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COMPARATIVE *'Capability'* OF MIGRANT AND NON-MIGRANT HOUSEHOLDS: EVIDENCE FROM RURAL BANGLADESH

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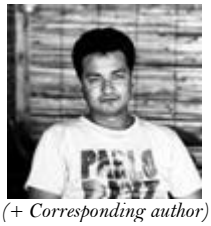
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ABSTRACT

This research aims to ascertain the level of capabilities attainment by the rural households of Bangladesh through temporary international migration. Multilevel Propensity Score Matching (PSM) based on logistic regression is used to construct the 'treatment' group of migrant households and 'control' group of non-migrant households. Various observed characteristics of 5219 households from the cross-sectional Bangladesh Integrated Household Survey (BIHS) 2011-12 (Ahmed, 2013) is used to perform the matching procedures, and it matched 490 households of which 178 households for the 'treatment' and other 312 households for the 'control' group with similar observed characteristics like the 'treatment' group. Between these two groups, various outcome variables are compared by mean difference in case of continuous variables and relative proportion for categorical variables. Evidence from the matched sample indicates that migrant households have a higher level of food & non-food consumptions, better housing, higher education expenditure for the children, higher health expenditure, better access to the communication & social acceptance and higher participation of women in household decision-making compare to non-migrant households. In summary, they do possess extended capabilities and functionings i.e. 'well-being' and 'social relation'. However, migrant households are also exposed to higher level of total outstanding loan, one-third of which taken exclusively for migration.

Contribution/ Originality: The key contributions of this study are, firstly, it uses the multilevel propensity score matching for estimating 'control' and 'treatment' groups; secondly, larger and more nationally representative sample is used; and thirdly, it puts on new dimension in the impact study of temporary migration of Bangladesh by incorporating capability approach.

1. INTRODUCTION

International migration has become an integral part of Bangladesh economy (Das *et al.*, 2014). Official statistics show that about US$ 15 billion was remitted by the Bangladeshi migrants in 2015-16 fiscal year. This figure surpasses the total amount of foreign direct investment and foreign aid by a huge margin, which recorded approximately US$ 2 billion and US$ 3 billion respectively (BB, 2018). Among all national financial inflows, remittance was at the second place, only after Ready-Made Garments (RMG) export that was around US$ 21 billion in the same period. Estimates exhibit that approximately 10% of the country's total male labour force is

currently working abroad contributing around 8% of GDP (BMET, 2016). In the past decade, the country produces on an average 0.6 million new migrants each year that indicates migration and remittance are expected to play an even more vital role in the future for Bangladesh economy.

International migration sector of Bangladesh is mostly dominated by male workers- with low skill and poor background- working in the Middle-East and South-East Asian region on temporary job contract basis. In spite of a rapid decline in women fertility rate (Paul, 1997) Bangladesh is a nation with high labour force growth (current labour force are coming from a generation with high fertility rate of 4 births per woman) and broad labour surplus, especially among unskilled or low-skilled young male workers (BBS, 2012). For them, migration thus opens an exclusive avenue to escape from unemployment and poverty. Migrants of this nature typically remit most of their income, because the lack of permanent settlement in the migrating country makes them reluctant to invest there. Instead, they desire to increase the current livelihood of the 'left behind' family and the productive capabilities upon their future return (Raghuram, 2008).

According to the 'Bangladesh Household Remittance Survey 2009', migration to Middle-East and South-East Asian countries cost around US$ 2900 and 3300 respectively- almost 4.5 to 5.5 times of national per capita income- which is paid for acquiring job contract, travel expense, agent's commission, etc (IOM, 2010). In spite of this heavy upfront cost, migration when successful produces increased level of income and household expenditure. Afsar *et al.* (2002) have estimated that overall benefit-cost ratio of Bangladeshi short-term migrants is as high as 2.9 times. Authors have also reported that success stories of past and present short-term migrants encourage other community members to mobilize resource by taking a high-interest loan, dowry or even bonded labour contract. Further research by Sharma and Zaman (2009) showed that short-term international migration brought substantial benefit as measured by household consumption, savings and use of modern agricultural inputs. Moreover, three large-scale household surveys done by Siddiqui and Abrar (2003); IOM (2010) and BBS (2014) have also found substantial income rise and reduction of the poverty (more appropriately 'income based poverty') level due to migration and its related remittances.

However, do the migrants presume those income and expenditure expansions from international migration sufficient to achieve the long-term capabilities? Nobel laureate Sen (1989) reiterate from Aristotle, *"Wealth is evidently not the good we are seeking; for it is merely useful and for the sake of something else."* In recent decades, there has been growing consensus regarding the insufficiency of income as an accurate measure of human development (Sen, 1992). Because, firstly, various essentials needs are not provided in the market or the market is inefficient, for example, safe water, sanitation, etc. Secondly, the capacity to convert income into functioning differs between household to household. Thirdly, in practice, poor people describe their state of deprivation with various factors such as disempowerment, health, nutrition, social exclusion, etc. (cf Alkire and Santos (2013)). These insufficiencies of income expose the rationale behind measuring people's capability alongside income to assess real poverty. In the context Bangladeshi migrants, Capability Approach can be applied as well to estimate the real gain of migration. In brief, this approach analyses (or measure) 'benefits' on the basis of functioning vector (i.e. combination of 'doing' and 'being' that create the status of a person's life) which is given by the utilization (not only based on possession) of the available commodity bundle. The key advantage of this approach is that it is comprehensive enough to capture all aspect of human development (Clark, 2002).

In Bangladesh, the nexus between international migration and development is mainly examined based on the utility and resource based approaches. Only a few researchers have touched various dimensions of the capability paradigm. Such as, Afsar (2009) has studied the 'human rights' scenario of Bangladeshi migrant workers working in the Persian Gulf countries; Hadi (2001) has examined the 'women empowerment' issues of 'left-behind' wives of the Bangladeshi migrants; Siddiqui (2003) has looked into migration as the 'freedom' of choosing livelihood strategy; Raihan *et al.* (2009) have estimated the effect of migration on the household welfare. Nevertheless, no such studies have found that examine the international migration of Bangladesh through the lens of capability approach

exclusively. This research fills this lacuna by studying the comparative capability of migrant households with the non-migrant households using the framework of the capability approach.

In brief, the objective of this study is to compare the level of *capability* between migrant and non-migrant households. The existence of *capabilities* means a higher level of functionings and standard of living. So capabilities can be estimated by assessing functionings and standard of living. Therefore the aim of this study is to contribute the empirical knowledge by measuring the level of functionings i.e. well-being and social relations of migrant households in compare to the non-migrant households in rural Bangladesh. In consideration of this, the **first hypothesis** of this study is that *international migration has a positive effect on household's well-being*. The corresponding research questions addressed for this hypothesis are as follows:

1. What is the level of the capability of *'stay alive and live long'* of the migrant households in compare to the reference group of non-migrant households?
2. What is the level of the capability of *'healthy living'* of the migrant households in compare to the reference group of non-migrant households?
3. What is the level of the capability to 'produce' of the migrant households in compare to the reference group of non-migrant households?

The second hypothesis of this study is that *international migration has a positive effect on household's social relations*, and the relevant questions addressed are as follows:

1. What is the level of the capability of *'social interactions'* of the migrant households in compare to the reference group of non-migrant households?
2. What is the level of the capability of *'communication'* of the migrant households in compare to the reference group of non-migrant households?

This study is partially similar to the study done by Sharma and Zaman (2009) in the use of methodology and Hadi (2001) & Kuhn (2006) in the theoretical framing. The key distinctive feature of this present study are, firstly, it uses the multi-level model of propensity score matching for creating 'control' and 'treatment' group; secondly, larger and more representative sample is used; and thirdly, it puts on new dimension in migration impact study in Bangladesh by incorporating capability approach. The balance of this paper structures as follows: chapter two will outline the conceptual and theoretical framework needed for the empirical study and interpretation of results. In this context, the literature review limits itself by covering the papers which looked into the nexus between international migration and household poverty or well-beings related to household capability in the originating country. A dedicated section is provided here for the introductory concept of the capability approach and its use in the current research area. This chapter closes with a brief literature review of the econometric procedures applied for the quantitative analysis. Chapter three is devoted to the methodology and data. It is quite an elaborate segment of this paper that covers sample description, econometric model and selection of variables. Subsequently, Chapter four presents the descriptive statistics of the sample, interpretive analysis of the migrant households and results of the quantitative model. Furthermore, this segment offers a brief discussion of the findings. This paper ends with chapter five that summarizes the findings and concludes with some future research recommendations.

2. LITERATURE REVIEW

2.1. Effects of International Migration

The international migration and development nexus is often viewed from contrasting optimistic and pessimistic viewpoints. Optimistic view- *the dominant paradigm*- considers international migration as a significant instrument for achieving economic growth, reducing poverty and multidimensional human development (Preibisch *et al*., 2016). The rise and relative effectivity of the remittance in recent decades have raised this optimism. Indeed, migrants' financial transfer overtakes other type of capital flows in many regions of the global south. Furthermore, remittance reaches directly to the migrant families (bottom end) where bilateral and multilateral development aid

have to go through the traditional long and commonly inefficient top-down channels (Adams and Page, 2005; Ratha, 2005). Besides the growth of remittances, it is considered as a more stable source of external flow in compare to official development assistance, private equity flow, foreign direct investment (Kapur, 2003). Moreover, remittance flow has a counter-cyclical trend relative to the economy of receiving country; migrants usually send more money in the period of an economic downturn due to natural disaster, economic shock, or political conflicts (Ratha, 2007). At the household and community level, evidence suggests that consumption and investment of remittance in the local communities have a significant effect in reducing poverty and boosting the local economy through macroeconomic and multiplier effect (De Haas, 2005; Ratha, 2007; Böhning, 2009; Datta, 2009). A cross-country research on 71 developing countries reveals that both overseas migration and remittance reduce the level, severity, and depth of poverty (Adams and Page, 2005). Authors have found that ten percentage point increase in per-capita remittance leads to 3.5 percentage point decrease in the share of population living below the poverty line.

This optimistic view is also the dominant paradigm in migration research arena of Bangladesh. Most of the studies conclude that migration is playing a significant role in poverty alleviation of the country. Some of the significant studies are discussed here. Siddique *et al.* (2012) have found that migration and remittance are significantly causing national economic growth and poverty reduction in Bangladesh. Moreover, estimates by Raihan *et al.* (2009) show that 1.7 out of 9 percentage point reduction of poverty headcount ratio is directly contributed by the growth of remittances during the 2000-2005 period. Authors have also reported that probability of becoming poor is 5.9% lower for the migrant households in comparison to the non-migrant peer. In another study by Sharma and Zaman (2009) exhibits that migrant households are in a better-off position concerning the level of consumption, nutrition intake and agricultural implements. Despite the heavy upfront cost, temporary migration produces a high 2.9 times benefit to cost ratio (Afsar *et al.*, 2002). Besides income and expenditure, migration leads to higher level of human development. For example, It is evident that migration of father or brother increases the education of daughters and siblings (Kuhn, 2006). Moreover, migration increases women's participation in decision-making and bring the secular view from abroad that positively modify the position of women in the traditional community (Hadi, 2001).

On the contrary, critics- pessimistic view- argue that the dominant paradigm commonly underemphasizes the role of government policy and planning rather focus on the financial institutions and the market as key intermediaries between migration and development (Bakker, 2015). Evidence shows that poverty and inequality minimizing the effect of international migration and remittance has varied significantly across the countries (Acosta *et al.*, 2008). That indicates migration and remittance do not automatically produce inequality and poverty reduction rather depends on the investment climate, the rule of law and political stability (De Haas, 2005). Over-optimism about remittance often ignores another insight regard to the 'selectivity'. As migration is a selective process, benefits from migration and remittances are also selective and do not reach to the poorest segment of the communities (Schiff, 1994) nor to the poorest nation (Kapur and McHale, 2003). Therefore, remittances might deepen the existing economic and social inequalities within the country as well as among the countries (Ustubici and Irdam, 2012). On this counter side of the migration and remittance in Bangladesh, there exist three key researches. Rahman (2000) shows that temporary labour migration doesn't fuel the local economy rather drain the resources from rural to urban areas that impede the balanced economic growth. Another mostly ignored dimension of migration in Bangladesh is the number of failed migration attempt. Almost all survey and study define migrant- and non-migrant-household based on the current number of members living abroad. This specification, essentially, shades the number of failed attempt and related economic hazards. Das *et al.* (2014) have surveyed 496 villages from Bangladesh and found that 28% of all migration attempts by Bangladeshis are unsuccessful. These failures put a median US$ 250 financial burden towards the households which is nearly one fifth of average annual income. Even if the migration is successful, the process might put the households into the indebted situation. Many household sale

or mortgage the indispensable resource to finance the migration that is found unrecovered especially in the case of migrants to Gulf Corporation Council (GCC) countries (Rahman, 2015).

Overall, the dominant paradigm is contradictory to the pessimistic view and it is evident that migration might cause some harm as well. These contradictions are signposted the need for further research in this area by calibrating the current perspectives. Before proceeding further, one important question need to resolve that is 'why the impact of additional income from migration is considered very much different from other income, such as, income from agricultural or fishing, and considered as significant to achieve capabilities and functionings'. This consideration is based on some key distinctive features of migration, such as, (i) migration gives access to new information that changes the preference set of the household decision; (ii) remittances change the risk profile of the household that leads to change in expenditure pattern; (iii) migration reshape the intra-household dynamics and control of resources; Taylor and Mora (2006) (iv) remittance is viewed as transitory thus rational household might choose to smooth the consumption by savings and other productive use (Thaler, 1990) (v) Migration and remittance give liquidity to the households that increase the household's capacity (Sharma and Zaman, 2009). For these reasons, migration and remittance supposedly is a catalyst factor in attaining capabilities in the rural settings of Bangladesh. Therefore this study took capability approach as its perspective. However, this study may not be able to answer many of the aspects discussed in this section, but essentially reassess the migration and remittance effectiveness in achieving household capability.

2.2. The Capability Approach in the Dominant Paradigm of International Migration

The rationale behind the capability approach in assessing international migration might be well explained by the famous quotation of Max Frisch, a Swiss novelist, regarding the 'guest-worker' policy during the post-world-war Western European economic boom: *"We had called for labour power, and there come human beings"* (Gasper and Truong, 2010). International migration should not only be studied from an economic perspective as an impersonal mechanism of input flow but also from the humanitarian perspective as an act by and on people. It is important to note that international migration can be observed from the migrant receiver or sender country as well as from the global perspective. This paper is limited to the sender country's perspective, more specifically in the case of Bangladesh. While traditional economics- mostly dominated by utilitarianism- has always measured development with one dimension: income (Alkire and Santos, 2013) capability approach offers a theoretical framework to better conceptualize human rights, freedom, social justice, equality, and power and how these concepts can be materialized into the human development model (Preibisch *et al.*, 2016). Thus this approach appropriately focuses the humanitarian perspective of international migration.

Amartya Sen's capability approach is a moral framework that proposes social arrangement should be assessed based on the degree of freedom people have to promote and functioning they value most (Alkire, 2002). This approach begins with two simple questions: *"What are people actually able to do and to be? (and) What real opportunities are available to them?"* (Nussbaum, 2011). Appropriately, capability approach has placed 'human beings' and 'their wellbeing' as the final concerns of the social-economic processes based on the dignity of freedom and people's ability to live their own life (Deneulin and McGregor, 2010). Being an evaluative approach central question surrounds on the measurement of people's ability or capability. Sen wrote in his *Inequality Re-examined* book, *"capability is a set of vectors of functionings, reflecting the person's freedom to lead one type of life or another...to choose from possible livings."* Sen (1992) anticipated a range of capabilities of an individual is diverse and varies from basic need such as freedom from hunger to complex abilities such as achieving self-respect. However, he also notes in *Inequality Re-examined* book, *"…..but limits of practicality may often force the analysis [regarding vectors of functioning] to be confined to examining the achieved functioning bundle only."*

One of the major strength of Sen's Capability Approach framework is its flexibility and internal diversity, which allows researchers to develop and apply this model in many different ways (Alkire, 2005). Sen by himself

doesn't give a definitive list of capabilities rather he emphasizes personal value judgement for selection and weighting capabilities (Clark, 2005). However, several authors have criticized this framework due to the absence of a coherent list of important capabilities; even some labelled this approach as an impractical or unworkable idea (Williams, 1987; Qizilbash, 1996). This aspect of the capability list and the data limitation for making a well representative list will be discussed in the section 3.3 in more detail.

Even though migration in Bangladesh and poverty is a well-researched topic, the focus of those researches are very limited within few theme. The most dominant themes are 'income' and 'consumption' (Afsar, 2003; Siddiqui, 2003; Buchenau, 2008; Farid *et al*., 2009; Raihan *et al*., 2009; Sharma and Zaman, 2009; Siddique *et al*., 2012; Arifeen, 2013). Some research focus on other dimensions of human development, such as, 'education' (Kuhn, 2006), 'status of women' (Hadi, 2001) and 'human rights' (Afsar, 2009). But the use of capability approach is absent indeed. It is evident that people's functioning rather income is important in meaningful poverty alleviation and human development, where in academia in the context of Bangladesh has limited evidence.

2.3. Measuring the Level of Capabilities Achieved by International Migration

Impact on capabilities by international migration can be estimated accurately if migrant and non-migrant status will not be confounded with either observable or non-observable baseline characteristics (Greenland *et al*., 1999). Therefore, the impact of migration on outcome variables can be estimated by comparing the magnitude of the outcomes variables directly between migrant and non-migrant households. However, as households are living in the society with n-number of environmental factors affecting their almost every decision, migrant and non-migrant status are confounded with many observable and non-observable characteristics. For this reason, it is not possible to maintain a well-defined 'control' group (of non-migrant households). Thus, direct estimation of the causal effect of migration by comparing migrant or non-migrant household could be biased because of self-selection or some selection bias born from the discretion of the researcher in assigning households to the 'treatment' (migrant household) group (Dehejia and Wahba, 2002).

To overcome these biases, researchers have developed a strategy: *matching*. This process involves pairing 'treatment' and 'control' subjects with the same observable characteristics or covariates. As the relevant difference between two subject groups is captured by the observable characteristics or covariates, impacts (causal effects) are independent of assignment to treatment, *matching* approach can give an unbiased estimation of the causal effects (Dehejia and Wahba, 2002). Another important point to note is the number of covariate as matching criteria. Migration decision does not depend on any particular covariate, therefore, to get a well-matched pair of treatment and control, *n*-dimensions of decision-making process need to be incorporated in the matching. However, a large number of covariates essentially bring the 'curse of dimensionality' (Caliendo and Kopeinig, 2008). Hence, Rosenbaum and Rubin (1983) suggest to use a scalar balancing score (propensity score) i.e. functions of the observed characteristics or covariates that are independent of assignment to treatment. In a nutshell, Propensity Score Matching (PSM) summarizes all 'pre-treatment' characteristics of a subject into a single index variable, the propensity score (Dehejia and Wahba, 2002). This procedure will be discussed in the methodology section in more detail.

McKenzie *et al*. (2010) have done an unique research on the *impact of migration* to New Zealand for Tongans (citizen of Tonga, a Polynesian country near New Zealand). New Zealand allows a quota to Tongans to migrate based on the lottery in the case of excess application. This circumstance gives a unique opportunity to conduct an experimental research. They estimate the income gains due to migration by comparing migrants' income with those who applied and complied to migrate but failed to migrate due to the lottery (pure random). Moreover, researchers also conduct an observational study by comparing the migration effect with the group who didn't apply at all for the migration. They applied four different types of non-experimental estimation techniques such as single difference estimator, ordinary least squares, difference-in-differences, and propensity score matching and compare the result

with experimental research outcomes. They have found that among all non-experimental estimation approach propensity score matching performs comparatively well. This finding gives a rationale behind using *propensity score matching* (from now on PSM) approach to estimate the impact of migration on outcome variables in the non-experimental design. Four significant studies have used propensity score matching in this arena in the past, those are, Esquivel and Huerta-Pineda (2007); Sharma and Zaman (2009); Bohra-Mishra (2011); Jimenez-Soto and Brown (2012) in case of Mexico, Bangladesh, Nepal, and Tonga respectively.

However, PSM has a serious limitation in compare to other matching procedure i.e. fully blocked. PSM uses complete randomization in both observed and unobserved covariates which increases model dependence and bias, whereas fully blocked matching uses exact matching for observed covariates and randomization for unobserved covariates (Imai *et al*., 2009). In a simple way, complete randomization means that when scalar propensity score matches with many observations (this is the common case), then PSM chooses observations for the matched groups randomly. That might lead to a match in the score but severally unmatched in the characteristics. Thus fully blocked matching performs better over PSM. But when the number of dimensions or covariates increases fully blocked method doesn't work well and shrink the sample size, even to no match in many instances (Stuart, 2010). To avoid this issue, this study uses a combined method composed by collaborating PSM and exact matching which solve the complete randomization problem of PSM by exact matching on key covariates. This procedure will also be discussed in detail in the next section.

3. RESEARCH METHODS

3.1. Data and Sample

The data used in this paper is taken from Bangladesh integrated household survey (BIHS) 2011-12[1] (Ahmed, 2013). The survey has been conducted to construct the baseline scenario that has been used to assess US government's Feed the Future (FTF) initiatives in the southern part of the country. This survey is one of the most comprehensive household surveys that nationally representative of the *rural Bangladesh* thus can be implemented from many perspective of policy analysis (Ahmed *et al*., 2013). It is important to note that comprehensive redesign of the dataset has done to align all needed variables against the household identification number. However, none of the variables have re-coded apart from the 'level of education' variable where the level is converted to 'years of education' using the Bangladesh education framework.

The BIHS has covered total 6503 households, 20 from each of the 325 villages (Primary Sampling Units-PSUs), from eight strata (all seven administrative division and FTF zone). The Sampling design used in BIHS followed two stage, first, selection of villages in each stratum based on the probability proportional to size method (Bangladesh population census 2001 has used for size) and second, selection of households randomly from each villages based on the census which was done exclusively for BIHS prior to the main survey. It's important to note that the sample has 1080 households under 'FTF additional' category which was collected in the second phase to obtain more robust estimates of disaggregated analysis of the FTF zone (Ahmed *et al*., 2013). This group of households were not examined to construct nationally representative survey thus are excluded from the present study. Moreover, there are few households in the data those didn't have any international migrant member but got remittance within one year before the survey date. This group of households are also omitted from the study to separate the migration effect from non-migrant households. Therefore, this paper only considers 5219 households from 'national representative' category of which 429 households have at least one migrating member.

[1] All related documents and data can be downloaded from this link: http://ebrary.ifpri.org/cdm/ref/collection/ p15738coll3/id/108

3.2. Econometric Model

3.2.1. Formation of Matched Sub-Sample and Average Treatment Effect

The basic idea starts with the notion that having international migrant is similar to a 'treatment' so that average treatment effect on variables of interest can be estimated by comparing treated (migrant) households with non-treated (i.e. non-migrant) households. As discussed in the previous section, out of total 5219 households 429 have at least one member living overseas for more than six months. These 429 households are represented as the treated group while the rest is non-treated or control group. The critical assumption behind using this methodology is that the decision to be treated i.e. migrated, although it is a selective process, eventually depends on some observable variables. For this assumption, self-selection bias in assessing causal effect might arise, because even with the same observed characteristics one household might choose to migrate while other might not. This bias is partially dealt with the propensity score matching technique (as discussed in the literature review section) but complete unbiased estimation might not be possible with the present dataset used in this study.

Lacking an experimental design, Propensity Score Matching (PSM) has used to create a 'control' group of non-migrant households with the very similar characteristics of the households of 'treatment' group. Let $Y_{i1}^{t=1}$ is the outcome achieved of $i1$-th household if it has migrant(s) and let $Y_{i1}^{t=0}$ is the outcome achieved if the household has no migrant. Then, the impact of migration on the outcome of $i1$-th household can be derived by $\Delta = Y_{i1}^{t=1} - Y_{i1}^{t=0}$. However, $Y_{i1}^{t=0}$ is not observed because of the non-experimental research design. To overcome this absence of experimental control units, $Y_{i1}^{t=0}$ can be obtained by observing in-th household(s), which is not essentially $i1$-th household but having the same set of covariates X_{i1} as like $i1$-th household. PSM provides one method for obtaining these counterfactual control units i.e. statistical comparison group (Rosenbaum and Rubin, 1983). Let $P(X)=P(t=1|X)$ is the probability of having migrant family member in the household or 'treatment' conditional on the vector of covariates X. Subscripts are dropped to represent the whole sample and essentially $P(X)$ exhibit the probability at the mean of all covariates. This probability can be calculated using various methods. This paper has used logistic regression, where the relationship among variables can be written as Wooldridge (2013)

$$P(t=1|X)=G(\beta_0+\beta_{1,2,3...n}X), wher, 0<G(z)<1 \quad \ldots\ldots\ldots\ldots\ldots\ldots (1)$$

Non-linear function used to make $G(z)$ within the range of 0 to 1 for all real numbers and z is as follows-

$$G(z)=\frac{\exp(z)}{1+\exp(z)}=\Lambda(z) \quad \ldots\ldots\ldots\ldots\ldots\ldots (2)$$

Basic PSM model proposed by Rosenbaum and Rubin (1983) use this $G(z)$ as the propensity score and matched cases are selected based on the distance calculated as $D_{ij} = |G(z_i)-G(z_j)|$ where i- is a household with migrant and j- is a household without migrant. However, this current study used a later version of PSM proposed by Rubin and Thomas (2000) and software package for linear fixed effect (LME) and coarsened exact matching (CEM) used in this procedure is written by Bates *et al.* (2015) and Iacus *et al.* (2009) respectively. This procedure is a multilevel modelling where sample is further nested based on some key 'prognostic' K covariates and calculate $G(z)$ by considering variables opted for propensity matching only (cf. Rubin and Thomas (2000)). Moreover, unlike general covariates, exact matching is used for the key 'prognostic' covariates, where distance is calculated as follows-

$$D_{ij} = \begin{cases} 0 \ldots\ldots if K_i = K_j \\ \infty \ldots\ldots if K_i \neq K_j \end{cases} \ldots\ldots\ldots\ldots\ldots\ldots (3)$$

Where, K is the set of 'key covariates'. After calculating the propensity score for all observations, new sub-sample of migrant (t=1) household and non-migrant household (t = 0) has created by matching the 'distance' (D_{ij}) at given caliper i.e. maximum allowed differences between matched observations. Rest of the process is straight forward. From the matched sample 'average effect of the treatment' of the sample has obtained by,

$$E(\Delta \mid X, t=1) = E(Y^{t=1} - Y^{t=0} \mid X, t=1) = E(Y^{t=1} \mid X, t=1) - E(Y^{t=0} \mid X, t=1) \ldots\ldots\ldots\ldots\ldots\ldots (4)$$

Where X is a vector of covariates, t is the treatment dummy, $Y^{t=1}$ is the outcome of the treated household and $Y^{t=0}$ is the outcome of treated household when not treated (counterfactual, constructed using the procedure of equation 1, 2, & 3). This procedure requires two assumptions (Rosenbaum and Rubin, 1983) first,

$$E(Y^{t=0} \mid X, t=1) = E(Y^{t=0} \mid X, t=0) \ldots\ldots\ldots\ldots\ldots\ldots (5)$$

Equation 5, depicts the 'conditional mean independence', requires that after controlling X vector of covariates, mean outcome ($Y^{t=0}$) of non-migrant households are identical to the outcomes of migrant household ($Y^{t=1}$) if they had choose not to migrate. It can also be denoted as $Y^{t=0}, Y^{t=1} \perp\!\!\!\perp t \mid X$, where $\perp\!\!\!\perp$ denote the independence. Intuitively, this assumption implies that conditioning on observable covariates X, subject assignment to treatment or non-treatment have been random, in particular, unobservable have not any role in assigning treatment (cf. proposition 1, Rubin (1977)). The second assumption is-

$$0 < P(X) < 1 \ldots\ldots\ldots\ldots\ldots\ldots (6)$$

This assumption implies that probability is well defined for all values of X. Matching using X vector of covariates estimate $E(Y^{t=0} \mid X, t=1)$ by $E(Y^{t=0} \mid X, t=0)$, which is an estimate based on the mean outcomes of 'control' group matched with the 'treatment' group directly on X covariates. Therefore, increasing number of covariates increases the n-dimensionality which PSM could overcome (discussed earlier). Rosenbaum and Rubin (1983) have showed that if outcomes are independent of treatment (migration for this study) after controlling X, then outcomes are also independent of treatment after conditioning of $P(X)$. If these two assumptions hold, PSM provides an effective method for estimating $E(Y^{t=0} \mid X, t=1)$ and equation 4 without estimation bias. However, it is not possible to test these assumptions for non-experimental data. Previous conclusion by McKenzie *et al.* (2010) about PSM's superiority in non-experimental impact study of migration thus the main motivation behind using this methodology.

3.2.2. Implementation of Propensity Score Matching (PSM)

As discussed in the previous section, logistic regression is the first step for implementation of PSM. There are few things that can be done to increase the stability of the model. This study uses standardization of covariates to reduce error variance. Generally, the limited dependent model usually produces a heteroskedastic error as it deals with probability (uncertainty) that can arise from all countless variables outside of the model, which is a serious violation of OLS, hence might produce a biased estimation of probability (Tabachnick and Fidell, 2007). Some argue that this problem is even more serious in the case of the limited dependent variable model than OLS (Williams, 2008) and suggest some corrective measures (Williams, 2009). However, those corrective measures are very sensitive and increase the number of predictors i.e. covariates radically that might reduce the overall stability of the model (Buis, 2011). Therefore, sample standardization has done by deleting the 'outliers' based on z-score (samples removed with the z-score outside of ±3.29) that essentially helps to reduce error variance to some extent. This process further reduces the sample to 4826 with 387 households with migrant member(s).

It is worth noting that, unlike treatment dummy, propensity score is a continuous variable which doesn't identify the subjects to be excluded or included in the 'treatment' or 'control' groups. So there are some discretions

usually researcher have in implementing PSM, such as choice of matching method, match ratio, caliper, with or without replacement, etc. Among the matching methods, nearest neighbour matching is used as it discards the unmatched control samples which are helpful for follow-up the treatment effect (Stuart, 2010). Additionally, three matches for one treatment unit is used as the match ratio. The sample considered in this study has very large number of control units in compare to treatment units, so 3:1 match will allow more matched units to come and increases the power of matching. However, a higher ratio of matching might bring some bad matches in the control group thus increases bias. Because an additional number of control units means, 2nd and 3rd matches are further away from the treated unit. At the same time, it reduces the variance by creating large sample size. So it is a bias-variance trade-off (Rubin and Thomas, 2000). This bad match is partially dealt with the stricter caliper of 0.2 i.e. maximum allowed differences between matched observations. Another key consideration is with or without replacement matching. With replacement matching is used because this matching procedure uses single control unit for multiple times if there is no other good match found for any particular treatment unit, thus reduces the bias. Moreover, it makes the treatment units' matching order irrelevant. But bring some difficulty in the interpretation as frequency weight of the control units might vary.

3.3. Selection of Variables

3.3.1. Selection of Covariates for Propensity Score Matching

As discussed in section 3.2.1, this study has used the multilevel model of PSM where covariates are segmented into two groups i.e. general and key covariates. To incorporate these two groups of variable, equation 1 can be modified and written as follows,

$$P(t=1|X,K)=G(\beta_0+\beta_x X+\beta_k K),\ where, 0<G(z)<1 \quad \ldots\ldots\ldots\ldots\ldots\ldots (7)$$

Where the dependent variable is the dummy for migrant or non-migrant household, x is the list of general covariates and κ is the list of key covariates. For better implementation of this logistic regression model as well as PSM, variables those have simultaneous influence on the outcome variables as well as on the decision of being migrated should be selected (Caliendo and Kopeinig, 2008). But making an accurate list of these variables is quite difficult due to complexity of people's decision making, differences in characteristics and choice and in some cases lack of observability. Variables selected for the logistic regression model are-

In Bangladesh, a significant portion of migrant moved to Middle-East and South-East Asian countries are recruited by the private recruiting agencies. These firms normally recruit within a narrow social and community network to minimize information asymmetries and moral hazard (Sharma and Zaman, 2009). Thus migration in Bangladesh is geographically skewed. This is also evident in a study by Buchenau (2008) where researcher reports that approximately 68.1% visas for GCC countries come to Bangladesh through friends and relative network. In the BIHS survey, there were no questions asked related to relatives and friends network of the respondent. However, it can be safely assumed that these networks are more active in the high migrant-producing areas such as Dhaka, Chittagong, and Sylhet division. So, samples can be further nested based on their location which is assumed as a proxy of social and community network. That's why location variables are allocated in the key covariates section for exact matching. Another key covariate used in this study is the religion. Datta (2004) has reported that along with many other reasons a significant portion of Bangladeshi Hindu people migrate to India as they fear about losing their land & property. Moreover, this fear also restrains them from investing and participating in general economic activities spontaneously. Migration of this kind is not the point of interest of this paper, and the free inclusion of this group might increase the variance. So, exact matching has done in the case of the dummy variable for Islam (the religion of majority) to make the comparison group more representative.

Table-3.3.1- 1. List of covariates

Variables type	Name of the variables	
Treatment variable	Household migration status (Dummy=1 for migrant with international migrant)	Matching Applied
General Covariates (X)	Household head's education	Propensity Score Matching
	Household head's spouse education	
	Number of adult female	
	Number of male with primary education	
	Number of female with primary education	
	Maximum education among adults	
	Size of homestead 5 years ago	
	Distance of nearest town, Bus stop, or railway station in km (minimum one)	
	Distance of nearest hospital or health care centre in km	
	Dummy=1, if households have television	
	Dummy=1, if households have electric fan	
	Dummy=1, if household head is a wage labourer	
	Dummy=1, if household head is a crop farmer	
	Dummy=1, if household head is a female	
Key covariates (K)	Number of adult Male	Exact Matching
	Size of all other land 5 years ago	
	Dummy=1, if household's religion is Islam	
	Dummy=1, if household from Dhaka	
	Dummy=1, if household from Chittagong	
	Dummy=1, if household from Sylhet	

Source: Authors' proposition.

Furthermore, in Bangladesh, male labour force mainly works outside and responsible for household earnings (Paul-Majumder and Begum, 2000). Moreover, international migration is largely dominated by the male. So, in general, having a fewer male member in the household means low-income opportunity as well as less migration opportunity which affects all other characteristics of the household. Thus, exact matching is followed on this variable. In an another study, Sen (2003) has found that rural households had used crop intensification and agricultural diversification as their key poverty escaping strategy. Moreover, land is considered as the most important indicator of wealth in rural Bangladesh. Thus, the land has a significant role in determining migration status as well as other household capabilities. Fortunately, land information is collected with the date of acquisition in BIHS. As migration module considers last five years' information, size of land is calculated by considering the amount of land households had five years ago. All other variables are selected to control the generic characteristics of rural households.

3.3.2. Selection of Variables of Interest or Outcome Variables

It is well researched and proven that monetary poverty, primarily measured by income, does not reveal all dimension of deprivation (Robeyns, 2006). Thus, in recent decades, capability approach provides a unique lens to look into social well-being, poverty, and inequality. Professor Amartya Sen, the proponent of the approach, by himself once observed that *"Capability is not an awfully attractive word"* (Sen, 1993). Especially, 'operationalizing capabilities' is very unattractive word due its ambiguous and non-clear definition. It is a broad normative framework that can be used in a comprehensive sense, meaning *"something that can be put into practice or used"* and in a narrow sense, meaning 'quantification' to use at a specific level (Comim, 2001). The latter sense is used in this study.

Although Sen and Nussbaum often argue that focusing on people's functioning rather capabilities imposes a 'specific' notion about the good life and restrict the potential ways of living (Robeyns, 2006), in some particular cases functioning measurement might make more sense compare to capabilities (Wolff and de-Shalit, 2007). For example, there are some people in the society who might opt to remain hungry even though he or she have sufficient amount of food if that particular person or group is fasting or in the hunger strike. However, grossly, it can be easily assumed that people who have the option won't choose to remain hungry. Likewise, in the other basic

requirements for individual well-being, quantification probably makes more sense rather direct dealing with the capability. Moreover, most of the large-scale quantitative survey do not contain a considerable amount of information that could measure capability (Robeyns, 2003). As a result, functioning outcomes might be useful to measure people's capabilities.

Next important question arises regarding the measurement of capabilities is which capabilities to focus. As this paper dealt with the fundamental capabilities, the list proposed by Desai (1995) suits with this study better. There are more advances accomplished later in capability measurement, notably by Nussbaum (1997) who proposed ten basic entitlements that an individual required for a meaningful life, few of them are emotion affiliation, other species and senses, imagination and thought. This model is clearly not measurable with the present dataset. Another notable list provided by Alkire and Santos (2010) that uses a definitive set of 10 indicators in 3 groups (education, health, and living standard) to measure multidimensional poverty index (MPI). Probably it is the most widely used application of capability approach in measuring poverty or standard of living. However, this index is intentionally kept as simple as possible to bring global applicability, thus, quite restrictive. Thus, this application of capability approach is also avoided. There are some other frameworks available in the academia and practice proposed by Clark (2002); Saith (2001) & Robeyns (2003) those are not selected due to practicality or non-suitability. Following table depicts the Desai's list of capabilities, needs, character and variables to predict functioning (author's proposition):

Table 1.3.2-1. Capabilities and its predictors

Capability	Needs	Character	Variables to indicate Functioning*
1. To stay alive and live long 2. To produce 3. Healthy living 4. Social interaction 5. Communication	Food/Avoid hunger Drink/thirst Housing/shelter Medical Care Sanitary convenience Safety Leisure Avoid shame Education Information	Nutrition Stability of structure Level of overcrowding Easy access Confidence of consumer Cleanliness Reliability Predictability Warning Mobility Acceptability Status of women* Diversity Openness Freedom	• Food expenditure • Food expenditure on meat & fish • Food consumption from Own production • Size of land • Household asset • Weight of children, lactating mother, and pregnant women • Types of dwelling • Number of person living per room • Medical expenditure • Source of drinking • water • Type of Latrine • Total saving and loan • Economic shock • Leisure expenditure • Expenditure on clothing, and personal article • Women participation in production and decision • Educational expense • Cell phone ownership

Note: Items with (*) asterisk is authors' assumption and proposition
Source: Adapted from Desai (1995)

From the earlier discussion one might get confused regarding the difference between 'fundamental capabilities' and 'basic needs' of earlier basic need approach (BNA). While basic need approach is limited itself into the 'minimally decent life' for individuals (Saith, 2001) Desai's framework, as well as the functioning list used in this paper, expands the BNA by adding 'social relations' and 'qualitative aspects of consumption' dimensions. The above framework can be divided in two groups, capability number (1), (2), and (3) into 'health and well-being' (to support hypothesis one) and number (4) and (5) into 'social relations' parameter (to support hypothesis two). There are some overlaps exist among the groups because of the interaction of several capabilities to achieve particular functionings. Although Desai gives an empirical procedure to calculate single digit capability indicator, this study doesn't attempt to calculate that one. Because people's perception varies individual to individual regarding the combination of functioning. For example, one might consider cell-phone ownership is more important than the quality of clothes or vice versa. Putting some linear weight might be against fundamental nature of capability approach that is an 'anti-paternalism' consideration. In an interview, Amartya Sen advises to use advanced method like fuzzy sets theory to accurately measure the capability without undermining the fundamentals of the approach (Sen, 2010). However, the BIHS data set is not compatible to do so. Therefore, general descriptive statistics and interpretive figures are used to depict the scenario of households' capabilities.

4. FINDINGS AND DISCUSSION

4.1. Characteristics of Migrant Households

The Bangladesh Integrated Household Survey (BIHS) 2011-2012 have 179, 475 and 904 households with the past & current international and domestic migrant member(s) respectively. Based on this sample some key characteristics of the migrants are presented in the table 4.1-1. The amount of remittance sent by the international migrants (BDT 105,948) is substantially higher than the domestic migrants (BDT 20,600), even after adjusting all non-income generating migration i.e. students, marriage migration, etc. This difference indicates why people get ambitious about international migration and take desperate moves for mobilizing the resource to cover migration expense. In the BIHS sample of international migrants, approximately 32% of the respondents borrow money from friends, relative or commercial lenders while other 12% sold their lands. Afsar *et al.* (2002) also report this phenomenon of mobilizing fund even by the poorer strata of the society. However, they also report that many people migrate based on the bonded labour contract, specifically to the GCC countries, which is not evident in this sample, only 0.75% of respondents migrate through this sort of contract.

Both international and domestic migrations are largely dominated by the son or daughter of the household head while spouse migration is more frequent only in case of international migration. Husbands' migration (as 97.6% of total migrants are male) can be regarded as a catalyst for women freedom and autonomy in making household decisions (Hadi, 2001). Other important findings can be drawn from this current sample is that trend of female overseas migration is decreasing. In the sample of BIHS, 86.6% of the past migrants were male which has increased to 97.6% in the case of current migrants. Sharma and Zaman (2009) have found the opposite scenario of increasing trend of female migrants. Notably, current international migrants have better education compared to the past migrants but same as the current domestic migrants, however, all of them have low-level of education. Bangladeshi overseas migrants commonly migrate to Middle-East or South-East Asia and serve low-skill jobs, thus, there low-level of education match with the skill requirement of the jobs. This skill match is one of the key reason for high-level of international migration from Bangladesh (Siddiqui, 2012).

Table-4.1 -1. Demographics of Migrant Household

	International Migrants		Domestic Migrants
	Past migrants	**Current migrants**	**Current only**
N= Household n= Individuals	179 217	475 532	904 1131
Average Age	30.90	32.13	25.25
Average annual remittance (in BDT)	n.a.	105,948	20,600*
Male (%)	86.6	97.6	75.4
Percentage who are either son/daughter of the head of household	36.9	53.01	73.7
Percentage who are spouse of head of household	4.1	34.96	18.3
Percentage who are siblings of head of household	2.8	7.89	3.7
Percentage who are household head	53.5	1.32	1.1
Average Migration Duration	---	4.84	3.66
Average Years of Schooling	5.32	6.67	6.66
Percentage of migrants send regular remittance	n.a.	89.1	83.8
Past migrants' current main occupation			
Crop Farming (%)	31.8	n.a.	n.a.
Student (%)	9.4	n.a.	n.a.
Job-less (%)	9.2	n.a.	n.a.
Key Destinations			
Saudi Arabia	---	28.4%	n.a.
United Arab Emirates	---	22.2%	n.a.
Malaysia	---	12.6%	n.a.
Oman	---	9.0%	n.a.
Dhaka	---	n.a.	46.0%
Chittagong	---	n.a.	8.1%

*Adjusted for migration with no probable income opportunity i.e. student, marriage migration, etc.
'---' No information available
'n.a.' Not applicable
Source: Author's calculation based on Bangladesh integrated household survey 2011-12 (Ahmed, 2013)

Another notable finding from this current dataset is the pre- and post-migration employment scenario of the migrants. Afsar (2009) reports that pre- and post-migration unemployment rates are around 10% and 42% respectively. But in this large scale sample, less than 1% of the total respondents were unemployed before the migration and 9.2% of the past migrants were jobless at the time of the survey. Though there are differences in magnitude, the pattern of unemployment are similar that is the rate of unemployment among past-migrants increase after return from abroad. But this jobless scenario is not surprising because a large number of the return migrants want to migrate again with increased ambitions of higher income thus remain free to process migration (ibid).

4.2. Results: Impact on the Household Capabilities

Table 4.2-1 depicts the result of this regression model. The independent variables of the model are jointly significant at 1% level of significance. Individual statistically significant variables are the level of education of household head and head's spouse, number of female, female-headed household, religion, size of land five years ago, ownership of television and fan, and all three location dummies. This suggests that economically better off households are more likely to have a migrant member(s). Education and number of adult members have a mixed effect on the migration. Furthermore, geographically skewed distribution of migrants reported by Sharma and Zaman (2009) is also evident from this sample. Because all three location dummies for high migrant-producing areas are significantly positive.

Table-4.2-1. Determinants of migration

Dependent variable: Dummy=1 for households with migrant			
Independent variables	**Estimated coefficient**	**Standard Error**	**P-Values**
Household head's education	0.055	0.024**	0.023
Household head's spouse education	-0.163	0.029**	0.000
Number of adult Male	-0.148	0.143	0.303
Number of adult female	0.393	0.116**	0.001
Number of male with primary education	-0.021	0.110	0.846
Number of female with primary education	0.102	0.100	0.310
Maximum education among adults	0.015	0.026	0.578
Dummy=1, if household head is a crop farmer	0.251	0.139*	0.070
Dummy=1, if household head is a wage labourer	-0.751	0.298	0.012
Dummy=1, if household's religion is Islam	0.818	0.283**	0.004
Dummy=1, if household head is female	1.507	0.189**	0.000
Size of homestead 5 years ago	0.009	0.008	0.222
Size of all other land 5 years ago	0.003	0.001**	0.000
Dummy=1, Electric fan ownership	1.008	0.145**	0.000
Dummy=1, Television ownership	0.302	0.146**	0.039
Distance of nearest town, Bus stop, or railway station in km (minimum one)	-0.002	0.019	0.905
Distance of nearest hospital or health care centre in km	-0.005	0.014	0.750
Dummy=1, if household from Chittagong	2.156	0.194**	0.000
Dummy=1, if household from Dhaka	0.722	0.197**	0.000
Dummy=1, if household from Sylhet	1.115	0.244**	0.000
N=4826 Chi-square=764.131** Overall Prediction of the model 92.9%, for migrant it is 25.6%. Pseudo R-square .342			

** & * denote estimates are significant at 5% & 10% level of significance respectively

According to supplementary and diagnostic statistics of PSM, there are no variables (covariates of the PSM) exhibiting high imbalance i.e. larger than 0.25 standardized mean difference (this threshold is suggested by Rubin and Thomas (2000)). Moreover, new matched samples are well balanced. However, due to exact matching of some key variables, sample size reduced drastically. To be precise, 209 households are discarded out of 387 treated households after keeping only 178 migrant households in the matched sample. On the other hand, 312 households are picked from the non-treated group of 4439 households. Although the matching ratio (non-treated & treated) of this study was 3:1, this current survey sample doesn't have that many matches. It indicates that it is the best possible sample size constructed from BIHS dataset using the current multi-level model of PSM. This reduction of sample size is a very common mechanism in PSM which brings high variances but, at the same, time reduces bias (Stuart, 2010). In a word, it's a trade-off between variance and bias. Moreover, reduced sample size is also no longer nationally representative rather more symptomatic to the treatment of international migration.

Table 4.2-2 exhibits means of the outcome (functioning) variables stratified between migrant and non-migrant households. Moreover, the mean differences and independent t-test results are also exhibited which indicate the statistical significance of the estimated difference between the groups. As some of the selected outcome variables are categorical in nature, mean and the differences doesn't give any comparable picture. These variables are analysed by calculating the relative proportion of the households in each category.

Table-4.2-2. Impact of migration on household level outcomes

Outcomes	Matched Migrant Households	Matched non-migrant households	Difference	t-statistics
Weekly per-capita food expenditure	385.84	285.13	100.71	5.636**
Weekly per-capita food expenditure in fish & meat	88.53	55.23	33.30	4.713
Annual per-capita food consumption from own production in kg	134.21	106.19	28.02	1.096
Change in homestead during last five years, in decimal	3.26	2.07	1.19	1.658*
Change in other land ownership during last five years, in decimal	29.65	19.58	10.07	1.786*
Number of person living per room	3.45	3.72	-.27	-1.928*
Annual housing expenditure	18741.52	9826.60	8914.92	2.919**
Annual per-capita medical expense (male)	4,294.75	2,526.90	1,767.85	1.671*
Annual per-capita medical expense (female)	4,693.23	2,231.10	2,462.13	3.535**
Annual expenditure on clothing	2,576.53	1,591.16	985.37	7.794**
Annual expenditure on Recreation and leisure	164.80	103.27	61.53	1.527
Annual expenditure on personal articles i.e. jewellery, wallets, etc.	553.39	134.53	418.86	3.194**
Average number of member use cell phone	1.19	.83	.36	5.597**
Total value of shocks (last 5 years)	124,127.85	100,261.78	23,866.07	1.206
Annual per-capita educational expense (boy students)	3,794.55	1,838.48	1,956.07	2.953**
Annual per-capita educational expense (girl students)	2,578.10	1,831.66	746.44	1.962*
Average weight in kg of Lactating members	47.42	45.67	1.75	1.033
Average weight in KG of Pregnant women members	49.34	49.51	-.17	-.055
Average weight of children born in 2008	12.85	12.75	.099	.202
Average current household asset (consumption only type)	55,352.30	21,540.97	33,811.33	6.336**
Average current household asset (Productive only type)	248.26	177.08	71.18	.330
Average household total Savings	39,259.92	10,484.61	28,775.31	5.129**
Average household total outstanding loan	105,975.51[A]	30,442.19	75,533.32	5.530**

** & * denote estimates are significant at 5% & 10% level of significance respectively
A Out of total outstanding loan BDT 36,643 was taken for international migration
Note: All figures in Bangladeshi Taka except otherwise stated
Source: Author's calculation

This table essentially shows the differences in the outcome variables between migrant and non-migrant households that have the similar characteristics. As migration is considered for the period of last five years from the survey date, these differences show the cumulative effect of the migration for this entire period. Some key findings from these results are as follows:

First, per capita food expenditure of migrant household is significantly higher. It's commonly argued that migrant households have less household food production. Thus they tend to depend more on purchased food. But this result shows that food consumption from own production is also higher. Though it is not statistically significant, the common idea of migration leads to less household food production is not evident here. Moreover, food expenditure on meat and fish- the proxy for food quality- is also higher for the migrant household.

Second, the results of this study exhibit that average non-food expenditure on clothing and jewellery and number of person using cell-phone are significantly higher for the migrant households. These results are similar to the previous results estimated by Sharma and Zaman (2009) which indicates that migrant households have higher expenditure in clothing. However, in another key indicator of social acceptance, recreation expense, there is no statistically significant difference exist between the groups evident.

Third, per-capita education expenditure spent on the boy and girl students are significantly higher for the migrant households. But the comparative gap between boy and girl students from the migrant and non-migrant

households suggests that boys are getting higher priority or probably better education in the presence of migrant member(s). This result is opposing with the findings of Raihan *et al.* (2009) where they report remittances have a higher positive effect on girls' education. However, overall expenditure rise on education conforms with the past results of Kuhn (2006) where author exhibits that children from migrant households have a higher level of educational attainment.

Forth, the level of overcrowding in the house is almost similar irrespective of the migration status. But the expenditure on housing is higher, and the conditions of the houses are relatively better for migrant households. Around 30% of non-migrant respondents live in very damaged or in a poor state, while only 11% of the migrant household lives in the same condition. Moreover, 62.4% of the migrant household have own tube-well for safe drinking and other purpose water, while this rate is only 38.1% for the non-migrant. Again in the use of latrine, both of the groups have an almost similar pattern. Overall, migrant households have better and hygienic space for living. These findings are also in accordance with the results estimated by Raihan *et al.* (2009) where the authors report that housing related expenditure through remittance is significantly high for the migrant households. House construction expense commonly treated as non-productive use of remittance (Russell, 1986) but it might produce a high multiplier effect on the local economy and create a favourable environment for productive investment by other community members. However, excessive spending on non-tradable like housing and land might increase the risk of Dutch disease (Kapur, 2003).

Fifth, it appears that average weight of pregnant-, lactating women and children born in a particular year doesn't have any significant differences between migrant and non-migrant household. Overall mean weights of pregnant and lactating women are similar to the national average of 48.5 kg (Islam *et al.*, 2006). However, per-capita medical expenditures of male and female are significantly higher for the migrant households. More importantly, women from the migrant households get absolutely more medical attention. This finding also conforms with the medical expenditure regression results found by Raihan *et al.* (2009) where the coefficient of gender dummy reveals females of remittance-receiving household get more portion of medical expenditure. There is another dimension of migration health connections which is not considered in this study. Mercer *et al.* (2007) have found that approximately 66% of overseas male migrant had experienced 'unsafe' sex with a female sex worker or another male partner during their stay abroad. This risky behaviour of male migrants might put themselves and their wives at risk of HIV or other sexually transmitted diseases.

Sixth, it is commonly assumed that prevailing large male-dominated migration from Bangladesh brings extended freedom and economic participation of the left behind women. But the result of this study doesn't reveal extended women involvement in economic activities. Women's participation rate in an independent business or any other sort of work is 47.4% of total respondents from non-migrant household, while the rate is 41.2% for migrant household. However, women from migrant households might opt not to involve in additional economic activities due to their better economic position or avoid due to lack of supporting male partner. So, besides participation ratio, decision-making behaviour of the households needs to consider to get a clearer picture. Hadi (2001) has conducted a research exclusively focusing on this issue and found a significant positive association with male migration and women decision-making capacity. This study segments the household decision-making decisions into five categories, such as food, housing, health care, education, and clothing. Overall, women from the migrant households are more active in all sort of decision making in compare to the women from non-migrant households.

Finally, wealth position of migrant households is improved significantly over the period of migration with a larger positive change in the land, total savings, and total household asset. On the contrary, migrant households had significantly high level of outstanding debt, of which 35% is directly caused by the international migration, and faced higher economic shocks in the last five years. It is consistent with the characteristics of the migrant household discussed earlier that is a large portion of migrant uses borrowed fund to migrate. Furthermore, Sharma and Zaman (2009) have asserted that remittance-receiving households are more creditworthy, which is also indicative in this

study, thus they might have high access to loan and tendency towards high mobilization of funds. Another insight of the present results is that 89.1% of international migrant sent regular remittance (table 4.1-1). Even if it is assumed that they sent enough remittance to cover initial expenses, still around 14% failed completely to remit anything in the last one year from the survey date. This figure along with the level of outstanding debt indicates that some of the households might push down to income poverty as well as reduced functionings due to migration rather pulled out. Das *et al.* (2014) have also reported that migration robs household opportunity to move out from income poverty in many instances. This risk is also prevailed even for the migrants who send regular remittances. Afsar (2009) has found that 45% of the migrant sent remittance that is not enough to offset their migration cost. So, the high level of asset position of migrant household is not very conclusive due to a high level of average loan and economic shocks. More importantly, the higher level of capability achieved by migrant households that evident in this study may not be persistent over the long run in the event of remittance cut.

By and large, it is evident that migrant households, on an average, have a better position in both 'well-being' and 'social relations' dimensions of capability, thus confirm both of the hypotheses posed in section 1. Higher expenditure in most of the outcome variables by the migrant households compare to reference group Implies that overall liquidity position is better for them. Moreover, migration is also changing the patriarchal society to more equitable one by altering the intra-household decision-making dynamics. However, migrant households are also exposed to higher outstanding debt and economic shocks. Therefore, interruption of regular flow of remittance might affect the households severely. This risk is further deepened by the expenditure decomposition of international remittance. Out of all international migrant households 58.82% respond that they have to cut consumption if regular remittances stopped. So, both of the hypothesis might be proved wrong i.e. no or negative effect of migration on household capability. As this study used cross-sectional survey, it can't conclude anything about the sustainability of the achieved capability. The results also confirm the geographically skewed nature of migration and remittance.

5. CONCLUSION

This study was motivated by the optimistic view regarding the impact of international migration on the household poverty and economic development in Bangladesh. This optimistic view primarily hails from the studies that confirm rural household experience significant income increment through migration. However, income solely is an inadequate measure of development due to its certain limitations such as market inefficiency, people's capacity of converting income to functioning, multidimensional source of deprivation, etc. This intellectual process led the research questions and structure of the study that introduced in chapter one.

Literature review section in chapter two endeavours to outline the theoretical and conceptual framework of this study. It starts with a brief discussion regarding the effectiveness of migration and related remittances in economic development, poverty reduction, and capability expansion where it is evident that further research is needed to conclude about the impact of temporary migration. In the subsequent segment, the rationale for using capability approach in migration studies is presented which indicated the research lacuna in capability measurement. The final section of the chapter presents the technical difficulty of capability measurement and discusses justification of using matched sample that estimates the differential effect of migration on some outcome variables of the migrant and non-migrant households.

By considering the need for impact reassessment and the research gap, this study proceeds to formulate an econometric model to estimate the capability of rural migrant households. The household information is taken from Bangladesh Integrated Household Survey (BIHS) 2011-12. The total number of sample is 5219 with 429 sub-samples of migrant households. It is assumed that having migrant member is similar to the treatment. Thus comparison is made between migrant and non-migrant households if some particular characteristics were found

similar for both groups. The framework developed by Lord Desai (1995) is used to operationalize the theoretical capability approach. The key question this study tries to answer is:

- How well migrant households are utilizing expanded resources from migration in attaining capabilities especially in the 'well-being' and 'social relations' dimensions'?

The descriptive statistics of full sample and comparative results of the matched samples are provided in chapter four. It is evident that migration has positively carried out a higher level of capabilities and functionings i.e. 'well-being' and 'social relations' for migrant households compare to non-migrant households. To be precise, migrant households have a higher level of food consumption, housing and sanitation, education expenditure, medical expenditure, social acceptance, communications, etc. Moreover, women have better decision-making authority that indicates the change of social process. However, the migrant household has a higher level of debt (approximately 1/3 of this loan was taken for migration) and economic shocks. Findings from the past studies regarding the failure of migration's loan repayment (Afsar, 2009; Rahman, 2015) laid some uncertainty about the sustainability of the positive capability and functioning achievement.

Grounded on the empirical findings of this research several conclusions can be drawn. First, migration status increases the 'standard of living' of the households which is consistent with the previous conclusion made by Sharma and Zaman (2009). Moreover, the position of women within the household is also improved, again it is consistent with previous research conducted by Hadi (2001). This study exclusively attempts to incorporate Capability Approach in migration study of Bangladesh and finds that household capabilities and functionings are improving with the prevalence migrant member(s). However, capability measurement procedures followed in this study can be extended in the future by using fuzzy set to capture stochastic uncertainty.

Second, outstanding loan of the migrant households is significantly higher than the non-migrant household that means they are exposed to higher financial risk. While this research only captures the functionings at present by using cross-sectional survey data, time dimension might change the outcomes. Further research needs to be done by using multi-level survey (base line and end line survey) data to capture the debt repayment adjusted capability attainment through migration. Moreover, even with the same characteristics, some household might choose to migrate while other might not be due to their risk-taking behaviour i.e. self-selection. This dimension can be captured in further research by constructing the sample from the list of individual who applied to BMET for migration. If every individual of the sample has the desire to migrate and has similar household characteristics, then matching will provide an unbiased estimation of the impact.

Finally, international migration is geographically skewed because recruiting agents usually prefer narrow social channel (Sharma and Zaman, 2009). Moreover, a significant portion of temporary work visa comes directly through the relative network (Buchenau, 2008). Further research can be done from the policy perspective to suggest policy to smooth this geographical skewness of migrant distribution to allocate the migration and related benefits throughout the country.

5.1. Limitations of the Study

There are three key limitations of this study. By far the most severe limitation is the measurement of the capability. Though this study tries to quantify functionings rather capability which is also not easily quantifiable (Robeyns, 2006). Capability in its true form is the assessment based on the degree of freedom people have to promote and functioning they value most, but the relative valuation of funcitonings are not addressed in this study. The other limitations lie in the nature of survey and methodology. Although BIHS is quite a comprehensive survey, there are some missing questions which are very relevant for this particular study. Presence of those essentially improves the matching as well as result estimation. Finally, PSM procedure may not be able to reduce the self-selection bias completely. Clustering based on observable covariates doesn't necessarily mean household will be in

any particular group i.e. treatment or control group, because they might have other considerations which are observable but not observed or unobservable. Thus, it remains as a limitation of this study.

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