

MICROECONOMIC IMPACT OF REMITTANCES AT THE HOUSEHOLD LEVEL IN A REMITTANCE RECEIVING COUNTRY, BANGLADESH

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Abstract

Purpose of the study: This paper aims to investigate the microeconomic impact of remittances at the household level in Bangladesh, which is one of the top remittance receiver's countries in the world. The microeconomic factors, which have been include in this research, are per Capital consumption, per Capital food expenditure, poverty rate, health expenditure, education expenditure, and calorie intake.

Methodology: The propensity Score Matching (PSM) technique has been applied to present the issue of self-selection associated with the migration decision and the scope of the receiving remittances. Based on the survey results of Household Income and Expenditure Survey (HIES) 2016 conducted in Bangladesh, this study includes the Microeconomic impact of remittances on the household level in Bangladesh including some variables such as the size of household, food calorie, expenditure on health and education, etc.

Main Findings: Results show that the remittances have a significant microeconomic impact at the household level in Bangladesh. However, some of the findings are consistent with previous studies, while some others are not. Implications of the study have been discussed along with the concluding remarks.

Applications of this study: The study can be useful for the government and house decision-makers to utilize the remittances sent by expatriates at the household level.

Novelty/Originality of this study: There are no recent studies on the microeconomic impact of remittances at the household level in Bangladesh using the most recent survey, i.e. Household Income and Expenditure Survey (HIES) 2016. Previous studies were conducted based on Household Income and Expenditure Survey (HIES) 2010. Hence, this study contributes to the body of knowledge with recent variations on the microeconomic impact of remittances at the household level in a remittance-receiving country.

Keywords: *Microeconomics, Remittances, Expenditure, Household Level, Government, Bangladesh.*

INTRODUCTION

Bangladesh is one of the top remittance-receiving countries. The contribution of remittances into the economy of Bangladesh reached a record of \$16.4 billion in the 2019 fiscal year (FY), a growth of 9.8% from FY2018 ([World Bank 2019](#)). The inflow of the remittance will be continued for the next years and, therefore, the government of Bangladesh has identified remittances as one of the strongest pillars for the economic growth of the country ([World Bank 2019](#)). According to [Orrenius, Zavodny, Canas & Coronado, \(2010\)](#), remittances support the generation of employment and developing the number of foreign reserves. It is further supported by the [World Bank \(2019\)](#) that remittances have been accelerating the economic growth of the country by increasing investment as well as consumer demands, including higher-level savings. Therefore, an increasing trend and interest in the case of research associated with migration, remittances, and investment have been examined among academicians as well as government policymakers. However, it is also argued that remittance has a negative impact on the recipient economies ([Amuedo-Dorantes & Pozo, 2004](#); [Acosta, Calderón, Fajnzylber & López, 2008](#)).

Remittances are like capital inflows that balance the exchange rate in the recipient countries and create a significant allocation of resources in both tradeable and non-tradeable sectors ([Amuedo-Dorantes & Pozo, 2004](#); [Acosta et al., 2008](#)). Furthermore, [Antén \(2010\)](#) also argued that remittance has a positive influence on short and middle term child nutritional statuses; however, no real impact is found in the long term. According to [Chalise \(2014\)](#), remittances do not impact on entrepreneurial development and activities and, therefore, remittances have a lower possibility of creating a strong base for the future economy of a country. However, [Bayar \(2015\)](#) found that remittance as the most effective economic source for the economic development of many countries, which receive remittance. Similarly, [Kakhkharov \(2019\)](#) also found that remittance can be of paramount importance for rural areas to overcome financial challenges and fund small businesses and special projects that would contribute to the household's welfare.

However, the remittances have a significant relationship between migration and microeconomic factors, particularly relating to the welfare of the household in the recipient country ([Quartey, 2006](#); [Wadood & Hossain, 2017](#)). The remittances have also positive contributions at the household level is also further supported by the study conducted by [Munyegera & Matsumoto \(2016\)](#), who found that remittance impacts positively on household welfare in Uganda. Besides, the New Economics of Labour Migration (NELM) also confirms that migration has a significant impact on household strategies to manage and overcome market failures, for example, insurance markets and imperfect credit. According to [Taylor \(1999\)](#), the remittances have a multiplied impact on employment, income, and production in the

migration sending country. However, there has been a lack of contemporary empirical data on the microeconomic impact of remittances on household welfare. It is also dearth in the case of Bangladesh, which was the eighth remittance earning country in the world in 2019 ([World Bank 2019](#)). Furthermore, the country has developed training centers to train its people who would be willing to go abroad for work which will also boost remittances soon ([Hasan, 2018](#)). Therefore, it is now vital to understand about the microeconomic impact of remittances on household welfare in Bangladesh so that it can fulfill the literature gap relating to this burning issue, as well as offer feasible recommendations for different policymakers.

LITERATURE REVIEW

Workers' remittances have been recognized as one of the highest incomes for many countries that have already been identified in previous studies where some of the researchers also found that there was a significant impact on household levels ([Siddique, Selvanathan & Selvanathan, 2012](#); [Sikder & Higgins, 2017](#); [Das & Chowdhury, 2019](#)). The [World Bank \(2019\)](#) also argued that the remittances sent by expatriates had a positive influence on the economic and social development in a country. Furthermore, it was also argued that the remittances not only brought monetary flows into the economies but also technologies and investments which result in new enterprises over the periods ([Orrenius et al., 2010](#)). Remittances have also been effective in the case of education, farming, livestock, and the development of new organizations ([Regmi, Paudel & Mishra, 2016](#); [Arif, Raza, Friemann & Suleman, 2019](#)). Moreover, [Zhunio, Vishwasrao & Chiang \(2012\)](#) found the significance of remittances in improving primary and secondary school attainment. This finding was also supported by the study conducted by [Calero, Bedi & Sparrow \(2009\)](#) who found that remittances enhance the enrolment of students at primary schools and also decrease incidences of child labour, particularly for girls in rural areas.

On the other hand, the remittance also has an impact on household levels, as well as in the case of welfare ([Cuecuecha & Adams, 2016](#); [Kangmennaang, Bezner-Kerr & Luginaah, 2018](#)). Furthermore, remittance is also identified as a positive contributor to the development of the living standards of the people who receive the money ([Chezum, Bansak & Giri, 2018](#)). [Quartey, Ackah & Lambon-Quayefio \(2019\)](#) also identified that households' propensity to save money is significantly enhanced when remittances are received. Furthermore, the studies conducted by [Amakom & Iheoma \(2014\)](#) and [Chezum et al. \(2018\)](#) confirmed the significant impact of the remittances on health measurements. However, [López-Cevallos & Chi \(2012\)](#) reported a lack of relationships between the migrant remittances and preventative health measures. People who receive remittance from expatriates seemed to be high in saving funds compared to other people, only domestic remittances ([Quartey et al., 2019](#)). As a result, the living standards of the people receiving remittances become better over time, bringing about the motivation for them to open new enterprises based on their savings ([Black, King & Tiemoko, 2003](#)). This result is also confirmed by [Adaawen & Owusu \(2014\)](#), where they found the remittances are normally used to make productive investments, for example in the case of farm investments and purchasing land, as well as establishing new smaller enterprises. Moreover, [Adams Jr & Cuecuecha \(2010\)](#) found positive support for remittances to increase levels of investment in the people, as well as physical capital in the countries that receive remittances. This is further confirmed in the study conducted by [Hines & Simpson \(2019\)](#) in that households spend a slightly bigger part of the budgets on investment projects when they receive remittances.

However, [Abubakar & Folawewo \(2019\)](#) identified that the impact of the aggregate of food, cash, and other remittances on household investments is chequered in the rural and urban areas and the geo-political zones of Nigeria. However, [Kamal & Rana \(2019\)](#) found little effect of remittances on the expenditure at the household level while income from international remittance tended notably effective in household welfare. Therefore, [Kamal & Rana \(2019\)](#) have argued that better utilization of remittance income should be ensured through respective policies and strategies, particularly in the domestic economic environment and organizations. Thus, there have been inconsistent results and contradictory stances in trying to reach a conclusion regarding the influence of remittance on household levels in Bangladesh, one of the major countries receiving remittances every year. Hence, this study is going to fill the gap by providing updated empirical data for academicians, as well as policymakers, in order to take respective initiatives so that the remittances can be used in a better way in terms of household levels.

METHODOLOGY

A matching approach, following the research conducted by [Wadood & Hossain \(2017\)](#), has been applied in this study to overcome the changes in estimating the casual influence of remittance on household welfare by addressing some selected issues. In this regard, the households receiving remittance are included to evaluate the 'average treatment effect of treated' (ATT) ([Becker & Ichino, 2002](#)). It contributes to making a comparison between the remittance recipient households and non-receiving households to reduce the self-selection bias. However, there are always selective issues that complicate studies that attempt to measure the influence of remittances. In this respect, most of the studies are currently non-experimental, and very few of them have applied the appropriate method to deal with the selection issues. However, to overcome these issues, the propensity matching estimators devised has been used ([Rosenbaum & Rubin, 1983; 1985](#)) because there are issues of unobserved heterogeneity. In this process, every treated observation, such as household receiving remittances, is matched to a specific number of controlled observations, for example, in households not receiving remittances. Thus, the authors of the study calculated robust estimators to determine the effect of remittance at household levels.

However, two significant assumptions are made for matching estimators, such as the conditional independence assumption (CIA) and common support. In this respect, we denoted $D=1$ particularly when households receive remittances while $D=0$, if not. The term $Y(1)$ has been denoted as the outcome for the recipients, while $Y(0)$ is denoted as the non-recipients of remittances. It is very significant to mention that the outcome variables include consumption per capita, per capita income, and poverty status. Furthermore, the X denotes a set of socio-demographic variables. Therefore, assumptions have been presented below as:

$$Y(0) \perp Y(1) \perp D | X$$

$$0 < p(D=1|X) < 1$$

The conditional independence assumption (CIA) outlines X , which covariates X which are not influenced by the treatment, such as remittance recipients. In this respect, the P , the potential results, are orthogonal to the treatment projects. However, the assumption set of every household, which is receiving remittances should be similar or matched to the household, which does not receive any remittance to construct the counterfactual. Therefore, after the preparation of all assumptions, the average effect can be calculated between $D=1$ and $D=0$. On the other hand, to avoid the computational problems for dimensionality, a statistical comparison by estimating the propensity score is provided against the set of the covariates X . Therefore, the non-recipients and recipient groups are matched based on the propensity score. Thus, the assumptions are prepared as below:

$$(0)(1) \perp D | P(X)$$

$$0 < (D=1|P(X)) < 1$$

In this respect, $P(X)$ is the propensity score of receiving remittance of X . Thus, the process of matching is called the propensity score matching (PSM). Generally, this particular method outlines, if remittance-receiving is independent of covariates, outlined X , it is independent of the $P(X)$. Thus, the dimensionality problem becomes one dimension ([Dehejia & Wahba, 1999](#)).

The probit model, which contributes to calculating propensity score, is subject to all observable covariates to determine to receive remittances in this regard, the Estimation of observation $T=1$ and $T=0$ and the possibility of receiving remittances as well as testing balance property ($P(X|D=1)=P(X|D=0)$). When the balancing property is satisfied based on propensity score estimation, an estimation to gain ATT from the univariate nonparametric regression will be carried out between the households receive remittances and the non-receiving household of remittance. It is outlined below:

$$ATT = E[Y(1) - Y(0)|D=1] = E[Y(1)|D=1] - E[Y(0)|D=1]$$

Furthermore, to gain robust ATT, three types of matching criteria will be used in this study. In this regard, the nearest-neighbor matching criteria would be used to match the households (remittance recipients and not recipients) with the closest propensity scores. Furthermore, the kernel matching criterion has also been applied for the determination of the counterfactual match of every household, which gets remittance. Moreover, the stratification criterion to match treated observations with control observations has also been used to separate the findings into different segments matching similar findings with every segment. Moreover, it is very much significant to outline that the treatment effect in the process of the propensity score matching could be calculated incorrectly ([Heckman et al., 1998](#)). Therefore, bootstrapping standard errors with 100 replications were evaluated for matching criteria, stratification, and kernel.

The data to present the impact of the microeconomic impact of remittances on household levels has been taken from the Household Income and Expenditure Survey (HIES) 2016. This includes the data for the internal, domestic, and international migrations, as well as socio-economic aspects of migrants' households. Thus, these variables would be applied to estimate the propensity scores which have been listed below following the study of [Wadood & Hossain \(2017\)](#) who conducted it based on the HIES 2010 (the survey has completed in one complete year (1st February 2010 to 31st January 2011) ([International Household Survey Network, 2019](#)). Therefore, our study conducted based on the HIES 2016 would provide contemporary and more updated information on the microeconomic influence of remittances at the household level in Bangladesh. Therefore, this research will provide the most updated results for academic literature and policymakers. Variables, which have been used to estimate propensity score, include the size of households, access to mobile, access to the telephone, access to electricity, and household head's education level.

RESULTS AND DISCUSSION

Firstly, the empirical results from the Estimation of the propensity score have been entered in the following table where results are presented from the logit regressions.

Table 1 illustrates the results that household size is a significant variable, which affects the potentiality of receiving the remittance. It is also similarly found that the mobile electricity factor is also significant as it impacts positively to receive remittances. On the other hand, the telephone of the household's head did not have much of an impact on receiving remittances. However, household head's education shows a positive impact to receive remittances, which is different from the results of [Wadood & Hossain \(2017\)](#), conducted on the HIES 2010. In this regard, it can be said that there have

been significant changes in the education rates in Bangladesh where adult education has also been improved; therefore, the expatriates' confidence to send money to the educated head could be improved for better utilization.

Table 1: Results for the propensity score matching (Logit Model)

Variables	Household Received any type of Remittance	Household Received internal Remittance	Household Received foreign Remittance
Size of Household	0.000255** (5.87e – 05)	0.000140*** (4.10e – 05)	0.000175*** (4.95e – 005)
Mobile	0.724** (0.612)	0.142** (0.0488)	1.024*** (0.0788)
Telephone	-0.0425 (0.122)	-0.0325 (0.102)	-0.0461 (0.132)
Electricity	0.134** (0.0531)	-0.685 (0.0495)	0.134** (0.0531)
Education of Household Head	0.0161*** (0.00478)	0.00760 (0.00522)	0.0122*** (0.00495)

Note: Robust Standard errors in Parentheses***P≤0.01, **P≤0.05, *P≤0.1.

Table 2: All kinds of remittances (Internal and External)

Per Capita Consumption					
Matching	N (Treatment)	N (Control)	ATT	Standard Error	t
Nearest neighbour	1500	1000	496.82	133.80	3.98
Stratification	1500	10,116	721.34	84.62	7.75
Kernel	1500	10,116	649.94	81.19	7.96
Per Capita Food Expenditure					
Nearest neighbour	1500	1000	233.87	42.14	6.42
Stratification	1500	10,116	267.86	33.21	8.96
Kernel	1500	10,116	249.54	29.19	8.21
Poverty Rate (Upper Poverty Line)					
Nearest neighbour	1500	1000	-0.001	0.01	-2.56
Stratification	1500	10,116	-0.01	0.01	-7.90
Kernel	1500	10,116	-0.02	0.01	-7.56
Health Expenditure					
Nearest neighbour	1500	1000	1800.97	660.31	4.12
Stratification	1500	10,116	2056.92	634.65	4.16
Kernel	1500	10,116	1889.56		
Education Expenditure					
Nearest neighbour	1500	1000	1011.91	670.31	3.12
Stratification	1500	10,116	1356.83	784.65	5.16
Kernel	1500	10,116	1229.43	--	--
Calorie Intake					
Nearest neighbour	1500	1000	12.98	14.28	0.95
Stratification	1500	10,116	63.87	19.23	2.75
Kernel	1500	10,116	48.91	--	--

Table 2 presents the findings from the PSM matches based on different variables (outcome variables) and the model specifications. In this regard, firstly, we can see that per capita consumption is influenced by the remittances, which suggest that the matching algorithm, ATT, is significant and positive. Therefore, the remittances have had significant and positive differences between the matched treated (remittance-receiving and non-receiving). This is also largely similar to the results in the case of food consumption per capita. These results are consistent with the study conducted by

[Sikder & Higgins \(2017\)](#), [Das & Chowdhury \(2019\)](#), and [Siddique et al. \(2012\)](#) where they found the remittances as the significant source for the development of the economic outcome of a country. In this regard, it is very important that remittance has a significant impact to reduce of poverty amongst the recipient groups than the non-recipient groups. It is also noticed that the recipient households of the remittances suffer less than the non-recipient groups of remittances, which is consistent with the study of [Chezum et al. 2018](#)).

Furthermore, recipients of remittances spend more on their health, which is normal because they have more money than the non-recipient groups and are consistent with the results of the study of [Amakom & Iheoma \(2014\)](#). However, this is inconsistent with the study conducted by [López-Cevallos & Chi \(2012\)](#) didn't find any relation between remittance and health preventive measures. This study also found that education expenditure is more amongst the recipient of the remittances than the non-recipient groups. Moreover, it was also found that the influence of remittance on calorie intake is ambiguous but significant and positive, although it does not show much significance that is consistent with the results of [Regmi, Paudel & Mishra \(2016\)](#) and [Arif et al. \(2019\)](#). However, this particular result is in line with the results of [Wadood & Hossain \(2017\)](#) on the HIES 2010. It could be because people are now, i.e. after 10 years more conscious about education and, therefore, the remittance recipient groups of the people prefer to spend more on education. This scenario has been dramatically changed in the last decade in Bangladesh ([World Bank, 2019](#)).

CONCLUSION

Overall, the study investigated the microeconomic impact of remittances on household levels using Propensity Score Matching (PSM). The study provided significant insights and particularly found that remittance has a significant influence on house levels, for example, in the case of consumption, food, health and education expenditure, and calorie intake per capita. However, whilst the findings have been consistent with some previous studies while some were not so consistent for example the result on remittance recipient's spending on health of this study is inconsistent with the study of [López-Cevallos & Chi \(2012\)](#). Furthermore, the result on the calorie intake of this study is ambiguous but positive is consistent with the study conducted by [Regmi, Paudel & Mishra \(2016\)](#) and [Arif et al., \(2019\)](#). Therefore, the findings of the study provide a significant foundation for future studies to validate the contribution of remittances on the microeconomic aspects of countries where remittances are one of the major sources of national income. It is identified that Bangladeshi households receiving rematches are vastly benefited from by the remittances; however, better utilization of the remittances can contribute to the variables in a much better way. In this respect, the educational level of the household heads could be effective because they can use them properly and invest the remittances in profitable businesses. As a result, the income from the remittances will be increased, which could also contribute to the development of employment in the country. Thus, proper policies regarding the utilization of the remittances could be developed, including the recipients, who can be given knowledge, such as entrepreneurship knowledge to utilize the remittance, i.e. money to start a business to make the profit that would contribute to create employment as well as accelerate the flow of the economy. They should also be given information on investment opportunities in small and medium businesses or even company organizations. This could develop the monetary flow of remittance, which could enhance the overall economy. Furthermore, expatriates sometimes send money through the Hundi systems, which is detrimental for the nation that is dependent on the remittance because the government does not benefit from this system. Hence, the awareness of the detrimental aspects of the monetary factors should also be developed to obtain more economic benefits from the remittances at the national economic and microeconomic levels.

LIMITATION AND STUDY FORWARD

Since this study only includes some certain variables of a single country to examine the impact of remittance, the findings of the study, therefore, cannot be generalized for every country which receives remittances. However, future studies can be conducted by comparing between countries, which receive remittances to get more information on the microeconomic impact of remittances on the household level.

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CO-AUTHOR CONTRIBUTION

Md. Shahadat Hossain (me), i.e. himself, has developed the concept of the paper as well as an introduction while Lee Chin also contributed to developing up to a good journal publication. On the other hand, Md. Shahadat Hossain, Dr. Rusmawati Said and Dr. Suryati Binti Ishak have also contributed to writing the methodology, results and bring conclusion. In this regard, it is also very significant to mention that Associate Professor Dr. Lee Chin also contributed to the whole paper by making sure everything is in order.

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