 1998; Rodriguez, 1996), often increase income and therefore also the available pool for remittance.

Higher levels of remittances are sent by individuals under younger of age compared to older migrants (de la Briere et al., 1997). But, likewise, the adjustment impact is inferred to turn as the migrant becomes older, rendering all together remittances flows lower (DeSipio, 2000). Likely one of the greatest determinant outcomes of the migrant age has to do with the migrant's specific period in the household life cycle.

However, Lerch et al (2006) find the relationship between the age of migrant and the likelihood to send the money to the destination and the length of stay additionally correlates with the age of migrants also find the linkage with different stages of age with the kinship of family relationship which influences remit to the household at the origin. Several micro level studies in Bangladesh find most of the migrants are young especially when they first migrate (Siddiqui and Abrar, 2003; Siddiqi, 2004; Afsar et. al, 2002; Murshid et al, 2002).

Marital status of migrant in itself might be less important but married migrants who accompany by their spouse at the destination are much less possibly to remit than those who have a spouse in the country of origin (Carling, 2008). Several studies show that migrant marital status and residency pattern of household members, including spouses and children, are significant determinants of remittance motivation (Johnson and Whitelaw 1974; Menjivar et al. 1998; Vanwey, 2004; Luke, 2010; Alba and Sugui 2009). According to Sahu and Das (2009) single migrants and married heads living alone at the destination are likely to remit more than married heads living with their spouse and children. However Collier et al (2011) find that migrants' marital status do not influence the decision to remittance motivation.

Furthermore, (Sorenson, 2004a, 2004b, 2005; Atekmangoh, 2011) reveal that marital status is a key determinant for remittance behaviour and it also vary with gender discrimination when migrant change their marital status after migration, therefore remittance receiving household also change at the origin (Piper, 2005).Moreover, remittances increase while household head becomes a grandparent or the spouse lives outside or divorced, the household head send monies to share with the number of nuclear household members living outside the household (DeVoretz and Vadean, 2007). According to Siddiqui and Abrar (2003) the number of married migrants is higher percentage of remittance sending to their rural household members in Bangladesh.

The relationship between legal status of the migrant and the remittance linkage (Holst et al., 2011; Bettin and Lucchetti, 2012). Migrant remittances and their effect on the developing economics rarely focus on the status that affect migrants' remittance model (Mahuteau et al.,2010) typically analyse the underlying motivations to remit. As risk-averse migrants, who, in the face of higher income risk, remit more (Amuedo-Dorantes and Pozo, 2006a) and they also find undocumented migrant likely to send monies more percentage than the documented. Markova and Reilly (2007) show a positive determinant of remittances and the strong relationship between the legal status of the migrant at the destination and remittance flow at the origin. Similar findings also found other studies (Collier et al-2011) also shows the discrimination of the migrant legal and illegal entry affects the earning at the destination therefore remittance flow fluctuate according to their legal status.

Undocumented migrants more likely to have a higher communication and relationship with household members at the origin thus utilise remittances as mode of risk sharing against the ambiguity and uncertainty to their legal status at the destination (Piracha and Zhu, 2011). The legal status of the migrants may three categories such as some have resident permit or work visa, others are waiting for their visa to be processed and are simply undocumented (Solimano, 2003). A number of reasons including the presence of a higher number of Bangladeshi undocumented migrants are available at every destination countries as well in Italy (Barai, 2012).

Many empirical studies explore that the number of trips to the household members influence remittance behaviour (Lerch et al., 2006) Number of trips and remittance motivation. Many empirical studies explore that the number of trips to the household members influence remittance behavior (Lerch et al., 2006; Garip-2012; Roberts and Morris, 2003). During the visit at the origin, migrant bring gifts for their household members, family, extended and fictive

kin, and friends, they assert and keep up their community networks (Goldring, 1998) therefore the remittance effect direct and indirect at the home country in cash and kind. In contrast, rarely trip to the household members a lower likelihood to send remittances either cash or kind, at the same time, there is a gender and origin discrimination as (Lerch et al., 2006). Migrant who make frequent visits at the origin, not only to sustain community liaison, but also to lead or to constitute critical economic linkages (Kemper, 1981).

On the other hand Holst and Schrooten (2006) find that the personal trips to the origin country has no significant impact neither the probability of remittance motive or the amount of remittances, furthermore the migrants are not a homogenous group with consideration to their remittance motivation. However, Grabel (2008) finds that the huge percentages of remittances are hand carry by migrants during the trips at the home (Garip-2012; Roberts and Morris, 2003). During the visit at the origin, migrant bring gifts for their household members, family, extended and fictive kin, and friends, they assert and keep up their community membership (Goldring, 1998) therefore the remittance effect direct and indirect at the home country in cash and kind. In contrast, rarely trip to the household members a lower likelihood to send remittances either cash or kind, at the same time, there is a gender and origin discrimination as (Lerch et al., 2006). Migrant who make frequent visits at the origin, not only to sustain community liaison, but also to lead or to constitute critical economic linkages (Kemper,1981). On the other hand Holst and Schrooten (2006) find that the personal trips to the origin country has no significant impact neither the probability of remittance motive or the amount of remittances, furthermore the migrants are not a homogenous group with consideration to their remittance motivation.

Age of the household head is one of important determinant which play vital role in the remittance behaviour and the age factor also vary from country to country (DeVoretz and Vadean, 2008). Age of the household head nexus with gender behaviour in the remittance motive, for example male household less like to receive remittance rather than female (McDonald and Valenzuela, 2012).

However, Germenji et al (2001) show the older household head receive more remittance than the younger household head which reveal that the adult children care for their old parents as well their grant parents. Moreover, Walewski, (2009) shows reverse outcomes that the younger household head tend to receive remittance more and subsequently decrease and strong correlation with the household head age and remittance flow.

Gender of the household head special attention (Karakaplan et al, 2012) as the male-headed households remittance motivation and use differently from female headed which affect households resource allocation (Pfeiffer et al., 2008). As for, who left behind their wife at the origin, the women at the household experience changes and increase greater responsibilities to the household budget and remittance income as well children education.

Marital status of the households head one of the key demographic characteristic influence to receive remittances. Empirical study shows that the households with married head tend to receive comparatively lower remittances across the year, whereas remittances flow to widow and otherwise not married relatively higher, however the female-headed households receive more remittance specially those who are married (Pfau, 2008).

The households head occupation and employment status linkage with migration decision and remittance motivation as well of the household migrant member. According to Quartey (2006), there are few sectoral differences, for instance, the household head employment in public sector, private formal sector, export farmer, crop farmer, private, informal and unemployment play different impacts.

Thus, this study intent to delve out more specifically on the particular characteristic such as the rural household member level of education and the relationship to the other association of above demographic characteristics in remittances inflow in rural economy.

3. Data

The primary data was collected from households in the Naria Upazila of Shariatpur District in Bangladesh during the period of July to December, 2013. In the second phase, first-hand knowledge of the migrant-sending households was obtained by asking a single question (of whether the household had members who had worked in Italy or not) of each of the 4013 households in the 10 study villages. Thereafter, a structured questionnaire was prepared comprising several open and closed ended questions relevant to the research objectives. . The respondents were the heads of households or senior household members.

In designing the survey questionnaire used in this study, the researcher made a considerable effort with its contents, format, structure and sequence. Two guiding principles were followed: avoiding confusion and maintaining the perspective of the respondent at all times. To ensure as far as was possible that the information needed will be supplied by the respondents, maximum attention will be made to avoid jargon, slang, ambiguity, confusion, emotional language, prestige bias, double-barrelled questions, leading questions, threatening questions, false premises and double negatives. At the questionnaire design stage, appropriate care will be exercised when formulating sensitive or embarrassing questions and to place them in the questionnaire when it could be anticipated that the respondent and interviewer would have developed a measure of mutual trust.

The researcher was also concerned that the order in which the questions are presented may influence the respondents' answers. Therefore, care was taken in sequencing the questions to minimise any discomfort and confusion for the respondents. Moreover, the items in the overall questionnaire and context were organised in a way that specific questions would be answered before others were asked. The mixing of questions on different topics was also avoided. The following aspects were dealt with the in the frame of a standardised interview schedule:

a) All household members: age, gender, education, occupation, marriage status

b) Personal characteristics of the migrant before, during the migration period: educational level, employment status, remittances, investment,

c) Family system: joint and nuclear

d) Investment in the agricultural sector: assets, value of land, investment in livestock

e) Household income, expenditures and revenues: composition of household income, agricultural revenue from renting out, detailed splitting up of the expenditures (including marriage expenditure)

f) Land assets, purchase of land, property of houses and additional buildings

In selecting a representative sample of the population, Krejcie and Morgan's (1970) recommendation was accepted in this study. After categorising the households with migrant members in Italy), a random sample of 300 households was selected, the share in each village corresponding to their proportion in the whole population (the remittance-receiving households). Then, the remittance receiving households in each village were picked randomly. In the process, every household was coded during the first stage census survey and recorded on a separate identical size of piece of paper.

Thereafter, all folded papers were thoroughly mixed up to assure the same probability of selection of each household and to overcome systematic sampling error. One folded paper was picked up each time by the researcher himself. After each selection, the pile of folder papers was mixed up again and another person was chosen only to pick up another folded paper and the process continued until the target sample remittance-receiving households was attained. Finally the interviews of selected households were administered with structured questionnaires. As many questions as possible were precoded to save time during the data collection, processing and analysis. The data were subsequently entered into SPSS version 16.0 for the analysis.

4. Econometric model building

The econometric model has been developed in the Equation 1.1 has been regressed to observe the association between household yearly remittances received and the exploratory determinant variables.

To build up good fit model, variable reduction was undertaking through a process of 'backward elimination' which starts by including all potential variables and assessing their statistical significance one by one and discarding those which are highly non-significant. The backward process were undertaking three stages to build up best fit model and determine the key determinants of remittances of the study area.

Before starting the 'backward elimination' approach (Hocking, 1976), it is essential to check whether the collected data satisfy some fundamental statistical assumptions to justify the selection of the best fit model. For the cross sectional data used in this study, the following three are considered important normality, multicollinearity and autocorrelation because, as Gujarati (2003) states, not all assumptions are applicable for every type of data.

In constructing a complete model, twenty three variables for tentative model as follows:

$$\begin{aligned} RmY= \alpha + \alpha1\ AGEm + \alpha2\ EDUm + \alpha3\ MARSm + \alpha4\ YMIGm + \alpha5\ LEGSm + \alpha6\ NVISTm + \alpha7\ AGEhh + \\ \alpha8\ GENhh + \alpha9\ MARShh + \alpha10\ EDUhh + \alpha11\ RELhh + \alpha12\ EMPShh + \alpha13\ RELMhh + \\ \alpha14\ HHsize + \alpha15\ HLOWtitle + \alpha16\ Invest\_Fin\_Sec + \alpha17\ Invest\_Hous\_Dev + \alpha18\ Ln\_Live\_Exp \\ + \alpha19\ Ln\_HH\_Incom + \alpha20\ Inest\_Busi + \alpha21\ Ln\_Welf + \alpha23\ Loan\_Rep + e1 \text{ -----(1.1)} \end{aligned}$$

Multicolliearity represents a state of linear relationships existing among some or all the predictor variables in a regression model. It occurs when explanatory variables in the model are highly correlated to each other. Testing multicollinearity is important for model specification and is considered in this study.

The results in the proposed model would support the classical assumption of multicollinearity, for the high R2 value (.611) and 10 variables (YMIGm, LEGSm, HLOWtitle, HHsize, EDUm, Ln_HH_Incom, RELhh, Ln_Welf_EDUhh and Loan_Rep) are statistically insignificant in the first model of 13 variables.

Since the classical symptom of multicollinearity –'high R2 but few significant t ratios'-are found in the first model, clarification is needed of the statistical problem by observing the variance and covariance of the regression estimators. Gujarati (2003) states, 'the OLS estimators and standard error can be sensitive to even the smallest change the data'. The increase of variance and covariance of coefficients are falsified and that can be observed with 'variance-inflating factor (VIF)' and 'tolerance (TOL)' also in model result.

The rule-of-thumb states that the closer the value of TOL and VIF is to 1, the greater the evidence that one explanatory variable is not collinear with the other explanatory variable (Gujarati 2003). The values of Tolerance (TOL) and VIF in the second model indicate that there is no multicollinearity existing among the repressors (explanatory variables).

As stated earlier, the variables are considered for removal sequentially based on their statistically nonsignificant p value in the equations. The elimination process has begun by laying aside the variable YMIGm having the highest p value (.909), from the first model. This procedure is continued until a best fit model for the explanatory variables has been found. The ultimate outcome is the first best fit model which represents an equation as follows:

$$\begin{aligned} RmY= \alpha + \alpha1\ AGEm + \alpha2\ MARSm + \alpha3\ NVISTm + \alpha4\ AGEhh + \alpha5\ GENhh + \alpha6\ MARShh + \\ \alpha7\ EMPShh + \alpha8\ RELMhh + \alpha9\ Inest\_Fin\_Sec + \alpha10\ Invest\_Hous\_Sec + \\ \alpha11\ Ln\_Land + \alpha12\ Ln\_Live\_Exp + \alpha13\ Invest\_Busi + e1 \text{.....(1.2)} \end{aligned}$$

However, equation 1.2 results indicate in the second model that R2 slightly decreased from the first model to second model with 13 explanatory variables. This was expected as increasing the number of variable increase the value of R2 and vice versa. In this stage, the 'p' value of Invest_Busi and Invest_Fin_Sec two explanatory variables shows

statistically insignificant. Therefore, further backward elimination process has been taken to towards the best fit model. The elimination process has begun by laying aside the variable Invest_Busi having the highest p value from the second model. This procedure is continued until a best fit model for the explanatory variables has been found. The ultimate outcome is the best fit model which represents an equation as follows:

$$RmY = \alpha + \alpha 1\ AGEm + \alpha 2\ MARSm + \alpha 3\ NVISTm + \alpha 4\ AGEhh + \alpha 5\ GENhh + \alpha 6\ MARShh + \alpha 7\ EMPShh + \alpha 8\ RELMhh + \alpha 9\ Invest\_Hous\_Sec + \alpha 10 Ln\_Land + \alpha 11\ Ln\_Live\_Exp + e1 \ldots\ldots\ldots\ldots\ldots (1.3)$$

The identification of all these variables are given in the Appendix-I with the exception of the error terms e1 and $\pi 1$ which satisfy the assumptions of-

(i) zero mean, E(e1)=0; E(π1)=0

(ii) constant variance, E(e1)2=∂e2; E(π1)2=$\partial\pi$2

(iii) no autocorrelation exist in the error e1 and $\pi 1$; E(e1j)=0 and E(π1j)=0; where 1≠j

5. Empirical results

5.1 Descriptive Analysis

5.1.1The amount of remittance

The 300 household respondents were asked about the yearly amount of remittances received by them from Italy of their household migrant member. Table 1 explores that the yearly amount of remittance were twelve ranges. The maximum and minimum ranges were BDT 14,00,001-15,00,000 and 1,00,001-2,00,000 respectively. The majority 22.0% were sent at the range of BDT 5,00,001-6,00,000 and the 3% highest range BDT 14,00,001-15,00,000 while 12% minimum range BDT 1,00,001-2,00,000. The results indicate that the factor influences to send remittance to their left behind household members in rural Bangladesh.

Table 1: Yearly remittance frequency

Yearly Remittance range (BDT)	Frequency	Percentage
100,001-200,000	36	12.0
200,001-300,000	36	12.0
300,001-400,000	18	6.0
400,001-500,000	18	6.0
500,001-600,000	66	22.0
600,001-700,000	48	16.0
700,001-800,000	45	15.0
800,001-900,000	3	1.0
900,001-1000,000	9	3.0
1100,001-1200,000	15	5.0
1300,001-1400,000	3	1.0
1400,001-1500,000	3	1.0
Total	300	100.0

Source: Author calculation from the survey data

5.1.2 Frequency of Remittance

The respondents were asked about the remittances received frequencies who remittance from Italy of their household migrant member. Table 2 explores that the remittances received frequencies; the majority 57.0% were sent bimonthly basis remittance to their left behind household members. The others were sent 22% at any necessary, 20% monthly and 1% only festivals The 3% household were received the maximum level of remittances range BDT 14,00,001 to 15,00,000.

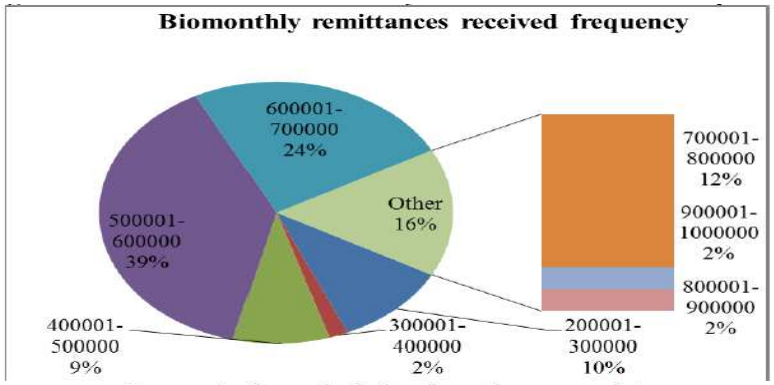
Table 2: Cross Tabulation Household yearly remittance received and Frequency of Remittance

Household yearly remittance received (BDT)	Frequency of Remittance				Total
	Monthly	Bimonthly	At any necessary	Festivals	
100,001-200,000	0	0	33	3	36
200,001-300,000	6	18	12	0	36
300,001-400,000	0	3	15	0	18
400,001-500,000	0	15	3	0	18
500,001-600,000	0	66	0	0	66
600,001-700,000	3	42	3	0	48
700,001-800,000	24	21	0	0	45
800,001-900,000	0	3	0	0	3
900,001-1000,000	6	3	0	0	9
1100,001-1200,000	15	0	0	0	15
1300,001-1400,000	3	0	0	0	3
1400,001-1500,000	3	0	0	0	3
Total	60	171	66	3	300
% of Total	20.0%	57.0%	22.0%	1.0%	100.0%

Source: Author calculation from the survey data

However, the following figure (1) shows that the bimonthly remittances received household were received different ranges of remittances. Among the ranges, the highest percentage of household 39% were received yearly BDT 500,001-600,000. However, their highest level of remittances BDT 9,00,001-10,00,000 of 2% and lowest level of remittances BDT 2,00,001-3,00,000 of 10%.

Figure 1: Distribution of bio monthly remittances received frequency



Source: Author calculation from the survey data

5.1.3 Educational Background of the migrant and remittances

The respondents were asked about the educational level of migrant member who are sending remittance from Italy. Table 3 explores that 57 % migrant member educational level between nine to ten years secondary level of education, 20% completed higher secondary, 10% between six to eight years secondary level, 7% between one to five years primary level, 2% bachelor degree and 4% adult education. The data revel that the secondary level of educated migrants are like to migrated in Italy and their maximum yearly remittance flows between BDT 500,000 to 800,000.

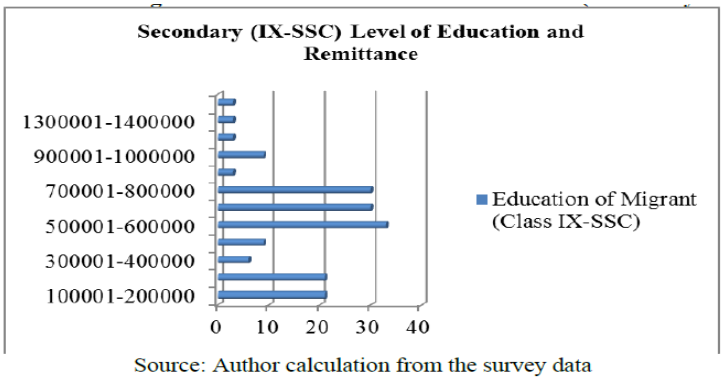
Table 3: Cross Tabulation Household yearly remittance received and education of migrants

Household yearly remittance received (BDT)	Level of Education of Migrant						Total
	Adult Education	Class I-V	Class VI-VIII	Class IX-SSC	HSC	Degree (Pass)	
1,00,001-2,00,000	3	6	0	21	6	0	36
2,00,001-3,00,000	0	6	6	21	0	3	36
3,00,001-4,00,000	3	0	6	6	3	0	18
4,00,001-5,00,000	3	6	0	9	0	0	18
5,00,001-6,00,000	0	0	15	33	18	0	66
6,00,001-7,00,000	0	3	0	30	15	0	48
7,00,001-800,000	0	0	3	30	9	3	45
8,00,001-900,000	0	0	0	3	0	0	3
9,00,001-10,00,000	0	0	0	9	0	0	9
11,00,001-12,00,000	3	0	0	3	9	0	15
13,00,001-14,00,000	0	0	0	3	0	0	3
14,00,001-15,00,000	0	0	0	3	0	0	3
Total	12	21	30	171	60	6	300
% of Total	4.0%	7.0%	10.0%	57.0%	20.0%	2.0%	100.0%

Source: Author calculation from the survey data

Furthermore, the following figure (2) shows that the nine to ten years educational level of migrants also sent different ranges of remittances. Among the ranges, the highest percentage of migrants 36% sent yearly BDT 600,000-800,000. However, their highest level of remittances BDT 14,00,001-15,00,000 of 2% and lowest level of remittances BDT 2,00,001-3,00,000 of 12%. It assumed that the nine to ten years educational level of migrants are likely send remittance to their household members frequently.

Figure 2: Distribution of highest remittance sender level of education (Secondary Level-IX-SSC)



Source: Author calculation from the survey data

5.1.4 Household head Educational level and remittances

The respondents were asked about the educational level of household head who were received remittance from Italy of their household migrant member. Table 4 explores that 34% household head educational level between nine to ten years secondary level of education, 1% Bachelor level, 7% Higher Secondary level, 23% between six to eight years secondary level, 21 8% between one to five years primary level and 6% adult education. The data revel that the secondary level of educated migrants are like to migrated in Italy and their maximum yearly remittance flows between BDT 500,000 to 800,000.

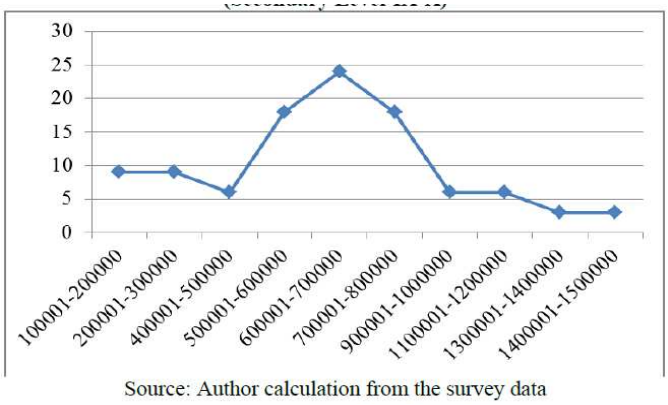
Table 4: Cross Tabulation Household yearly remittance received and education of household head

Household yearly remittance received (BDT)	Education Level of Household Head							Total
	Unedu cated	Adult Educa tion	Class-I-V	Class VI-VIII	Class IX-SSC	HSC	Degree (Pass)	
1,00,001-2,00,000	3	3	15	6	9	0	0	36
2,00,001-3,00,000	9	3	6	6	9	3	0	36
3,00,001-4,00,000	0	3	9	3	0	3	0	18
4,00,001-5,00,000	0	6	3	0	6	3	0	18
5,00,001-6,00,000	3	9	9	24	18	3	0	66
6,00,001-7,00,000	0	0	9	12	24	3	0	48
7,00,001-800,000	0	0	6	15	18	3	3	45
8,00,001-900,000	3	0	0	0	0	0	0	3
9,00,001-10,00,000	0	0	0	3	6	0	0	9
11,00,001-12,00,000	0	0	6	0	6	3	0	15
13,00,001-14,00,000	0	0	0	0	3	0	0	3
14,00,001-15,00,000	0	0	0	0	3	0	0	3
Total	18	24	63	69	102	21	3	300
% of Total	6.0%	8.0%	21.0%	23.0%	34.0%	7.0%	1.0%	100.0%

Source: Author calculation from the survey data

Furthermore, the following figure (3) shows that the nine to ten years educational levels of household head were received different ranges of remittances. Among the ranges, the highest percentage of household head 23% were received yearly BDT 600,001-700,000. However, their highest level of remittances BDT 14,00,001-15,00,000 of 3% and lowest level of remittances BDT 1,00,001-2,00,000 of 9%. It assumed that the nine to ten years educational level of household heads are likely receive remittance to from their migrant household members frequently.

Figure 3: Distribution of highest remittance receiving household head level of education (Secondary Level-IX-X)



Source: Author calculation from the survey data

5.2 Multivariate analysis

5.2.1 Unit analysis of educational attainments of household members

This study intended to delve out the different level of educational attainments of the household members such as migrant and household head with other characteristics as migrant, household head and household compositions. Hence, the sample broken into different sub-samples as follows:

5.2.2 Less than eight years level of education

Due to statistical limitation, the long regression could not run into SPSS at this level of education of the migrant while short regression result table 5 showed that the strong significance with other variables such AGEm, NVISTm, AGEhh, MARShh, and Ln_Land.

Table 5: Short linear regression results of less than eight years level of education of the migrant in the 10 rural villages, 2013

Determinants	Dependent variable		
	Household yearly remittance received (RmY)		
	Short regression		
	Coefficients	t-value	p-value
AGEm	-.745	-3.247	.002
NVISTm	.983	7.494	.000
AGEhh	1.291	4.666	.000
GENhh	6.853	3.771	.000
MARShh	7.939	5.233	.000
EMPShh	-.256	-1.546	.128
RELMhh	-.257	-.553	.582
Invest_Hous_Dev	.242	.525	.602
Ln_Land	-.468	-2.797	.007
Ln_Live_Exp	-.050	-.060	.952
R2			.860
Adjusted R^2			.833
F-statistic			31.975
Sum squared residual			47.239
Durbin-Watson statistics (d)			2.159
Observation			63

Source: Author calculation for this study

5.2.3 Nine to ten year's level of education of the migrant

The following table 6 explored the long and short regressions results of the nine to ten years level of education of the migrant. The long regressions results indicated the strong significance relation with migrant characteristics such as LEGSm and NVISTm; household head as MARShh, RELhh and EMPShh; household compositions HLOWNtitle, Ln_Land, Invest_Busi and Loan_Rep On the other hand, the short regression explored strongly significance with the migrant such as AGEm and NVIST; household head AGEhh, GENhh, MARShh EMPShh and RELMhh; and household compositions Invest_Hous_Dev and Ln_Live_Exp.

Table 6: Long-Short linear regression results of nine to ten years level of education of the migrant in the 10 rural villages, 2013

Determinants	Dependent variable: Household yearly remittance received (RmY)					
	Long regression			Short regression		
	Coefficients	t-value	p-value	Coefficients	t-value	p-value
AGEm	-.361	-1.489	.139	-.687	-4.667	.000
EDUm	-.344	-.715	.476			
MARSm	-.087	-.197	.844	.011	.028	.977
YMIGm	.914	1.127	.262			
LEGSm	.357	2.557	.012			
NVISTm	.392	2.995	.003	.478	6.673	.000
AGEhh	1.512	1.188	.238	.316	2.724	.007
GENhh	.852	.700	.485	2.142	2.166	.032
MARShh	.610	2.903	.004	2.582	3.349	.001
RELhh	1.781	2.187	.031			
EMPShh	-.288	-2.083	.040	-.212	-2.550	.012
RELMhh	.533	1.849	.067	.712	3.243	.001
HHsize	.022	.167	.868			
HLOWNtitle	-.652	-2.029	.045			
Invest_Fin_Sec	-.124	-.476	.635			
Invest_Hous_Dev	1.428	1.973	.051	2.210	5.277	.000
Ln_Land	.962	3.137	.002	.143	.958	.340
Ln_Live_Exp	.686	.583	.561	2.134	4.005	.000
Ln_HH_Incom	.184	.342	.733			
Invest_Busi	.294	2.708	.008			
Ln_WelF	1.532	1.807	.074			
Loan_Rep	5.373	4.634	.000			
R^2			.637			.638
Adjusted R^2			.564			.613
F-statistic			8.689			25.527
Sum squared residual			277.186			511.351
Durbin-Watson statistics (d)			2.405			2.164
Observation			171			171

Source: Author calculation for this study

5.2.4 Higher secondary level of education of the migrant

The unit analysis of the migrant level of education higher secondary and more also did not run long regressions while short regressions results explored in the table 7. The empirical results indicated the strong significance relationship with the MARSm and NVISTm; household head AGEhh, GENhh, MARShh and RELMhh; and household composition Invest_Hous_Dev, Ln_Land and Ln_Live_Exp.

Table 7: Short linear regression results of higher secondary level of education of the migrant in the 10 rural villages, 2013

Determinants	Dependent variable Household yearly remittance received (RmY) Short regression		
	Coefficients	t-value	p-value
AGEm	-.188	-1.144	.258
MARSm	-3.209	-11.928	.000
NVISTm	.650	9.262	.000
AGEhh	.562	8.603	.000
GENhh	4.783	8.948	.000
MARShh	3.588	7.544	.000
EMPShh	.082	1.247	.218
RELMhh	1.435	7.791	.000
Invest_Hous_Dev	.754	2.071	.043
Ln_Land	-.380	-3.310	.002
Ln_Live_Exp	4.163	9.504	.000
R2			.954
Adjusted R^2			.944
F-statistic			101.517
Sum squared residual			22.040
Durbin-Watson statistics (d)			2.447
Observation			66

Source: Author calculation from the survey data

5.2.5 Less than five years of education of the household head

The following table 8 explored the long and short regressions results of the less than five years level of education of the household head. The long regressions results indicated the strong significance relation with migrant characteristics such as AGEm and LEGSm; GENhh of household head; household compositions HHsize, HLOWNtitle, Invest_Busi, Ln_WeF and Loan_Rep. However, the short regression explored strongly significance with the migrant NVISTm; household head AGEhh; and household composition HHsize.

Table 8: Long-Short linear regression results of household head less than five years of education in the 10 rural villages, 2013

Determinants	Dependent variable					
	Household yearly remittance received (RmY)					
	Long regression			Short regression		
	Coefficients	t-value	p-value	Coefficients	t-value	p-value
AGEm	-1.903	-2.450	.018	-.083	-.430	.668
EDUm	-.485	-.587	.560			
MARSm	4.364	1.550	.127	.530	.822	.413
YMIGm	1.719	1.918	.061			
LEGSm	-3.842	-2.262	.028			
NVISTm	.429	1.443	.155	.313	2.856	.005
AGEhh	.552	1.217	.229	.726	4.978	.000
GENhh	7.374	3.900	.000	-3.326	-1.352	.180
MARShh	3.123	1.380	.174	-.374	-.311	.757
EDUhh	-.101	-.277	.783			
RELhh	4.454	1.197	.237			
EMPShh	-.322	-.595	.555	-.045	-.354	.724
RELMhh				4.171	2.639	.010
HHsize	-1.591	-3.659	.001			
HLOWNtitle	.943	.978	.333			
Invest_Fin_Sec	-1.555	-1.596	.117			
Invest_Hous_Dev	1.320	.924	.360	1.224	1.919	.058
Ln_Land	1.752	1.700	.095	.288	1.422	.158
Ln_Live_Exp	-1.677	-.369	.714	1.045	1.541	.127
Ln_HH_Incom	1.380	.746	.459			
Invest_Busi	.732	2.007	.050			
Ln_WelF	11.424	2.393	.021			
Loan_Rep	-4.196	-6.319	.000			
R^2			.877			.604
Adjusted R^2			.821			.558
F-statistic			15.848			12.921
Sum squared residual			78.725			287.157
Durbin-Watson statistics (d)			1.928			2.184
Observation			105			105

Source: Author calculation from the survey data

5.2.6 Six to eight years level of education of the household head

The following table 9 explored the long and short regressions results of the six to eight years level of education of the household head. The long regressions results indicated the strong significance relation with migrant characteristics such as EDUm, MARSm, LEGSm and NVISTm; household head AGEhh, MARShh, EMPShh and RELMhh; household compositions HHsize, Ln_Land and Ln_HH_Incom. On the other hand, the short regression explored strongly significance with the migrant such as AGEm and NVISTm; household head AGEhh, GENhh, MARShh and EMPShh; and household compositions Invest_Hous_Dev and Ln_Land.

Table 9: Long-Short linear regression results of household head six to eight years level of education in the 10 rural villages, 2013

Determinants	Dependent variable					
	Household yearly remittance received (RmY)					
	Long regression			Short regression		
	Coefficients	t-value	p-value	Coefficients	t-value	p-value
AGEm	-.523	-1.790	.080	-1.207	-6.909	.000
EDUm	.653	2.115	.040			
MARSm	-2.773	-4.576	.000	-.482	-1.287	.203
YMIGm	.747	1.458	.152			
LEGSm	-3.043	-2.450	.018			
NVISTm	.890	5.437	.000	.383	3.299	.002
AGEhh	1.116	5.571	.000	.909	5.457	.000
GENhh				8.811	7.128	.000
MARShh	-5.687	-3.568	.001	8.853	6.676	.000
RELhh	-.710	-1.030	.309			
EMPShh	-.403	-2.524	.015	-.299	-3.709	.000
RELMhh	1.872	2.434	.019	.059	.118	.906
HHsize	1.758	5.542	.000			
HLOWNtitle	.643	1.910	.063			
Invest_Fin_Sec	-.450	-1.829	.074			
Invest_Hous_Dev				2.630	4.204	.000
Ln_Land	1.231	3.007	.004	.436	2.570	.013
Ln_Live_Exp	2.252	1.138	.262	6.898	5.451	.000
Ln_HH_Incom	2.841	2.677	.010			
Invest_Busi	-.130	-.327	.746			
Ln_WelF	-.655	-.480	.634			
R^2			.889			.741
Adjusted R^2			.840			.691
F-statistic			18.153			14.852
Sum squared residual			29.930			72.805
Durbin-Watson statistics (d)			2.939			1.964
Observation			69			69

Source: Author calculation from the survey data

5.2.7 Nine to ten years level of education of the household head

Following table 10 explored the long and short regressions results of the nine to ten years level of education of the household head. The long regressions results indicated the strong significance relation with all the variables at 1% level of significance while regression explored strongly significance with the migrant such as AGEm, MARSm and NVISTm; household head GENhh and EMPShh; and household compositions Invest_Fin_Sec, Ln_Land and Ln_Live_Exp.

Table 10: Long-Short linear regression results of household head nine to ten years level of education in the 10 rural villages, 2013

Determinants	Dependent variable: Household yearly remittance received (RmY)					
	Long regression			Short regression		
	Coefficients	t-value	p-value	Coefficients	t-value	p-value
AGEm	1.638	5.362	.000	-.556	-3.573	.001
EDUm	-2.826	-11.510	.000			
MARSm	4.728	15.488	.000	-1.053	-2.262	.026
YMIGm	-1.994	-6.561	.000			
LEGSm	-18.040	-13.808	.000			
NVISTm	1.214	13.460	.000	.744	10.755	.000
AGEhh	-2.195	-9.767	.000	-.014	-.095	.925
GENhh				-2.432	-2.088	.040
EMPShh	-1.733	-19.801	.000	-.759	-6.244	.000
RELMhh	-5.534	-9.180	.000	.327	1.612	.110
HHsize	-.247	-4.422	.000			
HLOWNtitle	6.317	6.393	.000			
Invest_Fin_Sec	2.005	7.169	.000			
Invest_Hous_Dev	5.234	11.648	.000	1.765	5.263	.000
Ln_Land	-3.460	-15.332	.000	-.402	-2.232	.028
Ln_Live_Exp	5.786	10.895	.000	3.324	5.462	.000
Ln_HH_Incom	4.919	19.703	.000			
Invest_Busi	-2.818	-10.209	.000			
Ln_WelF	6.521	26.270	.000			
Loan_Rep	2.059	6.003	.000			
R^2			.997			.858
Adjusted R^2			.996			.842
F-statistic			893.187			54.797
Sum squared residual			.884			138.428
Durbin-Watson statistics (d)			3.322			1.991
Observation			102			102

Source: Author calculation from the survey data

6. Discussion and Conclusions

In this study, the rural household survey data from Bangladesh for the period of July to December, 2013, to analyse determinants of remittances at the left behind household members. Rather than multilevel models, in this research use a three stages backward regressions elimination estimation process and build up econometric best fit model of remittances, which helps us the focus the analysis on the explanation of remittances determinants heterogeneity in micro-economic level of studies.

Unique result from the previous literature, which is mostly, focuses on either in general on the household remittances determinants at the origin or destination country. This study finds also analyse overall significance level of all other determinants of remittances. However, this research delves out more on the specifically the educational attainments of the migrant and household head. This unit analysis allows us to test the significance level of education and their relationship with other key determinants of remittances at the household level at the rural micro economy.

The empirical findings suggest that the level of education neither significance at the migrant nor household head overall. While unit analysis shows different level of significance strongly with other key determinants. Such as migrant characteristics, number of visit by the migrant strongly significant all level of education for the both. Age of migrant significant all educational attainment except higher secondary and above level of education of the migrant. Legal status of the migrant also significant with few level of education except less than eight years level of education of the migrant and also higher secondary above as well as nine to ten years educations of the household

head. Marital status of the migrant significance with the higher secondary above level of migrant education and six to ten years level of household head.

The household head characteristics such as age of household head significance with the all level of education except nine to ten years educational attainments of the household head. Household head gender also significance all level of education for the both except less than eight years level of education of the migrant. Marital status also significance with all level of education of the migrant while insignificance with less than five years and six to eight years level of education of the household head. Employment status of the household head insignificance with the less than eight years, higher secondary above level of education of the migrant and also less than five years level of education of the household head. Household head relation to the migrant is insignificant with all level while significant with nine to above level of education of the migrant and six to eight years level of the household head.

The household composition is also nexus with the different levels of educational attainment. Such as household land accumulation is strongly significant with all levels of education except less than five years level of education of the household head. Household land ownership, investment in business sector and loan repayment are insignificant with the all levels of education while strongly significant with nine to ten years level of education with the migrant and less than five years of household heads.

Household living expenses is strongly significant with all levels of education except the levels of education of migrant less than eight years, less than five years and six to eight years of the household heads. The investment of housing development is also strongly relationship with all levels of educational attainments while insignificant with the less than eight years level of education of the migrant and the household head less than five years and nine to ten years. The household size is also have variation as the strongly significant with less than five years and six to eight years level of education of the household heads. The household income and investment in financial sectors are strongly significance with the single determinant such as six to eight years and nine to ten years level of education of the household heads.

Research Ethics

For this research, ethical issues concerned three parties – the researcher, participants and Southern Cross University with each party having certain rights and obligations to other parties. On his part, the researcher maintained objectivity, presented honest and true research findings and obtained the approval of the Human Research Ethics Committee of Southern Cross University (Approval Number ECN-13-141 before commencing the primary data collection activities.

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