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An Enquiry into the sluggish Growth of Workers’ Remittance Determinants: A Case of Comilla

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Abstract

The study focused on the importance of per capita and marginal productivity of remittance inflows in Bangladesh. Although remittance as a percentage of gross domestic products has stood above ten percent in recent times, the majority of Bangladeshi remittance earners are unskilled. Unskilled remittance remains a constraint for the development direction of Bangladesh that seeks to make a transition from a low income country to a middle income country. Based on cross section data, a multinomial logistic regression model was fitted to identify the significant inputs of skill development for remitters. Empirical results suggest that the log of remittance, the p-value is statistically significant. The study also found that skill development training and access to credit for remitters would contribute to maximizing remittance in the long run.

Keywords: Remittances, Labor Productivity Skills, Economic Growth

Introduction

Workers' remittance has become an important source of foreign currency earnings in Bangladesh. During the past four decades, Bangladesh received significant amount of workers' remittance. This remittance has played an important role in investment. Foreign exchange reserves have significantly stabilized Bangladesh's financial sector, which is now the second leading amount of capital inflows in Bangladesh (Bangladesh Bank, 2014). Taylor (1992) and Aggarwal et al. (2006) evaluated at both, international and national levels. Their study provides an insight into the relation between growth of the national economy and workers' remittance.

This study also supports the hypothesis that the development impact of remittances enhances the presence of sound macroeconomic policies and institutions. Iqbal and Sattar (2005) found that in the absence of worker remittances, it was likely that the macroeconomic determinants exchange rate, monetary and fiscal policies will come under pressure. The impact of workers' remittances on growth and poverty reduction in developing Asia-pacific was examined by Adams (2003) and Jongwanich (2007). Kundu et al. (2012) used a multiple regression model to estimate the real GDP and workers' remittance relationship. Results from a Johanson co-integration test provide evidence that GDP is most likely to have a long run relationship to workers' remittance.

According to the World Bank (2011b), about eight million Bangladeshi workers are currently working abroad. Each migrant remits back on average US\$ 1,672 per year per head. The corresponding figures for India and China are US\$ 4,843 and US\$ 6,112 respectively. These figures are indicative that the majority of the Bangladeshi wage earners are unskilled workers. World Bank statistics further reveal that over time the skill composition of overseas workers has become skewed towards semi-skilled and unskilled workers.

Barua et al. (2007) found that skill development can affect the growth of workers' remittance and the growth of remittance is associated with an increasing marginal productivity of remittance. Although the majority of Bangladeshi remittance workers are unskilled and semiskilled, they still dominate the overseas labour market of Bangladesh. This situation needs to change as Adams (2009) shows in his study. Increasing the total number of migrant workers and not

increasing their marginal productivity acts as a hindrance to progressive demands in the international labor market.

As new areas evolve a strategy to promote and increase labour in Technical Education and Vocational Training (TVET) become essential (ADB, 2004). Before a country pursues a labor-intensive growth strategy, it needs to take new strategies regarding marginal productivity of employment. Strategies for workers' remittance growth should be based not only on the analysis of the number of emigrant migration, but also on his/her skills. Thus, skill allied factors is an important role in giving access to employment opportunities and its measure by employment elasticity of labour, that is, percentage change in employment divided by the percentage change in the labour followed by Caillods (1994). The skill level and quality of the workforce will thus increasingly provide the cutting edge to successful competition in the global economy (ILO, 1998a).

Acceleration of economic growth and productivity of the labour market situation depends on skilled labor force. Mahmood (1992) observes that the maximum levels of gains from migration are achieved by skilled and semi skilled professional. Skilled migrants will typically earn more and may establish trade and investment links with their home country. This may contribute to economic growth directly or indirectly, but there is no official record in Bangladesh. These studies suggest that workers' remittances have positive effects on the economy of Bangladesh in terms of aggregate consumption, investment, reduction in current account deficit, external debt burden, and improve education/skills of the remittance workers'. It can be seen from workers' remittance determinants that focused on the importance of what are the essential allied factors of skill development for international migrant labour of Bangladesh.

The objective of our research includes an enquiry into the sluggish growth of remittance determinants in Bangladesh, for the purpose of a transition nation from a low income country to a middle income country. The remainder of this paper is organized as follows.

Emigrant Labor Remittance in Bangladesh

Remittance Recipients Countries

The export earnings of labor services in Bangladesh have been growing at a speedy rate from the early 1990s (BMET, 2013). Remittance as a percentage of GDP has stood well over ten percent

recently. Around eight million Bangladeshi expatriates in more than 140 countries signify the strength of Bangladesh in international migration (Bangladesh Bank, 2014). Bangladesh Bank is responsible along with other government agencies to internal and external balance in the economy. Labour surplus Bangladesh is one of the top ten labour-receiving countries in the world (World Bank, 2010). Top destination countries are India, Saudi Arabia, the United Kingdom, Kuwait, Oman, the United States, Malaysia, the United Arab Emirates, Italy, Jordan. According to World Bank (2011b), Bangladesh had the seventh position in top ten emigration countries and top ten remittance recipients in 2010 (billions, table no. 1).

Table no. 1. Top Remittance Recipients Countries in 2010 (Billions)

South Asia	Low-Income Countries	Developing Countries	World
India (\$55.0 bn) Bangladesh (\$11.1 bn) Pakistan (\$9.4 bn) Sri Lanka (\$3.6 bn) Nepal (\$3.5 bn) Maldives (\$0.0 bn)	Bangladesh (\$11.1 bn) Nepal (\$3.5 bn) Tajikistan (\$2.1 bn) Kenya (\$1.8 bn) Haiti (\$1.5 bn) Kyrgyz Republic (\$1.0 bn) Uganda (\$0.8 bn) Ethiopia (\$0.4 bn) Mali (\$0.4 bn) Cambodia (\$0.4 bn)	India (\$55.0 bn) China (\$51.0 bn) Mexico (\$22.6 bn) Philippines (\$21.3 bn) Bangladesh (\$11.1 bn) Nigeria (\$10.0 bn) Pakistan (\$9.4 bn) Lebanon (\$8.2 bn) Republic of Egypt (\$7.7 bn) Vietnam (\$7.2 bn)	India (\$55.0 bn) China (\$51.0 bn) Mexico (\$22.6 bn) Philippines (\$21.3 bn) France (\$15.9 bn) Germany (\$11.6 bn) Bangladesh (\$11.1 bn) Belgium (\$10.4 bn) Spain (\$10.2 bn) Nigeria (\$10.0 bn)

Sources: World Bank Migration and Remittances Factbook, 2011.

Bangladesh Overseas Employment and Remittances Profile

A dynamic aspect of Bangladesh overseas employment, semi/unskilled employment is emerging to take up a very important role in the remittance scenario. Bangladesh overseas employment size and total remittance in million US\$ can be seen from the Bangladesh Bank (2014). Total remittance of Bangladesh grew progressively from US\$ 381.18 million in 1980-81 to US\$ 12843.43 in 2011-12. In terms of calculated numbers, eight million Bangladesh's are currently working abroad. This suggests an added more than 200,000 emigrants to the total

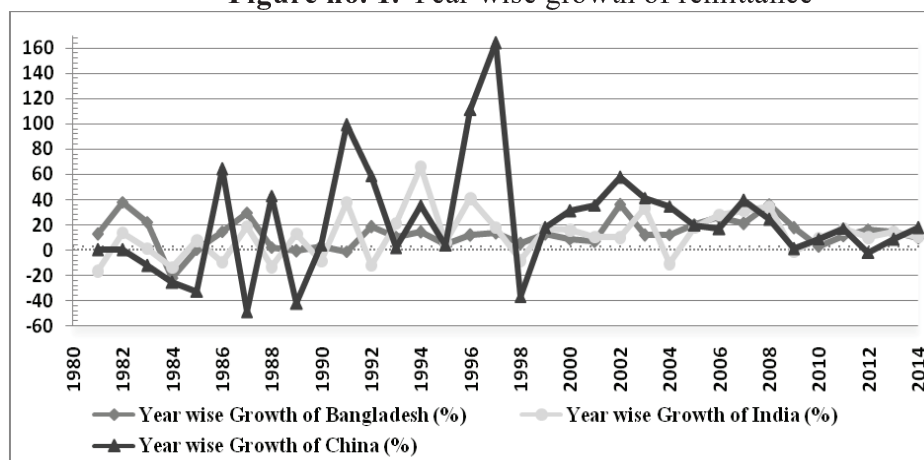
remittance workforce annually, and needed annually to maintain a stable growth of emigrant labour market.

In respect of sluggish growth of remittance, it grew tediously from about 9.78% in 1981-82, to about 10.24% in 2011-12. Similarly, remittance as a 1.99% of GDP in 1980-81 rose gradually up to 11.14% of GDP in 2011-12. While, remittance as a 56.33% of merchandise export in 1980-81 rose slightly up to 1988-89, but reduced mildly up to 2000-01, again rose slightly up to 52.03% of merchandise export in FY 2011-12 (Bangladesh Bank, 2013).

Growth of Worker's Remittance in Bangladesh

Workers' remittance inflows to Bangladesh are increasing at an average annual rate of nineteen percent in the last thirty years from 1979 to 2008 (Hussain and Naeem, 2009). The flow of workers' remittance increased steadily from US\$24 million in 1976, to US\$1949.2 million in 2000 and started to play a key role in the economic development of the country. However, from 2001, the trend shows a dramatic increase of four hundred percent to US\$9689.3 million in 2009 and US\$11.1 billion in 2010 (Bangladesh Bank, 2013). While the flow of remittances slowed down quite rapidly in the region as a result of the global financial crisis, the flow of remittances grew robustly by twenty four percent in Bangladesh during 2009.

Figure no. 1. Year wise growth of remittance



Source: World Bank 2015. *Migration and Remittances Factbook, 2015*. Washington, DC: World Bank. For latest data and analysis on migration and remittances, please visit <http://www.worldbank.org/migration>.

The year wise growth of remittance trends in Bangladesh, India and China are shown in figure 1.

As shown in the figure, on behalf of Bangladesh a significant sluggish growth rate (year to year) of these transfers started since 1980. The year growth of remittance in Bangladesh is maximum 38%, in India 66% and in China is 163%. The growth rate of remittance of Bangladesh is declining slowly in 1984, 1989 and 1991, but the per capita remittance rate of growth is sluggish comparable with India and China. The study focused on the quality of the semi/unskilled labor force.

Data and Methodology

Sources of Data

To analysis the primary data collected, quantitative technique is used to show the causes and effects of the factors on returns to workers' remittances of sub-urban and rural areas of Comilla District, Bangladesh. Given the sample size and distribution, it is clear that the survey is not intended to provide representative results of the whole emigrant in Bangladesh, but to provide a quick diagnostic check on skill allied factors for strong growth of remittances in Bangladesh.

The systematic sampling design that is used in the study is based on the geographical location and also determined the size of sample by using the appropriate formula. The most practical way of a 4% sample is desired, the first item would be selected randomly from the first twenty-five and thereafter every 25th item would automatically be included in the sample. Thus, in systematic sampling only the first unit is selected randomly and remaining units of the sample are selected at fixed intervals. Moreover, it is an easier and less costly method of sampling and can be conveniently used even in the case of large populations (Kothari, 1990). The primary data were collected from the respondents during the period between May and June, 2015.

The survey was conducted over two hundred respondents from the Comilla district. A structured questionnaire was prepared, that was filled up by direct interview. All filled-up questionnaires were fully scrutinized, the data thus collected were processed and analyzed to reach a conclusion, and one hundred and eighty were used as valid data in favor of research objective.

Analytical Framework

Logistic Regression Model

The advanced econometrics models such as multinomial logistic regression model are used and fit them to identify the significant factors of skill for remitters. The study used multivariate techniques to explore how to increase per-capita and marginal productivity of the remitters by allied factors, viz. multiple logistic regression models was used to identify the determinants of remittance growth. The model expresses a qualitative endogenous variable as a function of several exogenous variables, both qualitative and quantitative (Gujarati, 2004).

The reason behind the use of logistic regression model is that such model is helpful to predict the likelihood of factors options for selected variables to achieve high growth of remittances in Bangladesh.

Let Y_i denote the endogenous variable for the i^{th} observation.

Where $Y_i = \log$ of received workers' remittance

The linear probability model (LPM) was:

$$P_i = E(Y = 1 | X_i) = \beta_1 + \beta_2 X_i \quad (1)$$

Where, X_i is an exogenous variables and β_i 's the regression coefficients. Give a notation $P_i = E(Y = 1 | X_i)$ to represent the conditional mean of Y given X when logistic distribution is used. The method is to model the response using the logistic function given by:

$$P_i = E(Y = 1 | X_i) = \frac{1}{1 + e^{-(\beta_1 + \beta_2 X_i)}} \quad (2)$$

For ease of exposition, we write (2) as

$$P_i = \frac{1}{1 + e^{-z_i}} = \frac{e^{z_i}}{1 + e^{z_i}} \quad (3)$$

Where $Z_i = \beta_1 + \beta_2 X_i$ and Equation (3) represents what is known as the cumulative, logistic distribution function (Kramer, 1991). It is easy to verify that as Z_i ranges from $-\alpha$ to $+\alpha$, P_i ranges between 0 and 1 and that P_i is nonlinearly related to Z_i (i.e., X_i), thus satisfying the

two requirements¹. We have created an estimation problem because P_i is nonlinear not only in X but also in the β_i 's as can be seen clearly from (2). This means that we cannot use the familiar OLS procedure to estimate the parameters, which can be linearized shown as follows:

If P_i , the probability of skilled workers' remittance, is given by (3) then $(1-P_i)$, the probability of semi-skilled or unskilled workers' remittance is:

$$1 - P_i = \frac{1}{1 + e^{z_i}} \tag{4}$$

Therefore, we can write:

$$\frac{P_i}{1 - P_i} = \frac{1 + e^z}{1 + e^{-z_i}} = e^z \tag{5}$$

Now $\frac{P_i}{1 - P_i}$ is simply the odd ratio in favor of high growth of remittance – the ratio of the probability of high growth of remittance to the probability of low growth of remittance. If we take the natural log of (5), we obtain a very interesting result, namely:

$$\begin{aligned} L_i &= \ln\left(\frac{P_i}{1 - P_i}\right) = Z_i \\ &= \beta_1 + \beta_2 X_i \end{aligned} \tag{6}$$

That is, L , the log of the odds ratio, is not only linear in X , but also linear in parameters. L is called the logit, and hence the name logit model. For the purposes of estimation of the logit model, we write (6) as follows:

$$L_i = \ln\left(\frac{P_i}{1 - P_i}\right) = \beta_1 + \beta_2 X_i + u_i \tag{7}$$

To estimate (7), the values of the regressand, or logit, L_i . This depends on the type data we have analysis for data at the individual, or

¹ Note that as $Z_i \rightarrow +\infty, e^{-Z_i}$ tends to zero and as $Z_i \rightarrow +\infty, e^{-Z_i}$ increases indefinitely. Recall that $e = 2.71828$.

micro level. If we have data on individual families, OLS estimation of (7) is infeasible. $P_i = 1$, if growth of workers' remittance is high and $P_i = 0$, if growth of workers' remittance is low. These values directly into logit, L_i , we obtain:

$$L_i = \ln\left(\frac{1}{0}\right) \quad \text{if growth of workers' remittance is high}$$

$$L_i = \ln\left(\frac{0}{1}\right) \quad \text{if growth of workers' remittance is low}$$

Obviously, these expressions are meaningless. Therefore, if we have data at the individual, or micro, level, we cannot estimate (7) by the standard OLS routine. In this situation we may have to resort to the maximum likelihood (ML) method to estimate the parameters.

Empirical Logistic Regression Model

To estimate the model, a widely used multiple logistic regression frameworks are taken to separate out the effects of key socio-economic factors of explanatory variables impact on growth of workers' remittance. A consistent time series data on remittance skill allied factors are not available for this cases we take cross section data. Using the survey data, a logistic regression model has been estimated to examine how to growth of remittance based on various explanatory variables.

In the following analysis, Logistic regressions have been presented with the dependent variable as an indicator of the probability of being in remittance. Dependent variable dummy for three status of remitter (= 1, if a skilled workers' receive remittance '> TK. 50,000' for every month, otherwise a semi-skilled remittance is 'TK. 20,001 to 50,000' or unskilled remittance is '< TK. 20,001') have been included.

<i>Dependent Variable:</i>	
log of received workers' remittance	= 1, if a workers' receive skilled remittance, otherwise a semi- skilled remittance or unskilled remittance
<i>Explanatory Variables:</i>	
Age of remitter	'15-25 years', '26-35 years', '36-45 years' & '45+ years'
Sex of remitter dummy	Sex (1= Male, 0 = Female)

Education of remitters	'VoT', '< class 5', 'class 6 to 10', 'class 11 to 12' & '> class 12'
Years of emigrant	'1-5 years', '6-10 years', '11-15 years', '16 years' and 'Above'
Remittance Country	'Middle East', 'South East Asia', 'Europe', 'Africa' and 'Others'
Skill remitter dummy	= 1, if a remitter skill is used, otherwise
Skill training providers	'Government', 'NGO', 'Association' & 'IDA'
No. of dependent members	'<4 members', '4-6 members', '7-9 members', '10 members' and 'Above'
Professional service of remitters	'Welding/Electrician', 'Agricultural workers', 'Construction worker', 'Drivers', 'Cleaners', 'Company job', & 'Hotel employee'
Amount of loan	'< TK. 100,000', 'TK. 100,001 to 300,000', 'TK. 300,001 to 500,000' & '> TK. 500,000'
Sources of borrowing	'Relative/ Neighbour/ Friends', 'Mahajan', 'NGO' & 'Banks'
Collateral for loan	'Nothing', 'Land and building', 'Machinery and equipment', and 'Personal assets of owner'
Rate of interest annually	'Nothing', '< 15%', '15% to 20%' & '> 20%'
Cooperative bank dummy	= 1, if have idea of cooperative bank, otherwise

The expected sign of explanatory variables coefficients are positive and or negative respectively. The error term is assumed to be random and serially independent having zero mean with finite variance. In order to determine the appropriate technique of estimation, the empirical model is estimated by logistic regression method. The direction and the strength of between the explanatory variables and log of remittance variability are determined from the sign of the coefficient and significance of *t-statistic*. To verify the validity of the model, a major evaluation criterion were used, the a-priori expectation criteria,

which is based on the signs and magnitudes of the coefficients of the variables under investigation.

Analysis of the Results²

This analysis begins with an attempt to understand the relationship of allied factors of labour market and status of labour with full employed, under/unemployed. Since most modern statistical packages have routines to estimate logit models on the basis of ungrouped data, let us interpret the regression results using the data and estimate equations in the logit form of the regression results, calculated by *E-views 7* (Table no. 2).

Table no. 2. Determinants of Workers' Remittance Status: Results of Logistic Regression
Dependent Variable: Received Workers Remittance

Variable	Coeff.	Std. Error	t-Stat.	Prob.
Constant	-29.12	5.32	-5.47	0.00
Age of remitter	2.76	0.86	3.21	0.00
Sex of remitter dummy (male=1)	3.21	1.38	2.32	0.04
No of dependent members	0.98	0.42	2.33	0.04
Years of emigrant	1.92	0.51	3.76	0.00
Education of remitter	-3.16	1.07	-2.95	0.01
Country of remittance	4.21	0.73	5.73	0.00
Professional service of remitter	1.95	0.56	3.48	0.00
Skill of remitter dummy (yes=1)	2.62	0.49	5.31	0.00
Skill training providers	1.56	0.33	4.73	0.00
Amount of loan	0.87	0.26	3.35	0.00
Sources of borrowing	0.74	0.24	3.08	0.00
Collateral for loan	-0.69	0.25	-2.76	0.01
Rate of interest annually	-2.72	1.13	-2.41	0.03
Cooperative bank dummy	3.78	1.12	3.36	0.00
McFadden R-squared	0.73			
LR statistic (14 df)	91.47			
Probability(LR stat)	0.00			

²After operating analysis in software Econometric Views-7 have built-in routines to estimate the logit model at the individual level.

Each slope coefficient in this equation is a *partial slope* coefficient and measures the change in the estimated logit for a unit change in the value of the given regressor, assuming other regressors constant. The constant coefficient of -29.12 suggesting a relationship between the two variables show statistically highly significant with other variables constant, but negative sign means if an individual has no education, skills, training, money and others. Among the individual's characteristics, age of remitter and number of dependent members have expected influences. To capture the effect of gender, sex of remitter (male=1) have a significant impact on the received workers remittance, because female remitter participant rate is very tiny, and many female headed households receive remittance from male remitter.

Professional service of remitter and remittance country makes significant difference in growth of remittance and reflects the relatively higher log of remittance in Bangladesh. Specifically remitters' professional services ('welding/electrician', 'agricultural workers', 'construction worker', 'drivers', 'cleaners', 'company job', 'hotel employee') and remittance country ('Middle East', 'South East Asia', 'Europe', 'Africa') both are significant positive coefficients, and thus are making a larger contribution to the growth of remittance. Thus, the country of remittance coefficient of 4.21 means, with other variables hold constant, that if country of remittance increases by a unit, on average, the estimated logit increases by about 4.21 units, suggesting a positive relationship between the two. Similarly, Years of emigrant has a positive impact on growth of remittance in our equation, if a year of emigrant increases by a unit, on average the estimated logit increases by about 1.92 units.

The education coefficient of the remitter is negative and highly significant. The negative coefficient reflects that the relatively low educated workers are most of the emigrant workers, and when a person gets more education they are not working as workers in home and abroad determining a higher unemployment rate among the more educated. On the contrary, the coefficient of skill training providers ('Government', 'NGO', 'Association' and 'IDA') and skill of remitter of dummy form (yes=1) is positive and significant in the equation.

The amount of loan coefficient is positive and statistically significant. Similarly, the remitter may have sufficient scope for borrowing from 'relative/neighbor/friends', mahajan, NGOs and banks. Collateral for loan ('land and building', 'machinery and equipment',

‘personal assets of owner’) are not only obstacles. The rate of interest coefficient can have a significant impact on growth of remittance. The coefficient of cooperative bank of dummy form (yes=1) is highly statistically significant. Cooperative bank is likely to have a positive effect through its significant impact on log of remittance in Bangladesh.

However, together all the regressors have a significant impact on the log of remittance, as the LR statistic is 91.47, whose *p-value* is about 0.000, which is statistically significant. A more meaningful interpretation is *in terms of odds*, which are obtained by taking the antilog of the various slope coefficients. Whereas the McFadden R^2 (R^2_{MCF}) value is 0.73, although, this value is overplaying the importance of goodness of fit in models, where the regressand is dichotomous. Skill development needs for earnings will increase substantially if workers could be abroad fulltime employed with appropriate skills and trainings.

Summary and Conclusion

As indicated above, workers’ remittance plays a significant role in the promotion of targeted economic growth in Bangladesh. Despite the consequences, worker’s remittance spending on investment being low, even a small portion can help to alleviate liquidity constraints and directly contribute to growth. This is especially compelling for Bangladesh given that employment overseas helps somewhat in alleviating under/unemployment pressures at home. We anxious, however, low growth of worker’s remittance is the causes of weakness of the performance of the labor market. Deficiencies of skill and inadequacies of educational attainment are factors behind the low growth of remittance. It can be assumed that skill remittance factors might be significant in becoming skilled employed on particular sectors and particular top destination countries. We observed that skill employment is the predominant type of employment of farm and nonfarm sector, both in home and abroad.

The logistic regression result is difficult to predict on the basis of only empirical data. This empirical result suggests that log of remittance have been estimated to obtain the effect of significant coefficient of allied factors of remittance, which also might be found the most significant in case of skill development training and access to credit for remitters, other things remaining the same. There is a correlation between per-capita remittance and their skills which are complementarities for the growth process. The key features of the

strategy include need oriented, multitasking skill and flexible training to meet changing needs of potential industrialization, overseas employment and self employment.

A priori condition of growth and development is important of its allied factors, one of them is labour force which is required to quality maintained, and they have to ability in shaping nation for this necessity to access skill development allied factors that gather pace for remittance employment generation. We should set minimum standards of vocational training, financial scheme and its related facilities. Improvement should be carried out in quality of training of instructional and management staff. It is expected that, together with GoB, national/zonal NGO's and IDA (International Development Agency) will form part of the skills development revolution in Bangladesh. Thus, attention should be given to expansion of allied factors which incremental productivity of remitters in Bangladesh. Consequently, it can be concluded that a strong significant statistical correlation seems to exist with the number of emigrant workers and in the long run their skills will maximize remittance in Bangladesh.

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