査読論文

Determinants of International Labor Migration from Bangladesh: A Gravity Model of Panel Data

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Abstract

This paper presents empirical evidence on determinants of international migration from the perspective of a source country. It applies the gravity model to investigate panel data of emigrants from Bangladesh to 23 destinations during the period from 1995 to 2009. Empirical results under alternative specifications unveil that economic, demographic, and cultural factors have significant influence on emigration decision. However, marginal effects of cultural factors like religion and language are stronger than the other set of determinants. Furthermore, when considered as a group, the OECD countries were found to have a strikingly negative effect although such countries possess high per capita income and they accommodate the bulk portion of the world's immigrants. Hence, Bangladesh requires bolstering bilateral relations with the oil-rich Persian Gulf countries to stimulate manpower export. At the same time, institutional strengthening should be given priority to develop skilled manpower, to foster emigration in the OECD bloc, and to ensure proper management of the manpower export sector.

Keywords

Emigration, Remittances, Panel Data, Gravity Model, Bangladesh

JEL Classification F22, F24

1. Introduction

Along with a rise in cross border trade and investment, the number of migrant

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workers has been increasing globally. According to the world migration report in 2010, the number of immigrants globally were 214 million, up from 150 million in 2000; and the figure is predicted to rise to 405 million by 2050 (International Organization for Migration, 2010). In congruence with the global trend, emigration from Bangladesh continues to rise as more and more people are searching for employment in the international labor market due to low income, intense unemployment, and high growth of a young population in the country. The World Bank (2011) estimated that there were 5.4 million Bangladeshi emigrants in the world that placed it as the second largest South Asian country of international labor supply and the sixth largest source of global immigration. International migration of manpower from Bangladesh is closely inter-linked with the country's socio-economic prosperity. Employment in a foreign country serves as primary means of livelihood for millions of families at home. Apart from benefits at the household level, remittances earned by emigrants serve as a strategic component of macroeconomic stability and development. Expatriates' remittances constitute a key source of offsetting ever widening deficits in Bangladesh's current account. Earnings from remittances contributed to cover about 35% of import payments during the period from 2001 to 2010, compared to 22% during 1991-2000. After the readymade garments sector, manpower export generates the second highest foreign currency earnings in the country. Officially recorded inflow of remittances was equivalent to 74% of total export receipts in 2010 and this figure would be much more if the inflow of remittances through unofficial channels were taken into account. Furthermore, growth trends of receipts from expatriates' remittances and merchandise exports signal that earnings from the former might exceed the latter in the future[1]. Remittances also became a key segment of Bangladesh's GDP growth over the last decade. At the same time, stability of the country's foreign exchange market heavily depends on remittances inflow. Under this scenario, fostering labor mobility in international markets emerges as the prime thrust sector for sustainable socio-economic development in Bangladesh.

As a result of the rapid rise in international labor flows, research on migration drew immense attention. Empirical literature on international migration can be grouped into three streams of analyses: (1) determinants of international labor migration; (2) relationship between international trade and immigration; and (3) migration and development linkage. Among others, Zavodny (1999), Clark et al. (2007) examined immigration to USA from different angles. Karemera et al. (2000) examined factors

influencing the size and composition of migration flows to the USA and Canada. Kim and Cohen (2010) studied determinants of international migration flows to 17 western industrialized countries as well as from 13 of these countries. Besides, Pedersen et al. (2008), Mayda (2007), and Lewer and Berg (2008) investigated panel data of migration flows into the OECD countries. All these studies enriched literature on immigration dynamics of advanced economies primarily from the host country perspective. The International Labor Office – a wing of the International Labor Organization (ILO) – primarily analyzes migration dynamics of the least developed countries (LDCs) by focusing on migration trends and associated socio-economic impacts in the source country. Wickramasekara (2002) analyzed Asian migration including Bangladesh that mainly highlighted migration trends and composition. Besides, research by Abrar (2005), Refuge and Migratory Research Movement Unit (2002), and Siddiqui (2005) provided a descriptive picture of international labor migration from Bangladesh. All such studies are informative and useful to understand various facets of emigration and remittances in the economy of Bangladesh. Nevertheless, such studies lack any empirical analysis on the influence of economic, social, cultural, and historical factors affecting decision to emigrate. The present study therefore investigates panel data of international migration flows from Bangladesh to major destinations with the help of the gravity model to ascertain the factors governing the choice of emigration destinations. In the backdrop of growing significance of labor mobility and remittances earnings in Bangladesh's economy, this analysis aims to contribute to discern the potential locations for sending labor and also to suggest strategies for achieving targets. The rest of the paper is organized as follows: Section 2 briefly discusses various aspects of emigration and remittances; Section 3 provides methodology; Section 4 presents data sources and empirical results; and Section 5 gives a conclusion and suggests strategies for stimulating emigration in the future.

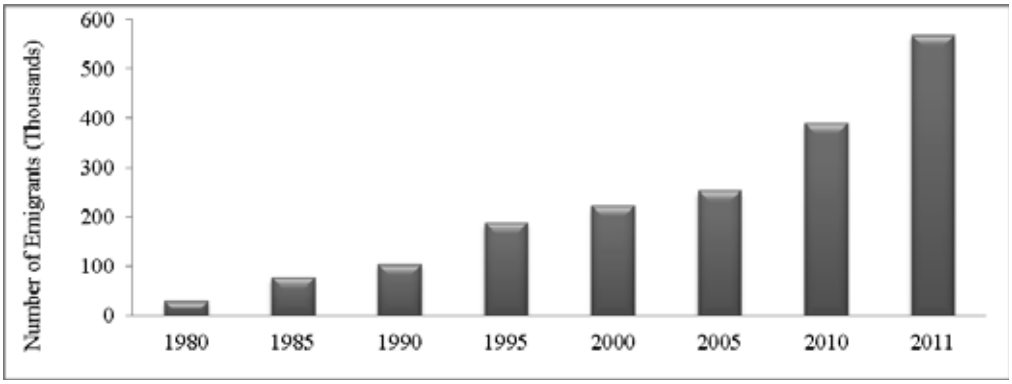
2. Various Dimensions of Emigration

2.1: Annual Outflow of Migrants

Figure 1 clearly evidences that legal labor migration from Bangladesh has maintained an upward trend over the decades. In particular, Bangladesh has witnessed a rapid rise in manpower export during the periods of 1991-1995 and 2006-2011. The number of annual legal emigrants has increased from 30,073 to 568,062 between 1980 and 2011. In addition to legal emigration, labor from Bangladesh also moves through illegal routes. Therefore,

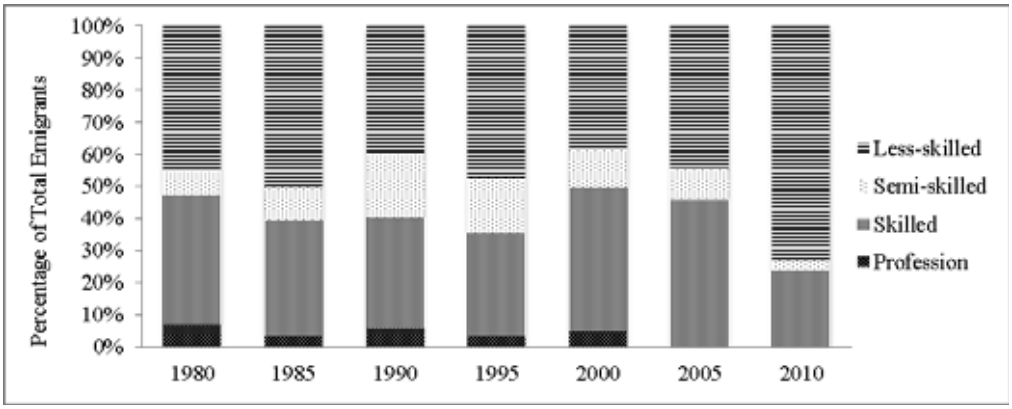
the actual number of annual emigrants would be much higher than the official figures. The official statistics by the Bangladesh Bureau of Manpower Employment and Training (BMET) reports that (see Appendix C), of the total emigrants in 2010, 73% were less-skilled or unskilled, 3.3% were semi-skilled, 23.6% were skilled, and 0.1% were professional. Thus, Bangladesh primarily supplies un-skilled manpower to international labor markets.

Fig. 1: Number of Yearly Emigrants from Bangladesh (1980-2011)



Sources: (a) BMET: 1980-2010, (b) Bangladesh Bank: 2011

Fig. 2: Skill Composition of Emigrants



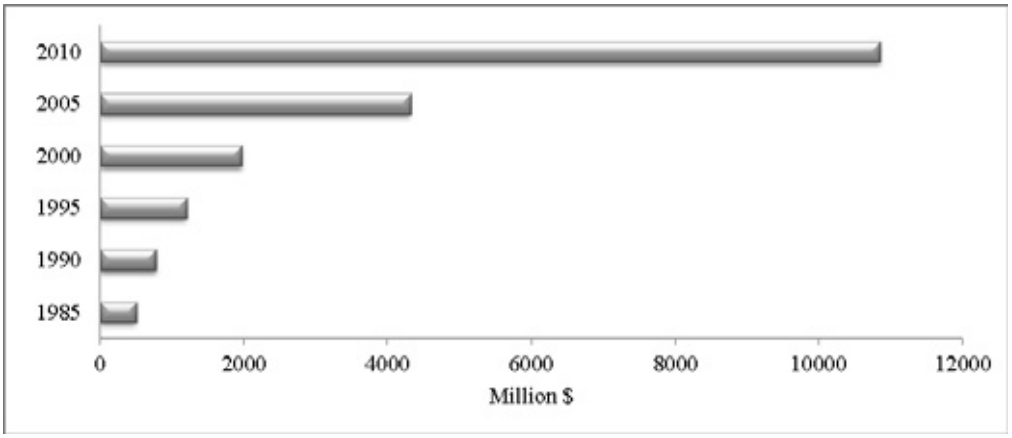
Source: BMET

2.2: Inflow of Remittances

Alongside the rapid growth in international migration from Bangladesh, remittances inflow into the country has also sharply increased over time. In particular, remittances flow witnessed a remarkable rise since 2000. Bangladesh's earnings from remittances in 2010 were five times higher than that of 2000. Average growth rates of remittances were

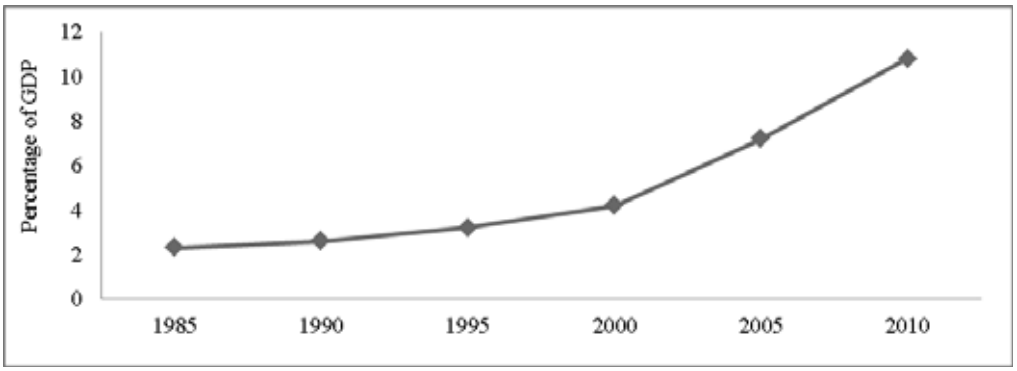
10%, 17% and 21% during 1996-2000, 2001-2005, and 2006-2010, respectively. However, the country achieved highest growth in remittances in the years 2002 and 2008. In both years, remittances grew at 36%. As a result of spectacular growth in remittances, its share to GDP continued to rise. Figure 4 revels that remittances' contribution to GDP increased from 4% in 2000 to 10.5% in 2010. Modernization of the banking sector and growth of telecommunications services during the last decade positively contributed to mobilize remittances through the financial intermediaries.

Fig 3: Bangladesh's Earnings from Remittances (1985-2010)



Source: The World Bank

Fig. 4: Earnings from Remittances (% of GDP)



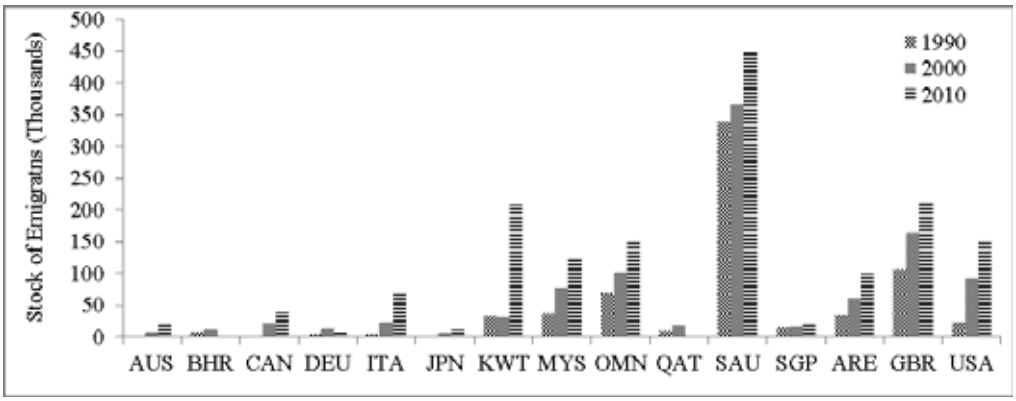
Source: Author's calculations

2.3: Emigrant Stocks

The stock of emigrants from Bangladesh globally stood at 5.4 million at the end of 2010 (World Bank, 2011). However, there are no official statistics in Bangladesh showing its emigrant stocks in the world since data on return migrants are not maintained. Hence,

numerous international data sources (see Table D in the Appendix) were accessed to compile emigrant stocks in some major countries over the last three decades and Fig. 5 exhibits stock trends. It is evident that Saudi Arabia accommodates the largest share of Bangladesh's emigrants. The number of emigrants in Kuwait also significantly increased between 2000 and 2010. Other major countries in the Gulf and Middle East regions including Oman, Malaysia, and United Arab Emirates also serve as import destinations for labor migration. Among the OECD countries, Great Britain, and the USA host a growing share of emigrants from Bangladesh.

Fig. 5: Stock of Emigrants (1990-2010)



Source: Author's compilation from various sources (see data sources in the Appendix A)
Note: iso3 codes are the United Nations Standard Countries/Area codes used in trade data. See Table B in the Appendix for the country names corresponding to the iso3 codes.

3. Methodology

This study applies the gravity model as the empirical tool to ascertain the determinants of emigration decision. The gravity model has been well-proved as a robust ex-post methodology to model international trade and investment. Along with numerous applications of the gravity model in empirical studies of international economics, authors including Anderson (1979); Bergstrand (1985, 1989, 1990); Deardorff (1998); Evenett and Keller (2002); Feenstra et al. (2001); and Helpman (1987) provided theoretical justification for the model. However, migration studies relying on the gravity model are fewer than those in the fields of trade and investment. Among others, Emmanuel et al. (2009); Karemera et al. (2000); and Lewer and Berg (2008) applied this model to analyze various

facets of international labor migration. Some of these studies presented empirical estimates of factors influencing international migration while others examined the linkage between migration and development. Using different empirical settings, determinants of international migration has also been studied by Clark et al. (2007), Mayda (2007), and Pedersen (2004). In particular, Karemera et al. (2000) applied a modified gravity model by incorporating political variable to investigate the factors influencing migration flows to North America. This study reported that demographic condition of the source country, civil and political rights of people at home, and income of the destination country were important determinants of migration flows to Canada and the USA. In the context of OECD countries, Lewer and Berg (2008) developed a gravity model of immigration and justified that immigration responds in a similar fashion of gravitational forces and distance.

Economic theory suggests that immigration is determined by a set of push and pull factors that are related to the source and destination country, respectively. The key push factor is income or wage difference between the sending and receiving country. Borjas (1987) found that migration flows was negatively related to origin-country income per capita. A study by Karemera et al. (2000) showed that source country income was negatively related to US migration but not in the case of migration to Canada. Another essential gravity factor for immigration is the population or size of labor market in the home and host country. Furthermore, international labor flows are restrained by migration cost that can be captured by geographic distance between source and destination country. Thus, the basic gravity model of migration is analogous to the specification of Tinbergen's gravity model of trade (Tinbergen, 1962). Equation 1 sets the basic gravity model with panel data.

$$M_{ijt}=\beta_0+\beta_1(S_{ijt})+\beta_2(N_{it}N_{jt})+\beta_3 dist_{ij}+\varepsilon_{ijt} \quad (1)$$

where, M_{ijt} represents immigration from country i to country j at time t; S_{ijt} indicates GDP per capita of destination country relative to source country; N_i (N_j) stands for population of the source country i (destination country j); $dist_{ij}$ is the distance (in km) between source and destination country; and ε_{ijt} is the normally distributed error term. The primary economic consideration for migration decision is income differences between home and host country. According to the labor market theory of immigration, a higher per capita income at home reduces propensity to emigrate while a higher per capita income of

recipient country induces immigration. Under this consideration, β_1 should have a positive effect on emigration decision. Population is the measure of labor market size in a country. The larger the size of labor pool in the source country, the higher the rate of emigration. Lewer and Berg (2008) argued that the larger the population in the destination country, the larger the labor market for immigrants. Hence, β_2 is expected to have a positive sign. Geographic distance between host and home country is inversely related to emigration decision and therefore, β_3 should have a negative sign.

The benchmark gravity equation 1 could be extended to include some historical and cultural factors that either 'facilitate' or 'inhibit' emigration. In addition to the variables found in previous studies on international migration, the present research incorporates two new factors: bilateral real exchange rates and commonality in religion between source and destination country. Thus, this study applies the specification 2 of the gravity model to ascertain the determinants of emigration from Bangladesh.

$$M_{ijt}=\beta_0+\beta_1(S_{ijt})+\beta_2(N_{it}N_{jt})+\beta_3\mathrm{dist}_{ij}+\beta_4 Ex_{ijt}+\beta_5 free_{ijt} + \beta_6 relg_{ij}+\beta_7 comcol_{ij}+\beta_8 lang_j+\beta_9 OECD_{jt}+\beta_{10} Yrrowth_j+\varepsilon_{ijt} \quad (2)$$

Equation 2 adds seven additional variables to equation 1. Ex_{ijt} indicates real exchange rates between source and destination countries at time t which were calculated following Montenegro and Soloaga (2006). Bilateral exchange rates indicate the value of one unit of the source country's currency against one unit of a destination country's currency. A rise (fall) in the bilateral exchange rate indicates depreciation (appreciation) of the source country's currency. The sign of β_4 is not known from a '*priori*' since no previous study on immigration included this variable. Bangladesh's currency (country i) has undergone continuous depreciation over time that might have had two possible effects on immigration. Firstly, depreciation of domestic currency increases emigrants' monetary outlay due to increases in job contract fee, transportation cost, and other agency fees. As a consequence of higher initial investment requirement, currency depreciation might negatively affect propensity to emigrate. Secondly, depreciation of local currency results in higher streams of income from remittances that can cause higher rate of emigration. Thus, the sign of β_4 can be either positive or negative. The variable $free_{ijt}$ stands for the destination country's index of freedom from corruption relative to source country which is one of the components of the Index of Economic Freedom devised by the World Heritage Foundation. A corruption free environment is likely to attract more immigrants since the

new entrant can expect fair treatment in the work place. Under such consideration, β_5 should positively influence emigration decision. The variable $relg_{ij}$ is a dummy indicating common religion between Bangladesh and country j. In this case, the dummy variable takes the value 1 if Bangladesh (country i) and destination country (country j) share a common religion, and 0 otherwise. Although commonality in religion is a key component of cultural similarity between two countries, no previous study has examined its possible effect on immigration. Since Bangladesh is predominantly a Muslim country, the usual prediction is that its people would be motivated to emigrate to other Muslim countries. In order to explore the role of history on immigration, the common colonial dummy ($comcol_{ij}$) is incorporated which equals 1 when two countries (country i and j) have had a common colonizer after 1945. It is expected that β_7 should be positive. The variable $lang_j$ indicates whether country j is predominantly an English speaking country, and if so it takes the value 1, and 0 otherwise. Educated emigrants usually prefer to emigrate to an English speaking country due to ease of settlement. In the context of a rising education rate in Bangladesh, it is expected that β_8 would be a positive motivator for emigration decision. The OECD dummy takes the value 1 if the destination country belongs to the OECD classification of the World Bank, and 0 otherwise. The OECD countries are the major destinations for global immigration. However, such countries usually invite skilled migrants. Since Bangladesh mostly supplies unskilled labor, the OECD dummy should have a negative sign. The last variable in equation 2 is GDP growth rates of the host countries which capture the effects of economic cycle on emigration flows. This variable is hypothesized to have a positive sign because host countries' economic boom pushes emigration while economic recession deters it.

In order to estimate the panel gravity equation 2, four alternative techniques are adopted: ordinary least squares (OLS), scaled ordinary least squares (SOLS), Tobit model, and fixed effect (FE). Feenstra (2002) advocated that FE is the consistent technique for estimating the panel gravity equation of trade since this methodology overcomes the bias arising from the use of unilateral and bilateral variables in a single regression. Empirical works by Kandogan (2007, 2008) provided further evidences on the robustness of FE methodology. Clark et al. (2007) and Lewer and Berg (2008) adopted the fixed effect method for analyzing migration issues. Apart from the FE estimation, the presence of missing values in bilateral migration flows for some years has motivated the researcher to apply alternative estimation techniques. Literature on the gravity model suggests that the

simplest solution to missing or zero values in a dependent variable is to omit those observations and confine estimation to the rest of the samples (truncated estimation). The second alternative approach to deal with missing data is to apply SOLS method, as done by Eichengreen and Irwin (1995). Moreover, some authors including Rose (2004), Soloaga and Winters (2001) have used the Tobit model (censored regression) in the presence of zero values in the data set.

4. Data and Empirical Results

Panel data of emigration from Bangladesh to 23 major destinations over the period from 1995 to 2009 were compiled from various sources which are mentioned in Table A in the Appendix. GDP per capita (nominal value in US$), GDP growth rates, population, remittances, and consumer price index (CPI) data come from the World Bank's World Development Indicators (WDI)[2]. The UNCTAD's dataset provides the nominal exchange rates in US$ of source and destination countries. Distance between capital cities (in km) and common colonizer data were collected from the CEPII's database. The data on religion was obtained from the World Religion Map. Official language data of the sample countries were collected from the Central Intelligence Agency's (CIA) *The World Fact Book*. The Index of freedom from corruption was taken from The Heritage Foundation's Index of Economic Freedom.

Empirical estimates reported in Table 1 reveal that economic, demographic, and cultural factors have significant effects on emigration decision. The signs and significance of the main gravity variables – income, population, and distance – fit well with the literature. Among the variables representing historical and cultural dimensions, three variables – $free_{ij}$, $relg_{ij}$ $Ygrowth_j$ – produce subtle variant results under the alternative estimation techniques. In general, the estimated outputs under the OLS and SOLS are more comparable since all the parameters have similar signs and significance levels under both of these regression techniques. There is no serial correlation and the error component is normally distributed. This study uncovers that missing values for a small number of observations do not cause any difference in the estimated outputs whether missing values are truncated or not. Thus, comparison of estimated results under the first two techniques supports Baldwin's (1994) conclusion that zero values do not have much impact on empirical results. However, estimated output in the first two columns show that two

variables, namely, $free_{ij}$ (freedom from corruption in country j relative to country i) and $comcol_{ij}$ (common colonial history between country i and country j) do have a negative but insignificant effects on emigration. The two latter regression techniques including Tobit and fixed effect (FE) correct the sign for $free_{ij}$ variable while the sign of $comcol_{ij}$ remains unchanged. Moreover, results under the censored model (column 3) and FE model (column 4) as compared to OLS and SOLS show an increase in the level of significance for the religion dummy ($relg_{ij}$). Thus, it appears that results under the censored regression and FE are more comparable than their OLS counterparts. Above all, estimations under the FE with period dummies fit better with the theories on gravity and economics of migration decision. Because, FE method allows to incorporate time fixed effects for accommodating cyclical influences. Hence, the subsequent explanations relate to the estimated results in column 4 using FE technique.

Table 1. Empirical Results

Explanatory variables	Coefficients			
	(1) OLS	(2) Scaled OLS	(3) Tobit (at mean exp. value#)	(4) Fixed Effects
S_{ij}	1.05(0.00)***	1.30(0.00)***	1.14(0.00)***	0.79(0.01)***
$N_i N_j$	0.87(0.00)***	0.85(0.00)***	0.89(0.00)***	0.90(0.00)***
$dist_{ij}$	-1.20(0.00)***	-1.19(0.00)***	-1.22(0.00)***	-0.71(0.07)*
Ex_{ij}	0.06(0.31)	0.06(0.38)	0.05(0.39)	0.04(0.54)
$free_{ij}$	-0.12(0.50)	-0.12(0.48)	0.16(0.37)	0.65(0.04)**
$relg_{ij}$	0.78(0.03)**	0.79(0.04)**	0.78(0.02)**	1.02(0.00)***
$comcol_{ij}$	-0.17(0.65)	-0.46(0.28)	-0.21(0.58)	-0.30(0.44)
$lang_j$	1.81(0.00)***	1.81(0.00)***	1.94(0.00)***	1.49(0.00)***
$OECD_j$	-4.43(0.00)***	-4.66(0.00)***	-4.63(0.00)***	-4.61(0.00)***
$Ygrowth_j$	-0.01(0.84)	-0.01(0.70)	-0.01(0.73)	0.01(0.81)
Constant	-14.77(0.00)***	-14.78(0.00)***	-15.40(0.00)***	-20.33(0.00)***
N	305	307	307	305
R^2	0.61	0.56		0.63
Wald-statistic			274	
Log-likelihood			517	

Notes: All but the dummy variables are in natural logarithms. *P*-values are in parenthesis. *, **, and ***, indicate significance at a 10%, 5% and 1 % level, respectively. It fails to reject the null hypothesis that the error term is normally distributed at any level of significance since the probability of skewness of residual was 0.57. Standard errors were corrected for heteroskedasticity. Fixed effects estimation includes time dummies.

#: Mean expected value for zero data in the dependent variable is generated based on the OLS results for non-zero observations.

Results in column 4 reveal that higher per capita income of destination countries relative to source country motivates emigration and the coefficient is significant at a 1% level of significance. The demographic variable represented by the interaction of population in the country i and j shows a positive significant effect. In line with the theory, longer distance between source and destination countries discourages emigration at a significant rate. However, FE shows a much lower degree of impact of distance on emigration flows since this method accounts the effects of time period. This reveals that the role of distance as a barrier to emigration has been decaying over time. Furthermore, although all the three main gravity variables appear as significant determinants of labor migration from Bangladesh, the extent of marginal effects of the demographic factor is the highest. Depreciation of domestic currency was found to exert a positive but insignificant impact on emigration. The variable $free_{ij}$ indicates that the higher the freedom from corruption in country j relative to country i, higher is the rate of emigration. The coefficient of the $free_{ij}$ variable is significant at a 5% level and signifies that people have strong preference to emigrate in a corruption free destination. Two variables relating to cultural aspects such as $relg_{ij}$ (common religion between source and destination country) and $lang_j$ (dominantly English speaking destination) influence emigration positively and significantly. The $relg_{ij}$ dummy clearly demonstrates that common religion between home and host country has a profound influence on emigration rates[3]. Although English is not the first language in Bangladesh, literate people understand English better than any other foreign language. With the increase in literacy rate (secondary school enrollment) in Bangladesh, it is likely that more and more emigrants prefer English speaking destinations. In particular, emigrants for long-term settlement in a foreign country have strong preference for English speaking countries. In order to capture the effects of economic cycle on emigration decision, this study included the GDP growth rates of the host countries ($Ygrowth_j$). Although the estimation result has the hypothetical sign, the coefficient is insignificant at any level of significance. This proves that economic growth of the destination countries does not constitute a sensitive factor of emigration flows Bangladesh. Finally, the OECD dummy shows a significant negative sign and it is acceptable since unskilled emigrants from Bangladesh mostly unfit with the labor requirements of the OECD countries. In this analysis, skilled manpower means people possessing technical and professional expertise. A significant negative sign for the OECD dummy implies that non-OECD countries constitute the key destinations for international labor migration from Bangladesh. The non-OECD sample countries are mostly located in

Asia, have high per capita income and share more cultural similarities with Bangladesh.

5. Conclusion and Future Strategies

This study applies the well-known gravity model to empirically assess the determinants of international migration flows from Bangladesh – a critically important sector for sustainable socio-economic development in the country. Apart from the economic, demographic, historical, and cultural determinants of immigration found in the literature, the current research examined the possible effects of two new variables: bilateral real exchange rates and common religion between home and host country. In the presence of zero observation in the dependent variable, four alternative estimation techniques i.e. OLS, SOLS, Tobit, and FE were employed; and the FE methodology was found robust and superior than the other three. The findings of the study unveil that along with economic and demographic factors, cultural similarities dominantly influence decision to emigrate. In general, high income non-OECD countries of the Gulf Cooperation Council (GCC) and the English speaking OECD countries were found as favorable destinations for emigration. The member states of the GCC and the OECD bloc usually invite different kinds of immigrants; as such the former group mainly offers contract employment for unskilled labor while the latter group mostly attracts skilled immigrants. Thus, usually two distinct kinds of emigrants move to the GCC and the OECD countries. Overall, countries in the Persian Gulf region remain the major destinations since Bangladesh mainly supplies unskilled manpower. Furthermore, the Gulf countries not only have higher income than Bangladesh but also share more cultural similarities with the latter and have a shorter geographic distance.

Besides, a number of studies i.e. Clark et al. (2007); Pedersen et al. (2008); Zavodny (1999); reveal a strong positive 'network effect' on immigration flows which means existing stock of emigrants in a particular country play a positive role to future emigration in the same destination. Thus, prospective emigrants from Bangladesh are more likely to emigrate in those destinations where the existing stock of own nationals is high. In contrary to this underpinning, emigration flows from Bangladesh to some of the Gulf and Middle East countries during the last few years declined substantially although emigration from other South Asian countries increased during the same time. This suggests failure of the regulatory agencies and institutions in Bangladesh to protect its

manpower export market through strengthening diplomatic relations and bilateral negotiations. Besides, cases of severe violation of law by some emigrants in some host countries and also emigration through illegal routes dampen the prospect of sending manpower. The outbreak of political turmoil in some of the Arab states might cause a further decline in demand for emigrant workers that might hurt economic emancipation of a large segment of population in Bangladesh. Furthermore, current emigration prospect to the OECD countries seems to dim due to rising unemployment rates and budget constraints caused by long persistent economic crisis. However, in the long run, demand for immigrants in some of the OECD countries including Japan and the Republic of Korea are expected to rise due to declining birth rates and aging populations. Under this circumstance diversified strategies should be undertaken for sustainable development of manpower export as such; (1) strengthening bilateral relations with the GCC countries to expedite manpower export to those economies and also signing memorandum of understanding with the host country's government to protect labor rights of emigrant workers; (2) tackling unlawful avenues of sending labor through active and supportive government intervention on recruitment agencies; (3) extending legal support to protect potential emigrants from harassment by recruitment agencies at the home and host countries; (4) imparting training to workers on foreign language, work rules, and law and order systems of the host countries prior to leaving for overseas employment; (5) designing strategic plans for sending technically skilled labors like nurses, electricians, plumbers, and carpenters; (6) exploring new market for manpower export and implementing supportive policies for building appropriate labor pool to meet the requirements of the receiving countries; (7) adopting the model of other countries like Indonesia and Philippines to materialize manpower export potentials in the OECD countries, particularly in Japan and the Republic of Korea. Above all, institutional strengthening should be prioritized for smooth management of manpower export and for sustaining congenial bilateral relations.

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Notes:

1 Over the period of 2001-2010, average growth rates of remittances and exports in Bangladesh were 19.1% and 10.7 %, respectively.

2 Any missing data in the World Development Indicators (WDI) were collected from the International Financial Statistics (IFS).

3 Robustness of the religion dummy has been checked by using alternative regression specifications and by putting GCC dummy (dummy for the member states of the Gulf Cooperation Council) and OPEC dummy (dummy for the countries included in the Organization of Petroleum Exporting Countries) separately. The logic behind the framing of alternative dummies is that religion of all the GCC and the OPEC member countries included in the sample is similar to source country's religion. All estimations reported positive significant results for the alternative dummies without any change in the signs of other variables. Regression results with alternative dummies are not reported in the paper but can be obtained upon request.

Appendix

Table A: Data sources

Variable description	Variable specification	Data Sources
Annual flow of emigrants	M_{ij}	(a) Flow of Migration by Country of Employment, Bureau of Manpower, Employment and Training (http://www.bmet.org.bd/download.html); (b) International Migration Flows to and from Selected Countries: The 2010 Revision (CD-Rom), Population Division, The United Nations; (c) International Migration Database, OECD's Library (http://www.oecd-ilibrary.org/statistics) (d) Department of Immigration and Citizenship, Government of Australia; (e) Immigration Data Hub, Migration Policy Institute (http://www.migrationpolicy.org/)
Annual inflow of remittances	-	Migration and Remittances Data, The World Bank (http://econ.worldbank.org)
Consumer Price Index	CPI	WDI (http://data.worldbank.org/data-catalog/world-development-indicators)
Common colonizer after 1945	$comcol_{ij}$	CEPII(http://www.cepii.fr/anglaisgraph/bdd/distances.htm)
Distance	$dist_{ij}$	CEPII(http://www.cepii.fr/anglaisgraph/bdd/distances.htm)
Exchange rates in US$	Ex_{ij}	UNCTAD (http://unctadstat.unctad.org)
GDP per capita	Y_i and Y_j	WDI (http://data.worldbank.org/data-catalog/world-development-indicators)
GDP growth rates of the host countries	$Ygrowth_j$	WDI (http://data.worldbank.org/data-catalog/world-development-indicators)
Index of freedom from corruption Emigrant stocks	$free_{ij}$	The Heritage Foundation (http://www.heritage.org) (a) Global Bilateral Migration Database, World Bank (http://econ.worldbank.org); (b) National Statistical Institute, Italy (www.demo.istat.it) (c) International Migration Database, OECD's Library (http://www.oecd-ilibrary.org/statistics) (d) International Labor Migration, ILO (http://laborsta.ilo.org/data_topic_E.html)
Official language	$lang_j$	The World Fact Book, Central Intelligence Agency (CIA) (https://www.cia.gov/library/publications/the-world-factbook/fields/2098.html)
Population	Ni and N_j	WDI (http://data.worldbank.org/data-catalog/world-development-indicators)
Religion	$relg_{ij}$	World religion map (http://www.mapsofworld.com/world-religion-map.htm)

Table B: List of destination countries included in the analysis:

Australia (AUS), Bahrain (BHR), Brunei Darussalam (BRN), Canada (CAN), Germany (DEU), Italy (ITA), Republic of Korea (KOR), Kuwait (KWT), Libyan Arab Jamahiriya (LBY), Malaysia (MYS), Mauritius (MUS), Netherlands (NLD), Norway (NOR), Oman (OMN), Qatar (QAT), Saudi Arabia (SAU), Singapore (SGP), Spain (ESP), Sudan (SDN), Sweden (SWE), United Arab Emirates (ARE), United Kingdom (GBR), United States of America (USA)

Note: iso3 codes shown in parenthesis are the United Nations Standard Countries/Area codes used in trade data.

Table C: Category-wise Overseas Employment from Bangladesh (1980-2010)

Year	Professional	Skilled	Semi-skilled	Less-skilled	Total
1980	1983	12209	2343	13538	30073
1981	3892	22432	2449	27014	55787
1982	3898	20611	3272	34981	62762
1983	1822	18939	5098	33361	59220
1984	2642	17183	5484	31405	56714
1985	2568	28225	7823	39078	77694
1986	2210	26294	9265	30889	68658
1987	2223	23839	9619	38336	74017
1988	2670	25286	10809	29356	68121
1989	5325	38820	17659	39920	101724
1990	6004	35613	20792	41405	103814
1991	9024	46887	32605	58615	147131
1992	11375	50689	30977	95083	188124
1993	11112	71662	66168	95566	244508
1994	8390	61040	46519	70377	186326
1995	6352	59907	32055	89229	187543
1996	3188	64301	34689	109536	211714
1997	3797	65211	43558	118511	231077
1998	9574	74718	51590	131785	267667
1999	8045	98449	44649	116741	267884
2000	10669	99606	26461	85950	222686
2001	5940	42742	30702	109581	188965
2002	14470	56265	36025	118516	225276
2003	15862	74530	29236	134562	254190
2004	12202	110177	28327	122252	272958
2005	1945	113655	24546	112556	252702
2006	925	115468	33965	231158	381516
2007	676	165338	183673	481922	831609
2008	1864	292364	132825	448002	875055
2009	383	104627	18419	341922	465351
2010	387	90621	12469	279673	383150

Source: BMET

Table D: Stock of emigrants from Bangladesh (1990-2010)

Destination country	1990	2000	2010
AUS	2237	8943	20497
BHR	7980	12198	n.a.
BRN	663	943	1334
CAN	2277	21945	38684
DEU	4103	14155	7093
ITA	5134	23376	71830
JPN	3855	7151	11385
KOR	n.a.	5148	5227
KWT	33157	31310	208893
MYS	37871	77856	122912
MUS	18	97	n.a.
OMN	69525	102360	149275
QAT	10724	19135	n.a.
SAU	338332	366007	447055
SGP	14569	16327	20432
ESP	1171	1214	8706
ARE	35862	61616	100668
GBR	107183	163655	210244
USA	23029	92655	148326

Note: n.a. indicates not available data
Source: Author's compilation from various sources mentioned in Table A

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