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Impact of Remittances on Poverty Reduction: Evidence from Bangladesh

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Abstract

Bangladesh is one of the major suppliers of migrant workers especially to the Middle East, and the flow of remittances has increased from $2.8 billion in 2002 to $13.52 billion in 2017, which is more than 5 per cent of the country's GDP. This article investigates the impact of remittances on poverty. The empirical analysis reveals that there is a significant relationship between growth in remittances and different outcome variables in the economy with positive impact on poverty, household income and financial inclusion. The results indicate that both internal and international remittances have positive impact on poverty alleviation; and these results are statistically significant. International migration and remittance supplies are important pathways out of poverty for the poor households. Considering the impact of remittances on poverty and economic outcomes, appropriate technical and vocational trainings are needed to utilise the full potential of the migrant workers and maximise the contributions of remittances to the domestic economy.

Keywords: Remittances, Poverty, Savings, Income, Bangladesh.

characteristics

Impact of Remittances on Poverty Reduction: Evidence from Bangladesh

Nahid Akhter[1]

1. Introduction

The significance of overseas remittances in the economic growth of Bangladesh is widely recognised. Worldwide, Bangladesh is one of the major suppliers of migrant workers. In terms of remittance flows, Bangladesh is the 8thlargest remittance receiving country in the world (2013) (World Bank, 2014). The flow of remittance has increased from $2.8 billion in 2002 to $13.52 billion in 2017, which is 5.17 percent of Gross Domestic Product (GDP), the second highest source (49.2%)of export earnings after the garments sector,and cover 29.4 percent of import payments (Bangladesh Bank, 2017). Thus it is clearly seen that foreign remittance earnings play a major role in the growth of the economy in terms of its impact on investment, expenditure or savings, and overall swelling up country's foreign exchange reserves.In most of the developing countries, there is a lack of foreign exchange reserves. Lopez-Cordova and Olmedo (2006) pointed that flow of remittances can put off balance of payment crisis and act as a steady flow of foreign currency. Remittances come from the activity called migration from one place to another.

The geographical movement of labour resources i.e., migration for the sake of availing better economic opportunities is considered as socially and economically constructive and beneficial as it allows increasing the marginal productivity of human resources. With the growing urbanisation, this rate of migration has been increasing rapidly. In this practice, generally excess manpower is released to the urban industrial areas from the rural sector. Though migration is risky and abortive migration is very expensive, in many cases it is considered as a supportive tool to overcome crisis period or lean seasons, where families are enforced into extreme poverty for part of the year. In any economic or cyclical crisis, an individual may prefer to move to an urban area or to abroad, as such a shift offers an opportunity for the households to come out from the crisis period. Moreover, temporary in-country or seasonal migration can allow balancing the wage inequality of the rural and urban areas.

There are two types of migration, domestic and international migration. Domestic migrants transfer funds from one place to another within the country, which is known as domestic fund transfer. International migrants transfer funds from one country to another country, which is identified as international remittance transfer. Among the poor households, the tendency of sending remittances to their families is relatively high (Hoddinott 1994, Funkhouser 1995, Durand et al. 1996). The use of remittances is mainly to sustain the existing assets of the households (Brown and Ahlburg 1999) and reimburse the existing loans that the householdshad already incurred to finance migration or other costs (Lucas and Stark 1985, Poirine 1997).

Migrants use both formal and informal channels for transferring remittances. Though the channels are not firmly recognised as formal and informal, the usual formal channels include, banks, money transferring agencies like Western Union, post and telegraph services and so on. Informal transfers are difficult to classify since it comprises all from hundi systems, couriers and traders to simply carrying money in person by the migrant him/her self or by third party.Moreover, a particular channel may be formal in one country but informal in some other country depending on its regulatory regime.

[1]Nahid Akhter is a Senior Research Associate at the Institute for Inclusive Finance and Development (InM), Bangladesh.

Therefore, its hard to classify the channels of money transfer. Though, informal remittance channels are popular in terms of some potential recompenses, like, economy, rapidity, convenience and secrecy (e.g. Pieke et al., 2007; Siegel et al., 2010), those channels are debated due to fear of money laundering, various criminal activities like, financing of terrorism and smuggling, and also incur higher risks of loss. On the other hand, formal channels have more potential for promoting economic development by improving the earnings of the domestic financial sector and by increasing resources to finance economic activities (Kosse and Vermeulen, 2013).

In Bangladesh, remittance flows along with Ready made Garments (RMGs) is keeping the wheels of the economy moving. Regardless of the vital contribution of migration and remittance earning on the national economy, little research has been done explaining the impact of remittance on povery based on primary data.Whereas there are planty of research papers on foreign employment, very few research efforts have been made using household surveys. In this study, a nationally representative dataset has been used to identify the impact of migration or remittances on poverty. Suitable econometric methodology has been followed to precisely evaluate the connection and possible estimation disputes have been tackled properly.

The paper is structured as follows. After the introduction, section two describes the specific objective of the study, section three presents literature review, section four describes the state of migration and flow of remittance to Bangladesh, Section five describes data that have been used, section six describes the estimation technique, section seven gives various channels of sending remittances, section eight provides the analysis of remittance income distribution among different income groups, section nine describe the results and finally, section ten gives conclusions and a range of broad and specific policy recommendations.

2. Objectives of the study

The basic objective of the study is to shed light on the effect of remittances on household level outcomes, like, poverty, income, savings, asset generation, access to finance etc. and the interaction of remittances on various financial inclusion indicators. The study also identifies various channels of remittance transfer. Thus, the main objectives are to identify the impact of local and international remittances on poverty in Bangladesh.

3. Literature review

Generally, remittances are considered as one of the most important sources of foreign income forcountries like Bangladesh (Ratha 2005). It can generate financial stability for migrants and thereby could play an important role in reducing poverty. Receiving of remittances can also contribute to overall macroeconomic stability and reduce aid dependency (Ali, 2014; Kpodar and Le Goff, 2011). Besides, remittances are used to repay external obligations and their ability to receive non-concessional borrowings from private creditors for imports bills and to repay foreign debt. At micro level, remittances have a beneficial impact on household consumption, poverty and self-employment.In one study, Ali (2014) claims that remittances are positively affecting almost all macro-economic indicators of Bangladesh.

One of the earliest studies was done by Mahmud and Osmani (1980) to show the behaviour of the migrants and the households receiving remittances by using quantitative expenditure model. They find a significant difference in the saving rate between remittance receiving and non-receiving households. More than eighty percent of incomes are remitted by the migrant from abroad. They also show that the saving ratio of highest remittance receiving income group is almost three-fourth of income. One major finding of their study is that remittances go into unproductive use.

Stahl and Habib (1989) first conducted the studies of estimating the impact of remittances in Bangladesh by usingthe computable general equilibrium (CGE) framework. The study finds that remittances are mostly spent on consumption items and a small portion of it is used for direct investment. In 1997, Quibria used a model combining migration and remittances to show that remittance works as a pro-growth external flow. Aggarwal et al. (2006) also reveal a positive association between remittances and bank deposits and credits to GDP ratio. The study used the data of 99 countries over the period of 1975-2003.

Murshid (2002) investigates the prospects and challenges of officially channeling remittances through the national and multinational banks. The investigation provides the result that the total income increases by BDT 3.33 million when remittance is increased byBDT 1million. Siddiqui and Abrar (2003) use qualitative data to find out the relationship between workers remittances and micro finance institutions in channeling remittances in Bangladesh. The study shows that almost half of the remitters are married and sends the money to their parents. Their study also reveals that half of the remittance is used for land purchases and does not go towards savings, while a substantial part of remittances are used to finance migration of other family members. Siddiqui (2004) identifies different layers of remittance processing which include government ministries, training institutes, civil society, commercial banks, Bangladesh Bank, MFIs, investment instruments etc. The study suggests that proper coordination and implementation of policies would help to make easy transfer of foreign remittances. The study also shows that in the 1990s, the remittance recipient families effectively utilised the remittances by investing in nutritious food for the family members, health, education, land purchase and financing the migration process of other family members.

Barua, S. (2007) bring the idea of determining workers' remittances. They use a set of panel data set of bilateral remittance flows from ten major destination countries for Bangladeshi migrants from 1993 to 2005. They find major determinants of the inflow of workers remittances in Bangladesh. The most significant determinant of remittances is found to be the income differential. High inflation in home country vis-a-vis the host countries exerts negative influence on inward remittances whereas depreciation (or devaluation) of currency leads to increased flow of remittances.

Khan (2008) uses Household Income and Expenditure Survey 2005 data to get information about the status of poverty in Bangladesh and finds that remittance helps to reduce poverty by approximately eighteen percent. Buchenau (2008) outlines a framework for analysing the link between migration, remittances and poverty at both the household and macro level. Another recent study by Akter (2016) shows that there is a significant positive relationship between workers' remittances and economic growth in Bangladesh. Azam (2015) finds a significantly positive relationship between workers remittances and economic growth in four developing Asian countries namely Bangladesh, India, Pakistan and Sri Lanka during 1976-2012.

Antwi, S., et. al. (2013) evaluates the time series data over the period 1980-2010 to inspect the impact of workers' remittances on poverty in Ghana. The results show that, remittances do have a significant impact on poverty through increasing income, smoothing consumption and easing capital constraints of the poor. However, the results do not provide any direct positive impact of remittances on economic growth of the country.

From the international literature we can see that there are two types of evidence on the issue -- the more expectant view shows positive impact of remittances that can lead to faster investments in human capital, eradicate households' credit restrictions, safe guard the economy from diverse financialtrembles and reduce poverty by enhancing accumulation of human capital. (Azam. et. al.2016;Adams 2005; Yang 2008; Gupta et al. 2009; Giuliano and Ruiz-Arranz 2009; Hakura et al.

2008, 2009; Catrinescu et al. 2009; Rao and Hassan 2012a, 2012b; World Bank 2008, 2011; Adams and Page 2005).

On the other hand, the pessimist view suggests that remittances have negative impact on recipient economies. As instead of investment, saving from remittances are primarily used for consumption (Stahl and Arnold ,1986). Remittance receipts can also lead to decline of labour participation (Amuedo-Dorantes and Pozo 2004; Chami et al. 2008; Hassan and Holmes 2013).

Given the divergent results of different studies based on older datasets, research on the impacts of remittances on poverty using recent data is necessary. Therefore, this study uses a relatively recent primary household level dataset for analysing the impact of remittances, both domestic and international.

4. Migration and flow of remittances to Bangladesh

Migration is now a days an important livelihood strategy in any country. It has remarkable positive effect on socioeconomic growth of Bangladesh. After the liberation war of 1971,outflows of Bangladeshis to other countries increased significantly. Currently there are two types of overseas migration from Bangladesh. One takes placeto the industrialised countries (mainly to UK, USA, and Canada) and also to some Asian countries like, Singapore, Malaysia and Japan which mainly started in the 1990s. The other type of migration takes place to the Middle East and South East Asian countries(Siddiqui, 2004).This type of migration started immediately after the birth of Bangladesh in 1971. The majority of labour migrants to the Middle Eastern and South East Asian countries are unskilled or semiskilled and the most popular destination country in the Middle East is Saudi Arabia (see Annex A).

Since 1942, Bangladesh has a long history of migration and overseas remittances (Mahmud, 1991). Datta and Sarkar (2014) state that a total of 7.1 million people immigrated from Bangladesh from 1976 to 2010 and remittance inflows to the country have risen at an annual average rate of 19 percent from 1979 to 2008. Aggarwal, Demirgüc-Kunt and Peria (2006) mention that a huge amount of remittances remains unrecorded and this amount have been estimated to be about 50 to 200 percent of the officially recorded remittances. Though due to the global economic downturn in 2008 the world faced a turmoil financial situation, Bangladesh was not much affected by the global recession and the overall remittances inflow was not affected too. From the Figure 1, it can be seen that the migration figure has grown to more than 800 thousands in 2007-08 from a small amount of 14 thousands in 1976-77. But in 2008-09 the out-migration declined to 650 thousands. However, an analysis of the growth of migration during this period shows four distinctive phases: (a) a relatively slow growth from 1976 to 1990, (b) doubling of the figure in 1991-92 from where the annual migration nearly stagnated to that level till 2005-06, and (c) a fluctuation in growth in the subsequent 5 years up to 2012, and (d) an increasing trend till 2017.

In the past few years, overseas employment and remittance earned by Bangladesh has declined because of global recession, political unrest in the Middle East and fall in foreign prices. The continuous fall in oil prices and political turmoil has directly and indirectly trembled manpower export and remittance inflows of the country. From Figures 1 and 2 it is observed that though there is a falling pattern of inward remittances in the recent past, but an increasing trend in the number of expatriates, particularly in fiscal year 2016-17.

Figure 1: Overseas Employment during 1976-2017

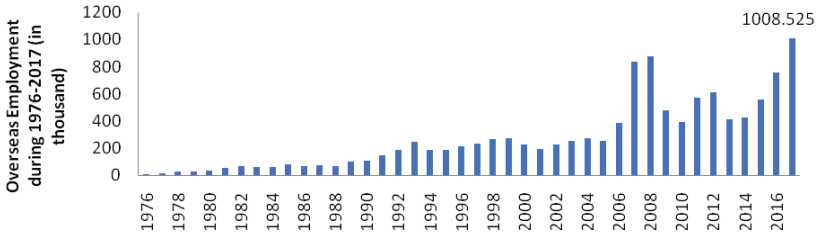
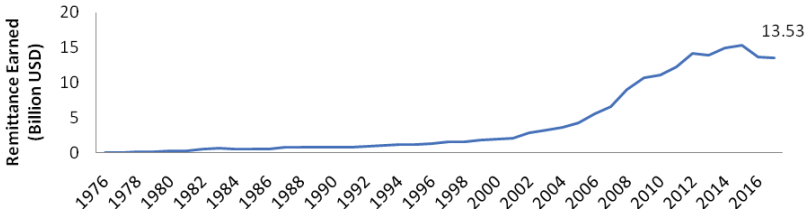


Figure 2: Remittance Earned during 1976-2017 (billion USD)



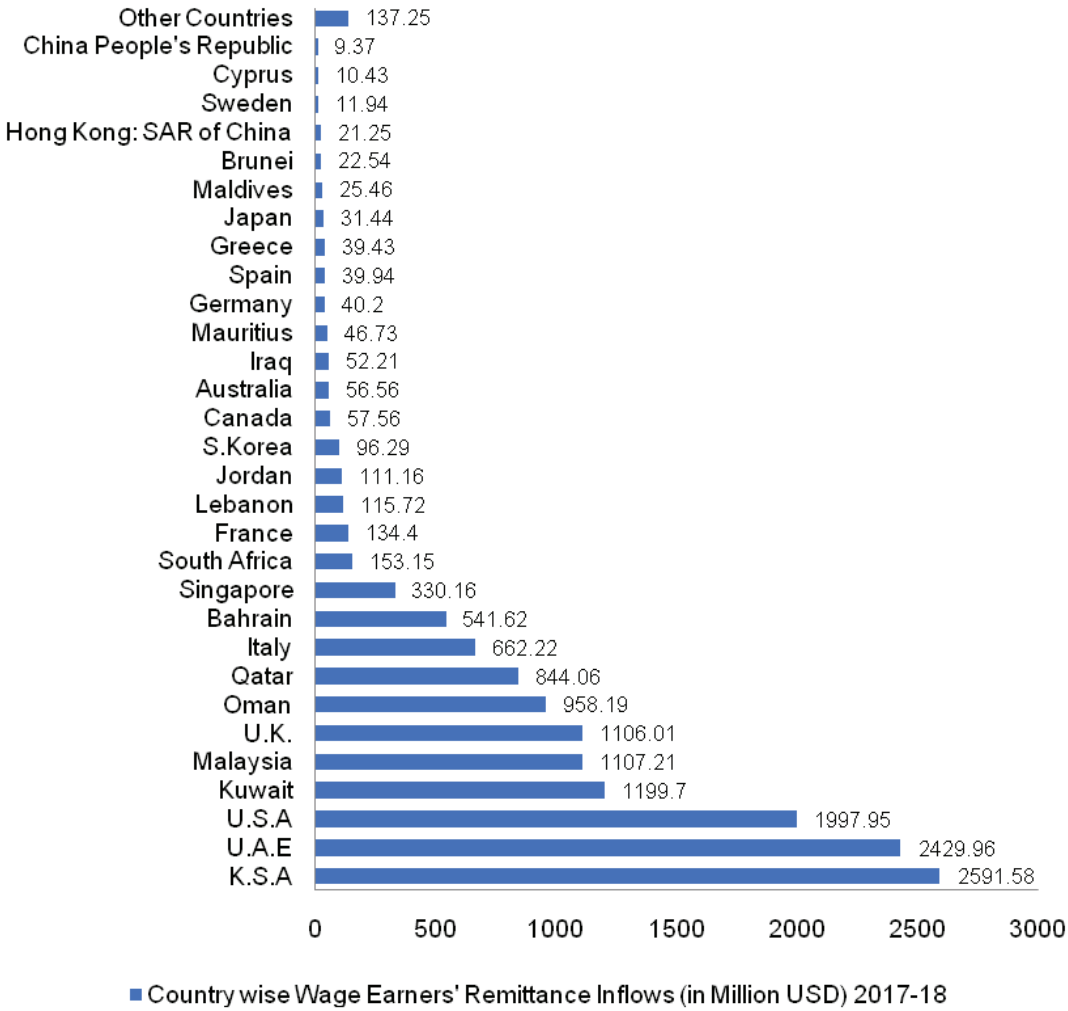
Source: Author's creation, Data: Bangladesh Bank (1976-2017)

In terms of long term data over time, it is seen that there is up and down turn in the growth of remittance since 1976 to 2017. As we can see from Figure 2,inflow of remittances more or less remained unchanged during 1987-1993. After 1993, remittance earning has shown slightly increasing trend upto 2002. After 2002 it showed a steady upward trend up to 2012. After 2012 huge fluctuation is observed in the inward remittance flow to Bangladesh. Remittance earning was $2.8 billion in 2002, $15.27 billion in 2015 and $13.52 billion in 2017. Gross remittance earnings decreased by 14.5 percent to USD 12,769.5 million in FY2017 compared to USD 14,931.16 million of FY2016.Therefore, special attention of the government is required in the manpower export sector. Bangladesh Bank has taken several major steps to facilitate remittance inflows to the country (Bangladesh Bank, 2017).[2]

If we look at the country wise earnings, for Bangladesh we see that during 2017-18 on an average, the highest amount of yearly remittances (USD 2,591.58 million) is received from Saudi Arabia followed by U.A.E (USD 2,429.96 million), USA (USD 1,997.95 million), Kuwait (USD 1,199.7 million),Malaysia (USD 1,107.21 million), UK (USD 1,106.01 million) and so on. After 2007remittance inflow has increased from the new sources like USA, Canada, UK, Germany, Italy, Malaysia and Japan due to increase in migration opportunities.

- [2]Bangladesh Bank provided permission to 40 banks for establishing 885 drawing arrangements with 300 exchange houses all over the world.
- Establishment of exchange houses/branch offices abroad by local banks has been approved. 34 exchange houses/branch offices/representative offices of different 17 local banks are operating their programmes in different countries (UK, USA, Australia, Singapore, Malaysia, Greece, Italy, Canada, Oman and Maldives).
- 24 Local have been given permission for onward sending of remittances to the country.
- For quick delivery of remittances to beneficiaries through bank-to-bank clearing systems Bangladesh Electronic Funds Transfer Network (BEFTN) was inaugurated on 28 February 2011.
- 26 Micro Finance Institutions (MFIs), branches of Bangladesh Post Office and Singer Outlets are permitted to operate distribution of remittances.
- Banks are permitted to provide remittance through mobile operator such as Grameen Phone, Robi, Banglalink etc. They are also encouraged to amend contracts with some Multinational Money Remitters/ Exchange to remove "Pay Cash Exclusivity Clause" or any other such clause.

Figure 3 : Country wise Wage Earners' Remittance Inflows (in Million USD) 2017-18



Source: Author's creation, Data: Bangladesh Bank

The reason for overseas migration varies from country to country and from person to person. Major reasons for long-term migration to Western countries are superior educational facilities for children, access to particular professions, improved health care systems, and broader opportunities for fulfillment of one's talents and potentialities, family reunion etc. Siddiqui (2003) notes that political turmoil, violence, insecurity and corruption as push factors for migration to another country. On the other hand, decision for temporary migration to Middle East and South-East Asia mostly depends on seeking better job opportunities and avoid unemployment and poverty. Besides, existing information on migration,employment prospects, the available of community networks and the function of hiring organisations also impact one's decision to migrate (Abdul-Aziz, 2001; Hossain, 2001; Siddiqui, 2003).

Remittance received by the family has been used for different purposes. According to one IOM study (De Bruyn, T., & Kuddus, U., 2005), remittances are used for five different purposes: (i) food

and clothing; (ii) home construction and repair; (iii) purchase of land; (iv) repayment of loans; and (v) savings. After consumption, the maximum amount is used for purchasing lands and minimum is used to repay loans. Therefore, migration as well as remittance earnings have contributed immensely towards employment generation, increasing foreign exchange reserves and accelerating overall national economic development. This study explores the causal effect of migration/remittanceson household level welfare namely household poverty by applying suitable econometric methodology to take care of possible estimation challenges.

5. Data

This study used the data of the project on 'Access to Financial Services in Bangladesh, 2015', of the Institute for Inclusive Finance and Development (InM). The survey was carried out in 2014 and covered 8,449 households drawn from all over Bangladesh (63 districts) through a stratified random sampling technique. The survey excluded data from Rangamati district.

6. Methodology

It is likely that remittances would have positive impact on income, asset accumulation, savings formation and poverty reduction. The simple tabular analysis gives us a bivariate relationship. However, the outcomes are determined by several factors such as the characteristics of the households, family characteristics, regional characteristics, etc. Hence, drawing inferences based on tabular analysis may understate or overstate the true impact. Therefore, the econometric approach of this study consists of propensity score matching techniques (PSM) as well as logistic regression. Other methodological issues such as selection bias, endogeneity, simultaneity, and heterogeneity have been addressed by applying appropriate econometric methods.

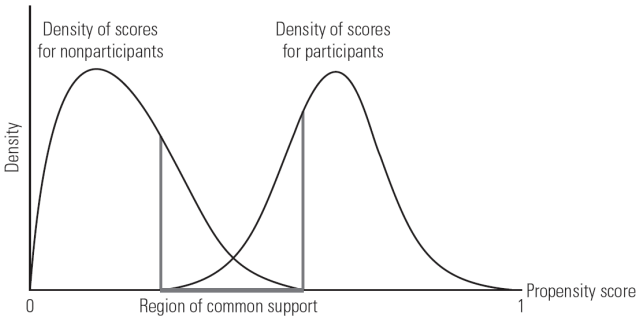
Propensity Score Matching

As mentioned earlier, the study intends to assess the impact/effectiveness of remittances on poverty. The most critical issue for assessing impact/effectiveness of any programme is selection bias. Researchers need to select proper econometric technique to address the selection bias problem. Without addressing the problem, it is not possible to identify the exact magnitude of impact. There are two core elements in proper impact assessments: (i) identification of matching groups of targeted respondents for participation; and (ii) control of influence of unobservable characteristics. One of the common tools used for matching of participating and control respondents is Propensity Score Matching (PSM) using cross-sectional data set.

The PSM method calculates the probability of participating in the programme based on some set of observable characteristics for both treated and non-treated groups. While calculating the propensity score, it assumes that participation decision is determined only by observable characteristics, not by unobservable characteristics. It has to be noted that if unobservable characteristics are believed to determine the participation decision, then PSM is not the right way to deal with the selection bias. If we have pre-intervention information only then we can use some outcome indicator as the control variable, as the programme has not affected those outcome indicators till then. After calculating the propensity score (probability of participating in the programme), each participating household with a certain score is matched with some non-participant with similar score. Non-participants whose scores are not matched with any participant are then dropped from the analysis. Similarly, it is possible that participants with no matched score in non-participants are also dropped from analysis. PSM generate some blocks or quintiles (the number of blocks varies). More concentrated the propensity is, the fewer the number of blocks.

Using the distribution of propensity score of participant and non-participant, the region of **common support** is generated. Region of common support ensures that propensity score of treatment group has 'nearby' comparable observations in the control group (Figure 4). Generating common support is the prerequisite of doing any further analysis like average treatment effect (ATE) or the treatment effect on treated (TOT). Households who do not belong to common support area are excluded from the analysis.

Figure 4 : Region of Common Support



Source: Khandker et al. (2010)

After the matching is done the only difference between the treated and control groups will be the effect of the treatment, which are remittance recipient households i.e., the international or national migrants.

At first, probit regression to estimate the propensity score will be used and the model for the analysis of proposed study is given below:

$$P(X_i) = \Pr(T = 1/X_i) \qquad (1)$$

Where T is the indicator representing treatment group, if $T = 1$ then the household received remittance or had at least one national or international migrant and if $T = 0$ then non-migrant household. X_i represents a set of socioeconomic characteristics, such as family size, household head's age, education, household demographic status, geographic division and occupation and so on.

After estimating the propensity score, we estimate the average treatment effect on the treated (ATT), which gives the difference between the scores among the participants and the non –participants after controlling for propensity score.

$$ATT = \{E[Y_{1i}/T = 1], P(X_i)] - E[Y_{0i}/T = 0], P(X_i)]\} \qquad (2)$$

Where Y_{1i} is the potential outcome if the household received remittance and Y_{0i} is the potential outcome if the respondent did not receive remittance.

Logistic Regression Model

The logistic regression model has been applied to assess the impact of remittance on some outcome indicators which are binary in nature and also to obtain propensity score as a function of a set of variables to identify the comparable groups of participants and control. ATT and Logit regression model are applied as the primary analytical tool for the purpose. Additionally, instrumental variables are also used as robustness test of the primary estimation results.

7. Channels of Sending Remittances

Evidence from the data shows that there is a significant variation among the mode of transferring remittances through formal or informal channels. Migrants' choice of payment channel when transferring money to relatives, also varies across migration types. Greater part of the migrants (both local and international) depends on formal channels while transferring money. In the case of international migrants, formal channels dominate (78 percent), where migrants mostly remit through

banks (49 percent) and Western Union (23.5 percent) (Table 1). Local migrants also remits through formal channels (55 percent). Formal channels like, banks, Western Union, couriers and MFIs are not popular to local migrants. They mostly use mobile banking services like, bKash, mKash etc.

Operation of the mobile banking services in Bangladesh from 2011 has brought a massive change in transferring money in the case of local migrants. Above 50 per cent of local migrants transferred money through mobile services in 2014, which was only about 3 percent in 2010.Sending money through friends or relatives (13 percent) is predictable among the local migrants. Using postal/courier service both for local (1.36 percent) and international (1.41 per cent) migrants are negligable.

Table 1: Channels of Sending Remittance (formal and informal remittances sending modes)

	Bank	Western union	MFIs	Postal /Courier	Mobile	S.A. Paribahan	Hundi /Agent	Friends /Relatives	Self-arrival	Others
Migration Type										
Local (n=1175)	3.32	0	0	1.36	50.47	0.17	0.43	13.11	30.81	0.34
Abroad (n=851)	49	23.5	0.24	1.41	3.88	0.35	17.63	3.29	0.47	0.24
Poor										
Local (n=266)	1.13	0	0	0.75	47.74	0	0.75	12.78	36.84	0
Abroad (n=71)	33.8	16.9	0	4.23	9.86	0	29.58	4.23	1.41	0
Non-poor										
Local (n=894)	4.03	0	0	1.57	51.45	0.22	0.34	12.98	28.97	0.45
Abroad (n=763)	50.59	23.98	0.26	1.18	3.28	0.39	16.38	3.28	0.39	0.26
Rural										
Local (n=1100)	2.82	0	0	1.27	50.91	0	0.45	13.27	30.91	0.36
Abroad (n=759)	49.01	23.58	0.26	1.58	3.69	0.13	18.18	2.77	0.53	0.26
Urban										
Local (n=72)	11.11	0	0	2.78	45.83	2.78	0	9.72	27.78	0
Abroad (n=87)	51.72	22.99	0	0	4.6	2.3	10.34	8.05	0	0

Source: InM Field survey (2014), Author's creation.

Note: Percentage is taken among the number of migrants.

Migrant's choice of remittances channel also varies across poverty status. Poor local migrants mainly use informal transfer mechanisms (50 percent) due to their less accessibility to formal channels and local non-poor migrants mainly use formal channels (57 percent). Interestingly, in the case of both poor and non-poor international migrants formal channels are more popular, i.e., 65 percent poor international migrants and 79 percent non-poor international migrants use formal channels for transferring remittances. However, among the informal channels, transferring money through friends or relatives is popular to local poor and non-poor migrants, whereas, hundi/agent is more popular among the poor or non-poor international migrants.

After the implementation of mobile banking services, there is a huge change in choice of sending remittance channel. Among the poor and non-poor local migrants mobile channel is the most popular one. 47 percent poor and 52 per cent non-poor local migrants use mobile channel for transferring money. It should be noted that the use of formal channel has increased in the present study compared to the first round study (Access to Financial Services, 2010). This is due to the mounting popularity of the mobile banking services. The higher use of formal channels depicts the fact that remittance does add to financial inclusion. It may be more advanced financial inclusion if the remittance receiving households make financial transactions and savings in formal institutions, like, banks.

8. Analysis of Remittances Income Distribution

The analysis of remittance income distribution covers five groups: lowest 20 percent, richest 20 percent and the middle 60 percent is divided into 3 groups depending on income distribution from the lowest to the highest (Table 2). Following the breakdown, we notice that the share of total remittance earnings in total income of households is highest among the richest 20 percent group. An interesting finding is thatthe share of local remittance earning in household's total income is highest for the lowest 20 per cent group, which gradually decreases as we move from lowest 20 percent group to richest 20 percent group. On the contrary, the share of international remittance earning in household's total income is highest for the richest 20 percent group and lowest for the bottom 20 percent group. The findings, in general, point out that households belong to the poverty stricken groups mostly follows in-country migration strategy to avail better employment opportunities. International migration has been used as an effective tool for the comparatively solvent households as an earning strategy. This is expected because international migration is quite costly and among some other countries Bangladesh has the highest financial cost for migration (International Organisation for Migration (IOM, 2018). In Bangladesh potential migrants mostly depend on middlemen rather than straightly communicating with the recruiting agencies. Therefore, the cost of migration goes high and for the poverty stricken group it becomes very hard to migrate to other countries.

Table 2 : Remittance Share in Total Income for Different Income Groups (percent) in 2014

Income groups (lowest to highest)	Mean yearly total income (BDT)	Share of local remittance earning in HH's total income (%)	Share of international remittance earning in HH's total income (%)	Share of total remittance earning in HH's total income (%)
Lowest 20%	37,872	8	2	10
1st Middle 20%	77,695	5	2	6
2nd Middle 20%	111,125	4	5	9
3rd Middle 20%	166,445	5	6	11
Richest 20%	408,409	4	14	18

Source: Author's creation, Data InM Field survey (2014)

9. Estimation and Results

In order to estimate the impact of remittance on different outcome variables, as mentioned earlier, Propensity Score Matching (PSM) technique and Average Treatment Effect on the Treated (ATT) have been used. PSM is a statistical matching technique which attempts to estimate the effect of a treatment or any intervention by accounting for the covariates that predict receiving the treatment. If

a treated subject and a control subject have the same propensity score, the observed covariates are automatically controlled for. By comparing how outcomes vary for any programme participants compared with observationally parallel nonparticipants, it is likely to estimate the effects of the intervention.

In this section the impact is evaluated on three different groups, such as, (a) international remittance recipients' vs non-recipients, (b) International migrants' vs non-migrants and (c) internal or local migrants' vs non-migrants. The outcome variables are household's annual income, total savings, total non-land assets, poverty status and financial inclusion. Estimation results show thatinternational migrants and remittance has higher impact on most of the outcome variables, like annual income and non-land assets. Poverty among the international remittance recipient households is about 15 percent less than the non-recipients and among the international migrants that is 18 percent less. Access to financial services is higher (9 percent) among the international remittance recipients' households than the non-recipients. Similar results are found for the international migrant households. Access to financial services is 10 percent higherfor the international migrants' compared with that of non-migrant households. The positive and statistical significance of coefficients associated with remittances is found in savings, non-land assets and access to finance. These results suggest that remittances can ease credit constraint and might positively affect domestic investment.

The effect of internal migrants in comparison with the non-migrants is also higher except two outcome variables such as, non-land assets and access to financial services. For internal migrants annual income and savings are significantly higher than the non-migrants. However, the degree of impact is lower than the impact of international migrants. Poverty among the local migrant households is less (8 percent) compared to the non-migrant households.

Table 3 : Impact of Remittance on Different Outcomes (PSM and ATT based estimates)

Outcome indicators	International remittance recipients vs. non-recipient	International migrants vs. non-migrants	Internal migrants vs. non-migrants
Outcome indicators/measures	ATTND	ATTND	ATTND
HH annual Income	109000***	129000***	34498***
Total household savings	-32000***	92154***	16204***
Total non-land asset	195000***	188000***	25435
Poverty	-0.151***	-0.177***	-0.083***
Access to financial services	0.092***	0.102***	-0.018

Source: Author's creation, Data InM Field survey (2014)

The geographical movement of labour resources i.e., migration for the sake of availing better economic opportunities is considered as socially and economically constructive and beneficial as it allows increasing the marginal productivity of human resources and generate higher income. The transfer of funds by the migrants i.e., remittance to their families or relatives are a source of foreign exchange, which is insufficient in developing countries.

In Bangladesh, there seems to be a causal relationship between growth in remittances and different out come variables of the economy, as it has higher impact on poverty, monthly income and financial inclusion. Furthermore, increases in remittance flows greatly assist to minimise the problem arising from shortages of foreign exchange reserves which is needed to pay for import payments.Briefly, international migration and remittance supplyis a pathway out of poverty for the households.

Robustness of the Result

Instrumental variable and generalised method of moments estimation (gmm) based estimates

Most empirical studies apply solo econometric technique to demonstrate hypothesis of the study or relationship between two variables. But it is very crucial to examine the robustness of the results too. Robustness tests emerged as social scientists' response to the uncertainty they face in specifying empirical models (Plümper and Neumayer, 2010). In statistics, robustness denotes the strength of a statistical model, test and procedures according to the specific conditions of the statistical analysis a study hopes to achieve.

In this section, the robustness of the results derived from previous analysis explaining impact of remittances on poverty has been established. In addition to using the propensity score matching method, another method using instrumental variable has been used to capture the confirmation of the results. As remittance is claimed to be suffered from endogeneity which means this is determined by some other factors and might be correlated with the error term leading to biased estimates in case of OLS estimation.Therefore a proper instrument is required to correctly capture the effect. Here 'prior information or knowledge of international or national migration within the villages has been used as instrumental variable. In spite of relying on a single regression method, instrumental variable estimation can be applied to improve the causal effect of treatment on the outcome. This estimate can be interpreted as a causal effect only for the part of the population whose participation in the treatment was affected by the instrument (Becker, 2016).

Using this instrumental variable, we proceed by applying ivprobit and the IV-based generalised method of moment (IV-GMM) in this context. Results are significantly consistent with the previous results drawn by using PSM and ATT. Poverty among the international remittance recipient households (where prior information of international migration has been used as instrument) is about 14 percent less than the non-recipients (Table 4). Additionally, among the local migrants (where prior information of local migration has been used as instrument) poverty is 8 percent less compared with the non-migrants (Table 5). Therefore, the results are robust in nature.

Table 4 : Impact of International Remittance on Poverty (Instrumental variable and gmm Based Estimates)

		ivprobit coefficient	Marginal effect ($\frac{dy}{dx}$)	gmm coefficient
1	International remittance recipient vs non-recipient (prior information of international migration within the village has been used as ***Instrument***)	-0.52***	-0.14***	-0.13***
2	Family size	0.14***	0.05***	0.05***
3	HH head's primary occupation wage earning	0.43***	0.15***	0.15***
4	Household head female	0.02	0.007	0.02
5	Education of household head	-0.06***	-0.02***	-0.014***
6	Log of saving amount	-0.08***	-0.03***	-0.02***
7	Log of formal loan amount	0.003	0.001	-0.0004
8	Social safety net programme (dummy)	0.05	0.02	0.15

Note: Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1, Model adjusted for family size, household head's age, education, household demographic status, geographic division and occupation.

Source: Author's creation, Data InM Field survey (2014)

Table 5 : Impact of Local Remittances on Poverty (instrumental variable and gmm based estimates)

		ivprobit coefficient	Marginal effect ($\frac{dy}{dx}$)	gmm coefficient
1	National remittance recipient vs non-recipient (Prior information of national migration within the village has been used as instrument)	-0.26***	-0.08***	-0.08***
2	Family size	0.16***	0.05***	0.05***
3	HH head's primary occupation wage earning	0.44***	0.15***	0.15***
4	Household head female	0.06	0.02	0.02
5	Education of household head	-0.06***	-0.02***	-0.01***
6	Log of saving amount	-0.08***	-0.03***	-0.02***
7	Log of formal loan amount	0.002	0.001	-0.001
8	Social safety net programme (dummy)	0.06	0.02	0.02

Note: Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1, Model adjusted for family size, household head's age, education, household demographic status, geographic division and occupation.

Source: Author's creation, Data InM Field survey (2014)

10. Conclusions and Policy Implications

In the context of existing inadequate ability to create new employment opportunities for the large population and the immense potential of manpower export, migration has become one of the important concerns of development policy. Poor people often adopt in-country migration as a crisis coping strategy in the lean seasons. Some of the studies suggest that seasonal migration is a temporary way out to the recurring downturn and natural shocks suffered in the agricultural sector (Shonchoy, 2010). Though, successful local migration can offer short-term economic relief to the poor households but sometimes those may not sustain for long time as it is hard to migrate over the years. Therefore, international migration has become a prime agenda of the country.

This study examines the impacts of international and local migration as well as remittance on poverty in Bangladesh. The study finds that both local and international remittances reduce the incidence, depth and severity of poverty. The statistical tests and also the robustness test show significant poverty reduction due to internal and external remittances. The receipt of international remittances reduces poverty by around 14 per centand internal remittance reduces poverty by around 8 per cent. One recent study by Yoshino (2017) shows that a 1 per cent increase in international remittances as a percentage of GDP can lead to a 22.6 per cent decline in the poverty gap ratio anda 16.0 per cent decline in the poverty severity ratio in the sample of 10 Asian developing countries from 1981 to 2014. The study used the dataset consisting of 10 Asian countries which are Bangladesh, People's Republic of China (PRC), India, Indonesia, Malaysia, Nepal, Pakistan, Philippines, Sri Lanka, and Thailand.By using Household Income and Expenditure Survey (2005) data another study, Khan (2008)also shows that remittance helps to reduce poverty by approximately eighteen percent in Bangladesh. These resultsare consistent with the results derived from the current study.

It has been found that over time, for a developing country like Bangladesh, remittances act as a steadying fund. In our analysis, remittances revealed a considerable positive impact on poverty, improved household income, savings, non-land assets and access to finance. Thus, it helps increase the earnings of the poor and smooth their consumption as well as eliminates capital constraints, hence, indicates the need for more inflow of remittances into the economy.

There are five government ministries dealing with international labour migration in Bangladesh. These are: the Ministries of Expatriates' Welfare and Overseas Employment; Home Affairs; Foreign Affairs; Finance; and Civil Aviation, and Tourism. The Bureau of Manpower, Employment and Training (BMET) takes the responsibility of processing labour migration. In 2006, the government has adopted an overseas employment policy. Besides, the government has given highest priority to the manpower export sector and allocates a substantial amount in its budgetfor immigration and Skill Development Fund each year. In order to send workers at a balanced rate from all areas of Bangladesh, the National Skill Council (NSC) provides substantial contribution to form suitable coordination among concerned ministries and divisions.

Earnings from migrant workers are increasing over time but at a lower rate than the number of migrants from Bangladesh. This may be the result of higher rate of unskilled and semi-skilled labour migration. Among the foreign Bangladeshi workers,the vast majority is unskilled or semi-skilled; therefore earn low wages relative to other country's workers. Considering the impact of remittances on poverty and the overall economy, the government should provide appropriate technical and vocational training before sending the workers to a foreign country so that they can utilise their full potential; anduninterrupted remittance inflows can be ensured. Lack of appropriate knowledge about the migration system, agents not being licensed or having legal entities, misleading information, inability to pursue skilled jobs at countries of destination are major challenges in this area. The government has to take suitable steps like, eradicating unlicensed agents, removing various layers of stakeholders in recruitment in destination countries, bringing work permits and visa processing under clear system can act as the solution.

The findings of the study have several policy implications and significance which will help develop a more effective policy environment in Bangladesh. Bangladesh has adopted several legal and policy actions to advocate the rights of migrant workers to participate fully in the opportunities unleashed and thereby contribute to and benefit from growth. This will make the labour market work better.It has to be noted that the government has to maintain strict security and provide legal assistance for the international migrants, especially women workers.

Another important policy agenda is to lower the transection cost of sending remittance and removing obstacles to official remittance channels so that the migrants are encouraged to send remittances through formal channels. The government should also develop appropriate training activities or education programmes for the migrant workers as well as the returning migrants or remittance recipients in making effective investment decisions. Given the global political chaos and declining labour demand in the existing overseas labour markets, the government should explore new labour markets as well.

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Institute for Inclusive Finance and Development (InM)

- PKSF Bhaban, Agargaon, Dhaka-1207, Bangladesh
- InM Training Centre, House # 30, Road # 03, Block : C
  Monsurabad R/A, Adabor, Dhaka-1207

Telephone: +880-2-8181066 (Agargaon), +880-2-8190364 (Monsurabad)
Fax: +88-02-8152796, Email : info@inm.org.bd; Web: www.inm.org.bd