

Thesis on
***Linkage between Migration Tenure and Remittance Transfer: Evidence
from Bangladesh***

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Declaration by the Student

I, Moumita Zarin, hereby declare that the work presented herein is original work done by me and has not been published or submitted elsewhere for the requirement of a degree program. Any literature or work done by others cited within this thesis was given due acknowledgement and has been listed in the reference section.

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Abstract

Migration and remittance both are critical to the development of Bangladesh. The nexus between migration outflow and remittance inflow have helped Bangladesh to balance between factor and financial market. The tenure of migration in the host countries has significantly positive influence on remittance transfer to Bangladesh. However, the rate of remittance transfer decay after certain years of migration. Using the log-linear ordinary least square model it is found that the optimum years of remittance transfer by an average Bangladeshi migrant are 16 years. After that, the rate of remittance transfer starts to decay with the length of migration. In this case, survey on use of remittance 2013 database which has developed by Bangladesh Bureau of Statistics is used.

Linkage between Migration Tenure and Remittance Transfer: Evidence from Bangladesh

Introduction

Bangladesh is one of the labour abundant countries in the world. Labour movement both within the country and outside is a common feature of Bangladesh economy. Historically, Bangladesh's gross national income (GNI) remains higher than gross domestic product (GDP); thanks to our overseas workers and their hard-earned remittance income. Unlike other developing countries, international remittance inflow, particularly, workers' remittance constitutes a major component of capital inflow to Bangladesh (Rahman *et. al.*, 2016). Over past four decades, remittance inflow to developing countries has increased manifold; from USD 0.3 billion in 1971 to more than 520 billion in 2018 (World Bank, 2018). At current state, a one-third of the global remittances are received by the developing countries. In commensurate with the global trend, remittance transfer has also increased in Bangladesh at the same period. For instance, in 1976, the remittance received by Bangladesh was about USD 0.023 billion which has reached to nearly USD 15 billion in 2018 (BMET, 2018). In fact, remittance inflow has outperformed the size of capital inflows e.g. foreign direct investment (FDI) and official development assistance (ODA) to support external financing to make import payments for Bangladesh. In terms of share of the GNI per capita in Fiscal Year 2018 remittance inflows for Bangladesh was about 6.3%, whereas FDI and ODA were only 1% and 0.5% respectively (World Bank, 2019). Besides, employable opportunities of workers in the host countries have helped Bangladesh to keep the unemployment rate under a manageable limit; in fact, to some extent to maintain the natural rate of unemployment at steady-state.

The migration-remittance nexus holds a critical significance to manage both micro and macroeconomic stability. Global evidence suggests that remittance inflow plays a critical role for families of migrant workers from developing countries to smoothening consumption, mitigating poverty, accumulating assets, raising savings to caution against external shocks – leading towards better living standards (Ratha 2013; Adams & Cuechuecha, 2010; Anyanwu

& Erhijakpor, 2010). In most of the studies, centering cases from Bangladesh, the impact of remittance is found to be similar. On the other hand, albeit remittances are private financial flows, it has multifaceted impact on key macroeconomic correlates e.g. current account balance, international reserves, strengthen import payment capacity, improve debt-to-GDP ratio and export competitiveness which support developing countries to balance economic growth. Overseas remittance have helped Bangladesh to improve its foreign reserve and enable the policymakers to take strategic trade decision from a relatively comfortable state.

A long-term nexus of remittance inflow and migration workers' outflow was supportive towards Bangladeshi policymakers to maintain a balance between factor and financial market. However, anecdotal information suggests that the job tenure in the destination countries are getting shorter. Now-a-days more migrants are going abroad for different destination countries from Bangladesh but with a short-term contract at hand. Therefore, perhaps time has come to understand how the migration tenure influenced our remittance inflows and whether it a statistically significant factor to bring any shift in remittance inflow to Bangladesh in future, given there are changes in job-tenure/contract agreement.

Objective of the Study

The objective of the research work will be to find out whether length of duration in the destination country has any impact on remittance transfer to Bangladesh; and if so, whether it holds a statistically significant relationship. Given its conclusion, the study may inform whether policymakers should emphasize more on job contract assessment in a changing global migration outlook – naming few, global migration crisis; volatility in international oil price; subdued prediction of global remittance inflows to developing countries; high volatility in cost of sending remittances through all corridors; more stringent rules of sending remittances through the formal channel; and increasing use of mobile application and digital devices to send remittances; and advancement of artificial intelligence.

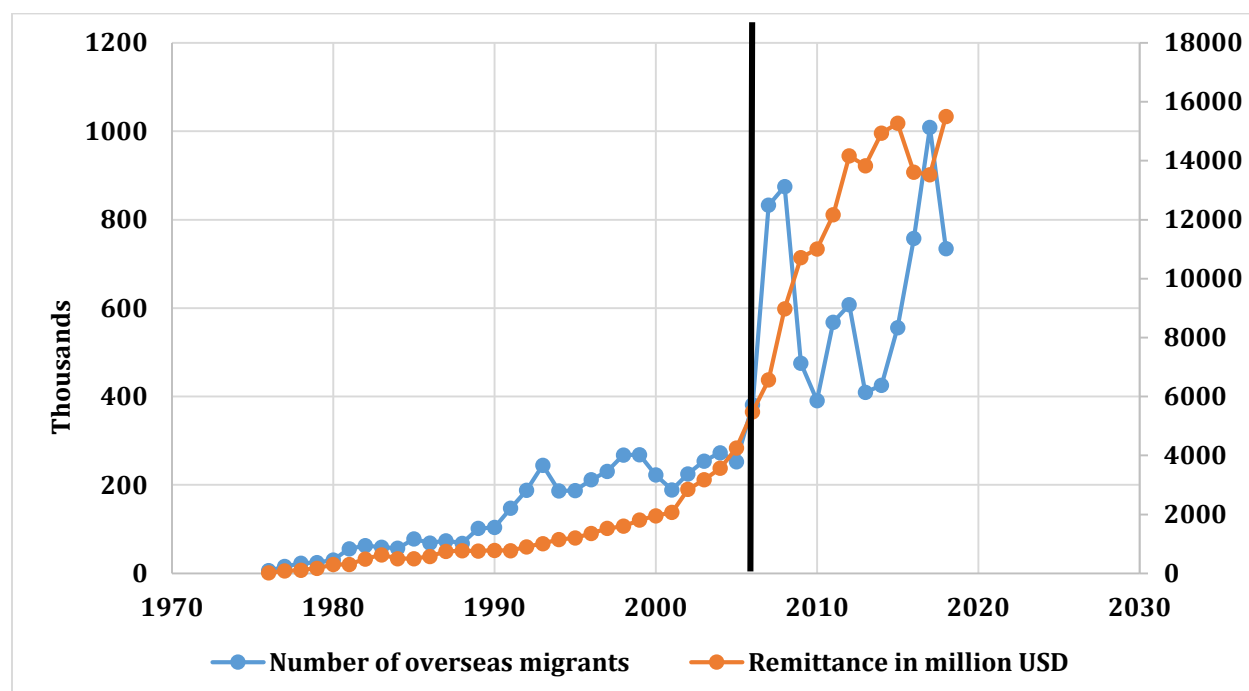
Following the introductory section, subsequent segments of the paper focus on the followings: (a) presents historical outlook of migration and remittance in the context of Bangladesh; (b) introduces the data source and presents descriptive analysis on the relevant

variables; (c) explains the methodology of the study and (d) highlights findings of the study before making the conclusion.

Migration and Remittance: Historical Outlook of Bangladesh

In the early days of independent Bangladesh before 1976 only a number of migrants from Bangladesh went to Middle-Eastern countries for work, mostly relying on their individual effort and network overseas. Since 1976 the Bangladesh government started actively engaging with resource heavy Middle-Eastern countries to harness the employment opportunities. In 1976, it was recorded that only 6,087 migrant workers went to Middle-East and Bangladesh received USD 23.7 million international cash remittances (BMET, 2018). In 1999, remittance inflow to Bangladesh crossed billion dollars for the very first time. In between, Bangladesh also allows female migrants as workers in different destination countries. Annual trend of migration outflow and remittance inflow suggest that both continued to rise, somewhat parallel, up to 2006 (BMET, 2018). However, in the last decade, an erratic trend has been observed, mostly, in terms of migration outflow. On the other hand, during the period, remittance inflow has increased by manifold before somewhat stagnated since 2016. Anecdotal information suggest that, the intervention of Bangladesh Bank in the curb market has helped to diverse a relatively large portion of remittances in the formal channels which used to be channeled through informal channels such as Hundi.

Figure 1: Trend of Migration Outflow from and Remittance Inflow to Bangladesh



Source: Bureau of Migration, Employment and Training (BMET)

Figure 1 reveals that the long-standing steady positive (upward) trend nexus between migrant workers' outflow and remittance inflow has started to fluctuate. For instance, in 2009, remittance inflow increased by 19.4% while migration outflow dropped by 45.7% and in 2016, remittance inflow decreased by 10.9% despite a rise in migrant workers' outflow by 36.3%. The robust performance of remittance inflow in Bangladesh despite a sudden fall in migrant workers' outflow from Bangladesh in 2009 and 2010 had a reasonable explanation that - there may have lag impacts of earlier migration outflow as well as stocks. However, the recent dynamics of low remittance inflow despite high migration outflow have created some dilemma for Bangladeshi policymakers. Some common explanations of this particular trend are- (a) share of remittance inflow through informal channel has increased because of increasing gap between black market premium and official exchange rates; (b) depressed global oil price costs workers' real income in the destination country as major share of migration (56% in 2016) from Bangladesh took place in Middle-East (BMET, 2018); (c) flow of Bangladeshi returnee migrants have significantly increased. However, none of these explained relationship is tested through robust scientific methods, mostly because of

lack of statistics and reliable data. Nevertheless, the issue of job tenure/contract period is often remain overlooked in public policy domain. The argument is – if our workers are getting on board towards destination country with relatively shorter job contract, does that enable the migrants to send expected amount of remittance that they anticipated.

The above argument stands firm as overtime Bangladesh did not diversify much both in terms of migration workers' destination place and their own skill set. Historically, overseas migrant workers' find themselves in the markets of middle-east and remained engaged in low-value added works because of their relatively less diverse skill set in compared to their counterparts from other developing countries. For instance, in 2018 more than 65% workers migrated to middle-east. However, in contrast, the inflow of remittance from middle-east is showing a declining trend. Now, Bangladesh receives more than 55% of its remittances from countries located outside of middle-eastern region (BMET, 2018).

Literature Review

Remittance transfer depends on both micro and macroeconomic factors. As this paper is investigating to understand how migration tenure contributes remittance transfer, therefore, will concentrate more on literature reviews that discuss upon how micro-economic factors contributed the remittance transfer to the household level.

The theory of altruism argues that migrants' get a positive utility from the well-being (Becker 1974; Cox *et al.* 1996). The intent is to improve the consumption level and living condition of the family left in the home country. The closure the relationship between migrant and family members, given income at the host country, likely remittance transfer is higher (Lucas & Stark, 1985). In this context, Glytsos (2002) argued that permanent migrants have higher likelihood to transfer remittance for altruistic purposes while temporary migrants are more likely to send remittance for investment and future consumption smoothing.

In contrast, theories of pure-self-interest behind remittance transfer argue that – three factors that influence remittance decision significantly are (a) intention to return to the country of origin, (b) investment in the community of origin and (c) the desire to inherit the assets of the family of origin (Lucas & Stark 1985). On the other hand, family contract theory argue that transfer of remittance can be seen as a return on investment – simply the

repayment of costs incurred by the migratory family (the cost of education and/or the cost of migration) (Bouoiyour & Miftah, 2015). Nevertheless, household or migrant, if made loan from banks or other informal sources to complete the migration process are also included with the aforesaid costs. In the absence of a well-developed credit system, labour and insurance market (Taylor *et al.*, 1996), migration is often seen as a family or household strategy to reduce economic risks through diversification of income sources or loan repayments (Lucas & Stark 1985; Azam & Gubert, 2005). Under theories of New Economics of Labour Migration (NELM), Taylor and Martin (2001) argued that migration is collective family decision with an aim to maximize household income while minimizing risk by portfolio (income) diversification.

The personal characteristics of migrants are also important determinant of remittance transfer. For instance, Holst *et al.*, (2008) found that female migrants from Germany tends to support their family (especially children), while their male counterpart tend to support a wider network of more distant family members and friends. In contrast, De la Briere *et al.* (2002) have found that on average a female migrant from Dominican Sierra sends significantly higher remittance to the home country compared to their male counterpart. Furthermore, being married has a positive impact on the amount remitted, as does the amount of earnings (Merkle & Zimmermann, 1992; Sinning, 2007). In contrast, Duval and Wolff (2010) have found being married does not improve the likelihood of higher remittance transfer.

Remittance transfer tends to differ upon characteristics of temporary and permanent migrants. It is found that home countries tend to benefit more from temporary migrants. With higher likelihood of return, temporary migrants is likely to send more remittance back home (Amin & Mattoo, 2005; Bauer *et al.*, 2005). Cai (2003) has found that temporary migration status, being male and wage also have positive and statistically significant effects.

However, caveat is, it may also depend on the number of years of stay or duration of migration tenure. In this context, it is found that remittance transfer is generally positively correlated with the age of the migrant and negatively with the year of first departure, indicating that the amount remitted decreases with the length of stay (Dustmann, C., & Kirchkamp, 2002). This very notion is known as remittance-decay hypothesis, i.e., the longer

the period of residence in the host country the lower the incidence of remittances, though for those who intend to return home eventually could be likely to remit more towards investments in assets, real estate and social capital (Dustmann, C., & Kirchkamp, 2002). Nevertheless, contrasting results are also been found in this regard. For instance, there is no significant relationship found in between years of migration and remittance transfer (Agarwal, R., & Horowitz, 2002; Osaki, 2003).

On the other hand, skilled migrants, who earns more at the host country are expected to send more remittance back home. However, often it turns out to be opposite. Faini (2007) in a seminal work found that – higher skill of migrants do not guarantee higher remittance transfer to the developing countries. Similar results been found by Nimi *et al.* (2010) – where they have argued relatively skilled migrants with potential permanent residency send less remittance than their other fellows. Education, surprisingly, has little influence on either the decision to remit or the amount to remit – perhaps because education often leads to the actual work a migrant is involved in the host country (Cai, 2003).

Data and Descriptive Statistics

Data Source

Keeping in mind the objective of the research work, a dataset that includes a variable as regards “years of stay at the destination place” was required. Along with this particular variable, data on a number of variables were collected by Bangladesh Bureau of Statistics. The title of the survey was “Use of Remittance”. The dataset was developed in 2013 by BBS. The dataset has information on 11,765 migrants including temporary and permanent migrants from 157 different destination countries.

Descriptive Statistics

Using the following unit level data, in this section, descriptive analyses have been presented. This particular exercise would help finding appropriate variables for the anticipated regression analysis that is run following a detail methodology.

Table 1: Remittance Sent by Overseas Migrants

Remittance	Number of Migrants	Average Remittance (in taka)	Standard Deviation
Cash	11,765	162,125.3	3,506.2
In-kind	11,765	6,773.3	348.1
Total	11,765	168,898.8	3,507.3

Source: Author's estimation from Survey on Use of Remittance, BBS (2013)

Table 1 reveals that on average a Bangladesh migrant sent about 168,900 equivalent taka in 2013 of which 4% were in-kind transfer. The standard deviation was just over 3500 taka.

Table 2: Remittance Sent by Migration Tenure; by HH Land Holdings at home country; by HH income other than remittance income

Particulars	Number of Migrants	Average Values	Standard Deviation
Migration Tenure (in years)	11,619	6.3	0.20
Land Holdings (in acre)	11,765	1.2	0.19
Household income except remittance (in taka)	11,765	58,484.5	46,72.14

Source: Author's estimation from Survey on Use of Remittance, BBS (2013)

Table 2 reveals that on average a Bangladesh migrant stay around six and half years in the host country before their return. The relatively small (0.20) standard deviation refers that about 70 percent of migrants lie in between the aforesaid time duration. On the other hand, on average land holding by a migrant household was nearly 1.2 acre while they were having roughly 58,000 taka per year from the other household income.

Table 3: Education and Professional Correlates (in percentage)

Profession	Educational Status						
	Illiterate	Primary	Secondary	College	Bachelor	Graduate	Total
Workers	73.3	66.3	59.9	39.6	27.7	32.4	59.7
Job Holder	19.8	26.5	32.3	45.6	51.5	48.6	31.5
Businessmen	3.2	3.7	4.9	8.0	10.0	8.0	4.9
Student	0.0	0.2	0.6	3.6	6.5	8.0	1.1
Home Servant	2.2	1.9	0.9	1.4	2.6	1.5	1.4
Others	1.5	1.5	1.4	2.0	1.7	1.7	1.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Author's estimation from Survey on Use of Remittance, BBS (2013)

Table 3 shows the correlates between education status and their professional attainment. It reveals that majority of workers were either illiterate or with low educational endowment. In contrast, with relatively higher institutional educational endowment migrants had managed to opt for more diverse range of professions (may indicate they managed to get more semi-skilled or skilled job compared to their less educated fellows).

Table 4: Remittance Transfer by Profession and by Destination Country (in taka)

Profession	Middle-East	Outside of Middle-East	Difference
Workers	159,710.6	167,856.5	?
Job Holders	159,315.5	190,379.0	***?
Businessmen	343,376.9	221,647.8	***?
Student	-	131,431.3	-?
Home Servant	140,234.1	38,641.0	-?
Others	140,052.1	85,282.3	-?

Source: Author's estimation from Survey on Use of Remittance, BBS (2013)

Note: *** $p < 0.01$, statistically significant at 1% significance level

Country destination is always remained to be a core issue of discussion as regards migration outlook of Bangladesh. It is been argued that majority of our workers find themselves in the middle-eastern countries – partly because of earlier social networks in those common destination countries. Keeping that in mind, a cross tabulation by destination region and by profession, were held, to understand whether there is any difference in terms of remittance received. The cross tabulation analysis reflects that migrants who were engaged in business at the host country – regardless of the region – they sent more remittances to the home country. However, there was a significant high remittance transfer observed from migrants who managed to hold business in middle-eastern countries when compared to their other counterparts outside of the middle-east.

Besides, among the migrants who went to outside of middle-eastern countries and managed to hold a job - they sent significantly higher remittances to Bangladesh then their fellows from middle-east (Table 4). On the other hand, regardless of the country destination, on average migrants who find themselves as worker or servant in the host country, transfer relatively lower remittance in Bangladesh – which perhaps reemphasize the need for improving the skill domain of Bangladeshi migrant workers.

Table 5: Remittance Transfer by Pre-departure Skill Training and by Destination Country (in taka)

Training	Middle-East	Outside of Middle-East	Difference
No Training	164,572.2	165,484.0	-?
Vocational	182,428.1	228,247.2	***?
Language	199,960.5	210,253.7	**
Computer	183,629.3	185,385.0	-?
Driving	262,941.7	254,589.8	-
Others	195,082.5	196,114.1	-

Source: Author's estimation from Survey on Use of Remittance, BBS (2013)

Table 5 suggests that pre-departure skill training is critical in yielding relatively higher return in terms of remittance – regardless of country destination. However, within different

sets of training perhaps vocational training may be valued more in outside of the middle-eastern countries – as observed significantly higher remittance inflow to Bangladesh from the Table 5. Language (respective) is a critical set of skill that enabled migrants of all class. Looking at the relatively high amount of remittances sent by migrants who were on board with either computer or driving training have somewhat triggered me to draw a hypothesis that – a specific set of skill (considering the demand of the aspired destination country) training than a general training may enable a migrant more to send higher remittance in the home country.

According to the Table 6, there observed a significantly high remittance transfer from male migrants compared to their female counterpart. On average, annual remittance transfer was almost double by a male Bangladeshi migrant than a female migrant. In addition, those who have permanent residency in the host country sent relatively higher remittance than those who do not hold permanent residency. However, in terms of the remittance transfer to Bangladesh, there found no statistically significant difference because of variation of the location of destination country.

It is also revealed from the analysis presented in Table 6 that migrants sent relatively higher remittance to their own family followed by their parents. Also remained somewhat reserved while sending to other relatives outside of the aforesaid two family connections.

In terms of profession, migrants who were involved in businesses in the host country were better positioned to send relatively higher remittance income back in their native place. There were no much of a difference among the migrants in terms of sending remittance while they engage as workers or job holder in the respective host country (Table 6).

Table 6: Remittance Transfer (in taka) by Gender; by Years of Stay; by Residency Type; by Profession; by Family knit at receiving end and by Destination Region

Variables	Number of Migrants	Percentage	Remittance Transfer (in Taka)	Standard Deviation
Gender				
<i>Female</i>	383	3.29	85,020.7	24,388.2
<i>Male</i>	11,269	96.71	172,718.0	3,428.3
Years of Stay				
<i>less than 1 year</i>	1,294	11.00	86,550.9	6,845.0
<i>>1 but <2</i>	1,348	11.46	138,769.6	4,757.1
<i>>2 but <3</i>	1,046	8.89	149,325.0	4,838.9
<i>>3 but <4</i>	1,084	9.21	158,659.6	5,941.6
<i>>4 but <5</i>	1,454	12.36	172,058.5	3,133.5
<i>>5 but <6</i>	1,184	10.06	189,816.0	6,229.4
<i>>6 but <7</i>	793	6.74	201,430.1	4,118.4
<i>More than 7 years</i>	3,562	30.28	198,119.8	7,519.4
Permanent Residence				
<i>No</i>	10,885	93.42	167,536.6	3,799.9
<i>Yes</i>	767	6.58	206,665.1	9,112.5
Professionals				
<i>Workers</i>	6,955	59.69	162,193.4	2,761.4
<i>Job Holders</i>	3,674	31.53	168,304.4	7,426.6
<i>Businessmen</i>	567	4.87	291,302.3	33,116.2
<i>Student</i>	123	1.06	131,431.3	31,394.1
<i>Home Servant</i>	158	1.36	89,405.5	16,873.9
<i>Others</i>	175	1.50	114,418.6	16,054.9
Family Knit				
<i>Parents</i>	4,544	41.46	174,795.1	1,595.0
<i>Wife/Husband/Children</i>	4,505	41.11	196,663.0	1,794.5
<i>Other Relatives</i>	1,910	17.43	168,811.0	1,540.4
Destination Country				
<i>Middle-East</i>	7,890	67.06	168,390.5	4,618.2
<i>Outside of Middle-East</i>	3,875	32.94	169,961.6	6106.3

Source: Author's estimation from Survey on Use of Remittance, BBS (2013)

Migrants' years of stay is critical to send remittance back in native land. Often it is argued that in the first year of migration – it's hard to send remittance to the homeland because to settle down in a new place in an unknown ambiance has its own opportunity costs. Often

finding a work cost a substantial time of the very first year. The analysis also holds evidence in support of such perception. Table 6 shows with the increase in migration tenure migrants start to send more remittance to their native land.

Methodology

Ordinary least square (OLS) regression has been used to find the statistical relationship between remittance transfers (as dependent variable) and other explanatory variables. The explanatory variables include factors such as migrants' profile (or personal characteristics); migrants' household characteristics in the home country; migrants' revealed information at the host (destination) country including few variables that inform about the migration process. A general micro (determinant) characteristics that influence a migrant's decision to send remittances back home may represent in the following functional form:

Decision of Remittance Transfer

= f(Personal characteristics, Household endowment at home country, Migrants condition at host country, Preparedness at the pre – departure stage)

From SUR dataset developed by BBS, migrants' characteristics variables e.g. gender, profession and family knit; household endowment (characteristics) variables e.g. alternative sources of income beyond remittance, household loan (or debt or dues) and investment portfolio (number of savings and investment schemes are maintained by the household); host country condition (e.g. years of stay or migration tenure at the host country; destination country region; status of residency); pre-departure characteristics e.g. migration nature (official versus unofficial) and attainment of pre-departure skill training have been included. The following matrix lists the name of the variables; expected statistical sign of explanatory variables from the regression analysis and the arguments behind the expected signs.

Table 7: Expected Signs and My Arguments behind Variable Selection

Explanatory Variables	Types of the Variable	Expected Sign	My Arguments
Migration Tenure	Numeric	Positive (+)	Higher number of stay should help a migrant to send more remittance to the home country.
Gender (Female=0)	Dummy	Positive (+)	As evidence from secondary literature suggest that on average a Bangladesh female migrant send remittance less frequently than their male counterpart.
Permanent Residence (No=0)	Dummy	Negative (-)	Migrants who also holds permanent residency in the host country may have less incentive to send remittances back in home country – assuming lower family knot in the home country.
Profession (Labour=0)	Categorical		This variable is used as a proxy of actual income earned – as there is no such information available in the dataset. On the other hand, education has not been included as a separate variable in the same model because it creates more intense multicollinearity problem. The correlation between

			migrants profession and education status is relatively higher.
<i>Job Holder</i>		Positive (+)	Assuming migrants with higher set of skills may have higher likelihood to get a job – when compared to migrants' who find themselves as a labour in the host country.
<i>Business</i>		Positive (+)	Assuming migrants with higher social capital may have higher likelihood to start a business – when compared to migrants' who find themselves as a labour in the host country.
<i>Home Servant</i>		Ambiguous	Prior information about the different industry wise labour market situation in the different host countries was not available.
Migration Destination (Middle-east=0)	Dummy	Ambiguous	As I don't have any prior information as regards the actual earnings of Bangladeshi migrants across countries.
Alternative source of household income	Numeric	Negative (-)	Assuming household with high percentage of alternative financing may be less dependent on the remittance income and thereby, transfer may be less.

Family Knit (Parents=0)	Categorical		
<i>(Husband/Wife/ Son/Daughter</i>		Positive (+)	It is expected that a migrant will be more comfortable/open to send remittance to his/her own family given other factors held constant.
<i>Other relatives</i>		Negative (-)	It is expected that a migrant will be somewhat reserve to send remittance to his/her own family given other factors held constant.
Debt (Parents=0)	Dummy	Positive (+)	Migrants who are obliged to loan repayment may intent to save more and sent more remittance to make payments of dues.
Investment portfolio	Numeric	Positive (+)	Migrants who have investment in higher number of investable schemes may require to send more remittance to manage them. The question includes variables investment on house purchase, building maintenance, land purchase, purchase of bonds and other financial instruments etc.
Migration Nature (Unofficial = 0)	Dummy	Positive (+)	Migrants who went to host countries by following legal procedure are likely to face less hazards at workplace and as well to transfer

			their remittances through the official channels.
Pre-departure Training (No=0)	Categorical		
<i>Vocational</i>		Positive (+)	Pre-departure skill trainings should enable migrants to demonstrate higher capacities in their respective works at the host country when compared to their counterparts without having any such training.
<i>Language</i>		Positive (+)	
<i>Computer</i>		Positive (+)	
<i>Driving</i>		Positive (+)	
<i>Others</i>		Positive (+)	

Following the arguments the specific function is written here as follows:

Rate of Remittance Transfer =

f (Migrature Tenure, Gender, Permanaent Residency, Profession at the host country, Migration Destination, Alternative source of Household Income, Family Knit at the home country, Debt, Investment Portfolio, Migration Nature, Pre – departure Skill Training)(1)

The specific form of the equation (1)

Remittance Transfer= A (Migration Tenure) ^{β_1} (e ^{β_2} Gender dummy) (e ^{β_3} Permanent Residency dummy) (e ^{β_4} Job Holder+ β_5 Business+ β_6 Servant) (e ^{β_7} Migration Destination dummy) (e ^{β_8} Other HH Income as % of Remittance income) (e ^{β_9} Own Family+ β_{10} Other Relatives) (e ^{β_{11}} debt) (Investment Portfolio) ^{β_{12}} (e ^{β_{13}} Migration Nature) (e ^{β_{14}} Vocational+ β_{15} Language+ β_{16} Computer+ β_{17} Driving + β_{18} Others) ε (2)

Where, A = Constant/Intercept and ε = Residual/Error Term

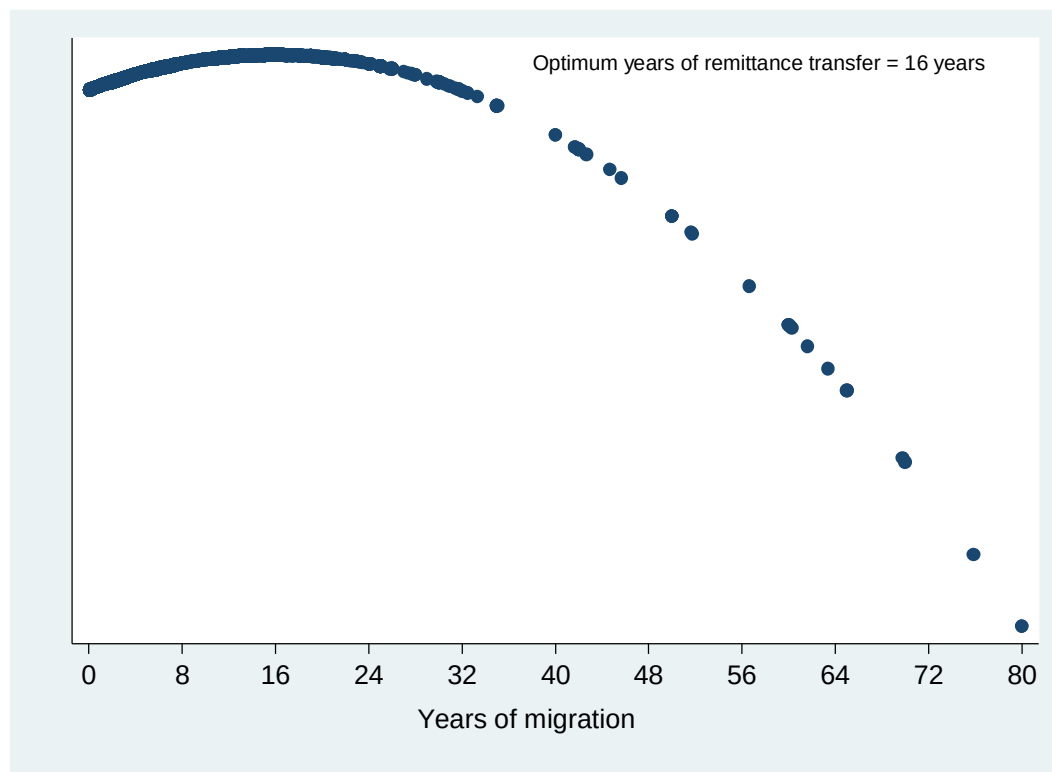
Log transformation of the equation (2) is:

$$\begin{aligned} \ln(\text{Remittance Transfer}) = & \ln A + \beta_1 \ln(\text{Migration Tenure}) + \beta_2 (\text{Gender dummy}) + \\ & \beta_3 (\text{Permanent Residency dummy}) + \beta_4 (\text{Job Holder dummy}) + \beta_5 (\text{Business dummy}) + \\ & \beta_6 (\text{Servant dummy}) + \\ & \beta_7 (\text{Migration Destination dummy}) + \beta_8 (\text{Other HH Income as \% of Remittance income}) + \beta_9 (\text{Own Family d}) \\ & \beta_{10} (\text{Other Relatives dummy}) + \beta_{11} (\text{Debt}) + \beta_{12} \ln(\text{Investment Portfolio}) + \\ & \beta_{13} (\text{Migration Nature dummy}) + \beta_{14} (\text{Vocational training dummy}) + \\ & \beta_{15} (\text{Language training dummy}) + \beta_{16} (\text{Computer training dummy}) + \\ & \beta_{17} (\text{Driving training dummy}) + \beta_{18} (\text{Others training dummy}) + \varepsilon \dots\dots\dots(3) \end{aligned}$$

Results and Findings

According to the regression results it is found that an addition year of stay (migration tenure) at the host country is likely to increase remittance transfer by roughly 7%, other things held constant. It is also statistically significant at 1% level. However, it doesn't mean migration yields increase remittance transfer forever or for infinite time period. Further delve into the issue, second order condition of migration tenure was found to be negative while the first order was positive. It reveals that there is an optimum year length after which remittance inflow to Bangladesh starts to decline from its migrants. The optimum year is estimated to be roughly 16 years (*see mathematical derivation in Annex*).

Figure 2: Optimum Years of Migration as regards Rate of Remittance Transfer



Source: Author's illustration from the analysis

The log-linear regression model is also showing that on average a Bangladeshi male migrant transfer 32% more remittances to their female counter part and it is statistically significant at 5% level. Besides, migrants with permanent residency tends to send 22% more remittance per year than their non-permanent residence peers (also statistically significant at 1% level).

On the other hand, holding the *ceteris paribus* condition, migrants who are engaged in business at the host country transfer significantly higher remittance (19.4%) than of the migrants working as labour. In addition, migrants who are at work outside of the middle-eastern region transfer 4.1% higher when compared to the migrants who are working in the middle-east.

Other household income do not hold any statically significant influence to transfer higher remittance to the home country. In contrast, a closer family knot motivates migrants to send statistically more remittance to their families (10% higher to the own families than of migrants who sends remittance to their parents and 3% less to other relatives).

Table 8: Regression Results

VARIABLES	Coefficients
Migration tenure	0.0698*** (0.00977)
Square of the migration tenure	-0.00219*** (0.000441)
Gender (<i>Female=0</i>)	0.327** (0.159)
Permanent residency (<i>No=0</i>)	0.222*** (0.0315)
Profession (<i>labour=0</i>)	
<i>Job holder</i>	-0.0133 (0.0325)
<i>Business</i>	0.194* (0.112)
<i>Home Servant</i>	-0.0990 (0.263)
Destination region (<i>Middle-east=0</i>)	0.0414** (0.0207)
Log of other HH income	0.000191 (0.00808)
Family knit (<i>Parents=0</i>)	
<i>Own family</i>	0.101** (0.0427)
<i>Other relatives</i>	-0.0362* (0.0206)
Debt (<i>No loan=0</i>)	0.129*** (0.0243)
Investment portfolio (<i>number of schemes</i>)	0.190*** (0.0198)
Migration nature (<i>Unofficial=0</i>)	0.0271 (0.0570)
Pre-departure training (<i>No training=0</i>)	
<i>Vocational</i>	0.236*** (0.0620)
<i>Language</i>	0.0602 (0.0562)
<i>Computer</i>	0.327** (0.131)
<i>Driving</i>	0.297*** (0.0834)
<i>Others</i>	0.206*** (0.0541)
Constant	10.77*** (0.0654)
Observations	10,703
R-squared	0.158

Standard errors in parentheses

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Furthermore, migrants' household with an additional investment scheme, may likely to receive 19% more remittance transfer. However, in this case, causal direction can't be determined with one stage regression analysis. In contrast, if household are indebted with loans, on average migrants' sent 13% more remittance to their household than otherwise – the relationship is statically significant at 1% level.

Migration nature does not hold any statistical significance in terms of sending remittance to the home country. Nevertheless, pre-departure skill-training e.g. vocational training help migrants to send 23% more remittance to Bangladesh than their peers without having any pre-departure training. The corresponding figure were 32% and 29% higher for migrants who took computer and driving training as part of pre-departure skill training.

Conclusion

Migration-remittance nexus play a critical role in the development of Bangladesh economy. In case of Bangladesh, as majority of migrants find themselves employed in middle-eastern countries, the portion of temporary migrants are higher. Although migrants with permanent residency at the host country tend to send more remittance to Bangladesh compared to temporary migrants, in an absolute amount temporary migrants send the bulk of the remittances. The average tenure of Bangladeshi migrants is about six and half years while their average age is around 32 years. It implies majority of Bangladeshi migrants are young when they go to host country and return to home country. The study found there is a positive relationship between migration tenure and remittance inflow to Bangladesh, however, it is not for endless period of time. In particular, this 'tenure of migration' and remittance inflow started to decay after 15 years – in case of Bangladesh. Considering the age, migration tenure and associate remittance transfer – Bangladesh may attribute all form of migration and remittance theories such as altruistic, pure self-interest etc.

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Annex

Mathematical derivation of optimal years of migration tenure as regards remittance transfer

$$\frac{d\ln(\text{remittance transfer})}{d(\text{migration tenure})} = 0.0698 \frac{d\ln(\text{migration tenure})}{d(\text{migration tenure})} + (-0.00219) \frac{d\ln(\text{migration tenure}^2)}{d(\text{migration tenure})} \dots \dots (i)$$

$$\frac{d\ln(\text{remittance transfer})}{d(\text{migration tenure})} = 0.0698 + 2 * (-0.00219) * \text{migration tenure}$$

$$\frac{d\ln(\text{remittance transfer})}{d(\text{migration tenure})} = 0.0698 - 0.00438 * \text{migration tenure}$$

At optimum state,

$$\frac{d\ln(\text{remittance transfer})}{d(\text{migration tenure})} = 0$$

$$\Rightarrow 0.0698 - 0.00438 * \text{migration tenure} = 0$$

$$\Rightarrow 0.00438 * \text{migration tenure} = 0.0698$$

$$\Rightarrow \text{migration tenure} = 0.0698/0.00438$$

$$\text{so, migration tenure} = \frac{0.0698}{0.00438} = 15.93 \approx 16 \text{ years}$$

Table 9: Year-wise Migration Outflow from and Remittance inflow from Bangladesh Data

Year	Number of overseas migrants	Remittance (in million USD)
1976	6,087	23.7
1977	15,725	82.8
1978	22,809	106.9
1979	24,495	172.1
1980	30,073	301.3
1981	55,787	304.9
1982	62,762	490.8
1983	59,220	627.5
1984	56,714	500.0
1985	77,694	500.0
1986	68,658	576.2
1987	74,017	747.6
1988	68,121	763.9
1989	101,724	757.8
1990	103,814	781.5
1991	147,156	769.3
1992	188,124	902.0
1993	244,508	1,009.1
1994	186,326	1,153.5
1995	187,543	1,201.5
1996	211,714	1,355.3
1997	231,077	1,525.0
1998	267,667	1,599.2
1999	268,182	1,806.6
2000	222,686	1,955.0
2001	189,060	2,071.0
2002	225,256	2,847.8
2003	254,190	3,177.6
2004	272,958	3,565.3
2005	252,702	4,249.9
2006	381,516	5,484.1
2007	832,609	6,562.7
2008	875,055	8,979.0
2009	475,278	10,717.7
2010	390,702	11,004.7
2011	568,062	12,168.1
2012	607,798	14,164.0
2013	409,253	13,832.1
2014	425,694	14,942.6
2015	555,881	15,271.0
2016	757,731	13,609.8
2017	1008,525	13,526.2
2018	734,181	15,497.6

Source: BMET, 2018

Stata Codes:

```
cd "E:\Moumita_MS Thesis"
use "comprehensive", clear
svy: mean q38 q42 //q38=cash remittance, q42=in kind remittance
egen total_remittance=rowtotal(q38 q42) //combining both types of remittance value
svy: mean q38 q42 total_remittance //table 1

***migration tenure
gen mt=q25/12 //mt=migration tenure converted from months to year
svy: mean mt
gen mt_sqr=mt^2 //square of migration tenure

***Gender variable
rename q20_sex gender
recode gender (2=0) //1=male,2=0=female
label define gender 0 "Female" 1 "Male"
label values gender gender

****Total remittance by gender
svy: mean total_remittance,over(gender)
svy: mean q38,over(gender) // only cash remittance by gender

*** residence type:temporary or permanent
rename q32 perr // perr=permanent or temporary residence
recode perr (2=0) //1=permanent r,0=no perr
label define perr 0 "temoprary" 1 "permanent"
label values perr perr

****Profession variable
rename q28 profession
recode profession (5=4) (3=0) //0=workers
label define profession 0 "labour" 1 "jobholder" 2 "business" 4 "students" 6 "servant" 9
"others"
label values profession profession
```

```

****Host country type

rename country2 mig_destination

recode mig_destination (500=1) //0=middle east, 1=outside of middle east

label define mig_destination 0 "Middleeast" 1 "Outside_Middleeast"

label values mig_destination mig_destination

***other sources of HH income

rename q44 a_hh_inc    // a_hh_inc=alternative household income

replace a_hh_inc=1 if a_hh_inc==0    // as ln0 is undefined, therefore, i assume those who
didnot send remi in last 12 months as 1 // ln1=0

gen ln_a_hh_inc=ln(a_hh_inc)

gen alt_finance=a_hh_inc/q38    // alt_finance= alternative sources of finance as percentage
of cash remittance

****family knit with migrant

rename q39 family_knit //

recode family_knit (2=0) (3/5=2) // 0 means parents of migrants; 1 = own family; 2=other
relatives

label define family_knit 0 "parents" 1 "own_family" 2 "other_relatives"

label values family_knit family_knit

*****land holdings

gen land_holdings=q8a1/100    // converted in acre

****loan/debt

rename lr debt    // lr means this migrants are repaying their loans

recode debt (17=1) // 1=HH is paying loans

label define debt 0 "No loan" 1 "paying loans"

label values debt debt

***migration nature: official or unofficial

rename q33 migration_nature    // whether the migrant went to host country through formal
channel or informal channels

recode migration_nature (2=0) // 1= official and 0=unofficial migration

label define migration_nature 0 "unofficial/informal" 1 "official"

```

label values migration_nature migration_nature

****Investment and savings schmes

egen invested_instruments=rowtotal(nis nss) //nis=number of investment instruments
//number of savings instruments // in how many different schemes they have invested
replace total_remittance=1 if total_remittance==0 // assumption to not to lose the
observation

***Training variable

rename q31 training

label define training 0 "No training" 1 "Vocational" 2 "Language" 3 "Computer" 4 "Driving" 9
"Others"

label values training training

***converting into logarithmic variable

gen ln_total_remittance=ln(total_remittance) // convert in ln function

gen ln_mt=ln(mt) // convert in ln function

replace land_holdings=1 if land_holdings==0

gen ln_land_holdings=ln(land_holdings)

gen ln_mt_sqr=ln(mt_sqr)

replace alt_finance=1 if alt_financ==0

gen ln_alt_finance=ln(alt_finance)

****descriptive analysis*****

svy: mean q38

svy: mean q42

svy: mean total_remittance // table 1

svy: mean mt if mt<37 // 1976 to 2013 // those who migrated before 1976 I kept them
outside as formal migration starts from 1976

svy: mean land_holdings // table 2

svy: mean a_hh_inc

```

recode yos1 (8/11=8) //years of stay
label define yos1 1 "less_than_1 year" 2 ">1_&_<2" 3 ">2_&_<3" 4 ">3_&_<4" 5 ">4_&_<5" 6
">5_&_<6" 7 ">6_&_<7" 8 "more_than_7_years"
label values yos1 yos1
**

tab profession medu, nofreq col //table 3
**

svy: mean total_remittance if mig_destination==0, over(profession) // table 4
svy: mean total_remittance if mig_destination==1, over(profession)
*****

svy: mean total_remittance if mig_destination==0, over(training) //table 5
svy: mean total_remittance if mig_destination==1, over(training)

**** gender wise remittance ****
svy: mean total_remittance, over(gender) //part of table 6
****years of stay wise remittance transfer***
tab yos1 // number of years of stay
svy: mean total_remittance, over(yos1) // number of years of stay // part of table 6
****pR wise remittance*****
tab perr
svy: mean total_remittance, over(perr) // part of table 6
**** profession wise remittance ****
tab profession
svy: mean total_remittance, over(profession) //part of table 6
*** family knit****
tab family_knit
svy: mean total_remittance, over(family_knit) //part of table 6
*** destination wise***
tab mig_destination

```

svy: mean total_remittance, over(mig_destination) //part of table 6

****Regression analysis **** Table 8

*svy: reg total_remittance mt mt_sqr gender perr i.profession mig_destination alt_finance
i.family_knit land_holdings debt invested_instruments migration_nature i.training if mt<37
& profession!=4 & profession!=9 //i because of categorical var

svy: reg ln_total_remittance mt mt_sqr gender perr i.profession mig_destination ln_a_hh_inc
i.family_knit /*ln_land_holdings*/ debt invested_instruments migration_nature i.training if
mt<37 & profession!=4 & profession!=9 //i because of categorical var

outreg2 using result.doc, replace ctitle(model 1)

gen optimum_year=mt*0.0698+mt_sqr*(-.00219)

twoway (scatter optimum_year mt) ///

(line optimum_year mt, sort lwidth(medthick))