MIGRATION AND REMITTANCES

The Impacts of a Government Intermediated International Migration Program

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ABBREVIATIONS AND ACRONYMS

BDT	Bangladeshi Taka
BLA	bilateral labor agreements
BMET	Bureau of Manpower, Employment, and Training
BOESL	Bangladesh Overseas Employment Services Limited
EU	European Union
G2G	government-to-government
GDP	gross domestic product
KNOMAD	Global Knowledge and Partnership on Migration and Development
MEWOE	Ministry of Expatriates' Welfare and Overseas Employment
MFI	micro-finance institution
MOU	memorandum of understanding
OECD	Organization for Economic Cooperation and Development
PPP	purchasing power parity
TTC	technical training centers
UAE	United Arab Emirates
UISC	Union Information Service Centers

FOREWORD

The number of international migrants has continued to surge worldwide. By 2017, 258 million people lived outside of their country of birth—a 50 percent increase since 2000. Consequently, the role migration plays in the development of poor countries has also risen. Global remittance flow had risen to $626 billion by 2018, triple the size of official development assistance and foreign aid. Remittance inflows make up a sizable proportion of national GDP for several poorer countries, particularly those in South Asia.

Most of the existing evidence on the impact of migration and remittances comes from studies of migration to OECD countries. However, as recent numbers show, South-South migration is more prevalent than North-South migration. This report adds value to the global knowledge base by examining the impacts of migration flows in this important corridor. Consistent with the wider literature, the report finds that such migration for work yields large positive gains to both the migrants and their families back home. Many rapidly growing economies in the developing world can be an attractive destination for workers in other developing countries.

This report is also novel for the type of migration it studies. It examines migration that is government-intermediated, deliberately temporary, tied to a specific type of work, and that offers no possibility of residency in the destination country. In the current socio-political environment of high resistance toward more relaxed migration policies, this type of migration can offer a pathway to capture some of the gains from international labor mobility. Temporary migration places no burden on the welfare systems of the destination countries and, by virtue of being demand-driven, poses almost no threat to domestic jobs.

Yet, for all the benefits temporary migration schemes offer, several challenges remain. High recruitment costs in the private recruitment market result in higher indebtedness and lower returns from migration. Working and living conditions in the destination countries are poor, and instances of worker mistreatment abound. Finally, migration opportunities are still out of the reach of the poorest. Resolving these issues will require a concerted effort from the migrants, recruitment agents, and employers, as well as governments of both the receiving and sending countries.

This report is very timely, as the governments of Bangladesh and Malaysia are amid discussions to resume the flow of migrant workers, which has stalled since September 2018 owing to malpractice in worker recruitment. We hope this report will guide the ongoing policy discussions in Bangladesh as well as broader policy discussions globally on harnessing the benefits of temporary international migration for both the sending and receiving countries.

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EXECUTIVE SUMMARY

INTRODUCTION

Bangladesh has seen remarkable GDP growth and poverty reduction in recent years. However, this growth has not translated into a similar level of job creation in the domestic market. In fact, while the pace of GDP growth has accelerated in recent years, the pace of job growth has slowed (Farole and Cho, 2017). With the working-age population growing faster than jobs, there has been an increase in unemployment and underemployment, particularly among youth. Over 1.8 million youths enter the labor force every year, more than the jobs being created domestically.

Bangladesh has relied on and will continue to rely on temporary international migration for low-skilled work. Part of the recent growth and poverty reduction has been driven by the remittances sent by workers migrating abroad for work. Foreign labor markets, particularly those in the Persian Gulf countries and middle-income economies like Malaysia in (South) East Asia, have become increasingly important sources of jobs and remittance income for Bangladesh. In 2015, Bangladesh was the 10th largest remittance-receiving economy, a direct consequence of more than 0.5 million Bangladeshi workers migrating abroad for low-skilled work every year.

However, challenges remain in making international migration an effective jobs and poverty reduction strategy for Bangladesh. Migration costs are high in Bangladesh, making it unaffordable for many who would benefit from such opportunities. Recruitment malpractice is also common. In the absence of a good way to regulate this market, drastic and suboptimal policy responses, such as banning migration in certain corridors, have become common. To end such malpractice-induced bans, the governments of Malaysia and Bangladesh signed a Memorandum of Understanding (MOU) in 2012 to resume worker flows from Bangladesh to Malaysia under a government-to-government (G2G) mechanism of government-intermediated worker recruitment.

This report evaluates the government-intermediated temporary international migration program to provide evidence on (i) the impact of such migration on the migrants and their families and (ii) the features that distinguish government intermediation from other intermediation, to provide policy recommendations on the role of government in making temporary international migration a viable and sustainable strategy for jobs and for poverty reduction.

THE G2G MIGRATION PROGRAM

The initial agreement was to recruit about 30,000 workers under the G2G program to work in the palm-oil sector of Malaysia. In 2013, the Bureau of Manpower, Employment, and Training (BMET) started the nationwide registration of interested applicants. BMET received an overwhelming response from 1.43 million applicants. BMET then conducted a lottery to randomly select about 36,000 workers, representing all unions (lowest level administrative units) in Bangladesh. The workers selected in this first lottery were further divided into three phases with another lottery. Intermediation was begun immediately for the Phase 1 winners and was gradually expanded to include Phase 2 and Phase 3 winners. Over the years, the program came under public criticism, mostly for not involving the private sector in the intermediation process and the program was eventually halted. By 2018, fewer than 10,000 lottery winners had migrated, most of them winners of the Phase 1 lottery.

This study uses the administrative data obtained on the winners and losers of the lottery to physically locate and interview the applicants or their household members in 522 unions in the divisions of Dhaka (including Mymensingh) and Chittagong in 2018. This study collects data on 3,512 lottery applicants (through the applicants or their households), of which 1,127 had won the lottery and were placed in Phase 1 (group T1), 1,138 had won the lottery but were in Phase 2 and 3 (group T2), and the remaining 1,247 had lost the lottery (control group).

Five years after the lottery, 76 percent of group T1 had migrated abroad, compared to 29 percent of group T2, and 19 percent of group T3. The G2G lottery program, therefore, was effective in drastically improving the migration rates in group T1 (and T2). This study then uses the lottery results—that is, whether applicants won the Phase 1 lottery—as a statistical instrument to examine government-intermediated low-skilled international migration, specifically to assess the impact of such migration on the migrants as well as their families.

Figure 1	Impact of migration on indexes of outcomes
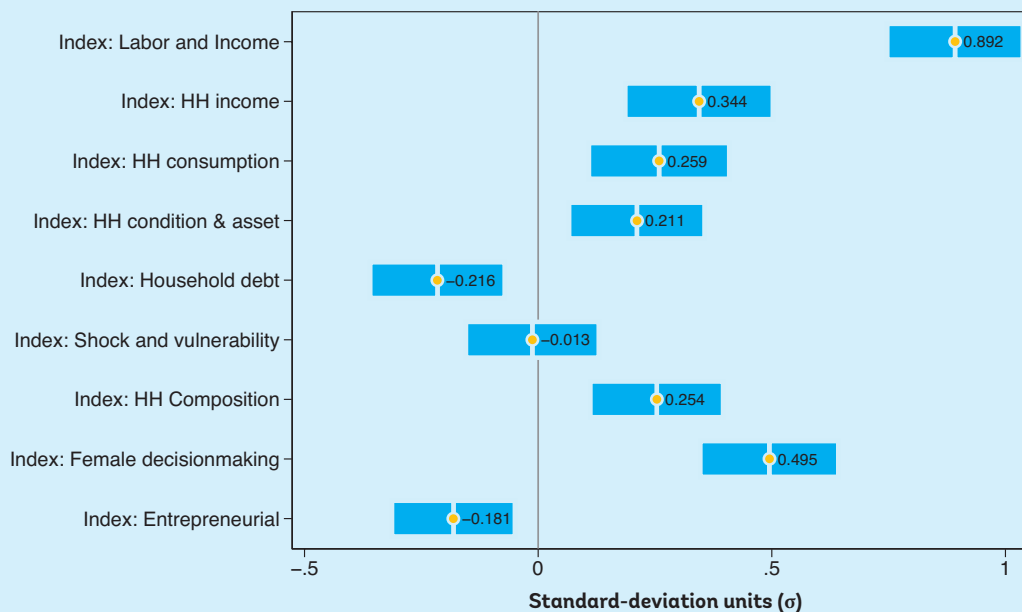
Source: Authors' estimates from the survey data collected for this study.

Notes: Figure shows the impact of migration on indexes labeled in the vertical axis. Each point represents the magnitude of the impact (in standard deviation units) and the bar represents the 95 percent confidence interval. Each of these indexes is an inverse covariance-weighted index of the outcomes discussed in detail through this report (see Appendix A.2 for details on the index). Each index is normalized so that the control group has mean 0 and standard deviation of 1. Lottery results are used as instruments for migration. The estimations control for applicant height, age, religion, parental education, and indicators for survey Upazilas. Standard errors are clustered at the union level. Appendix Table 1 presents the full estimation results. "HH" refers to household.

Interpretation example: Migration increases the labor and income index by 0.892σ (standard-deviation units).

IMPACTS OF THE G2G INTERMEDIATED MIGRATION PROGRAM

Temporary international migration for low-skilled work drastically improves the welfare of the migrant as well as their families. Figure 1 summarizes the impact on indexes of families of outcomes, and Figure 2 shows the impact on a few selected outcomes.

The key results can be summarized as follows:

- **LABOR, INCOME, AND EXPENDITURES: Migration leads to substantial income gains for migrants, which further leads to income gains for their households through increased remittance income.** Total earned income more than triples upon migration. This increase comes from increased time spent in wage work as well as an increase of over 130 percent in productivity (hourly earnings). Total household income also doubles, owing to the greater remittance income sent by the migrants. However, the labor supply and incomes of adult household members do not change as a result of migration and remittance income.

  Higher income is then translated into higher household consumption and better living conditions. Per-capita consumption increases by 22 percent, with increases in food as well as non-food, education, and health expenditures. Consequently, poverty rates, measured both at PPP-adjusted $3.20 per day and at PPP-adjusted $5.50 per day, falls drastically. The families of the migrants are 4 percentage points more likely to have purchased real estate and are staying in houses whose values are 26 percent higher.

- **FINANCIAL SECURITY AND VULNERABILITY: Migration improves the overall debt position and financial security of the households of migrants.** These households are 10 percentage points less likely to have an outstanding loan, and even among those that have loans the loans are from cheaper sources (relatives and friends, as opposed to moneylenders). This suggests that though migrants borrowed to migrate, they have paid back their loans. The household is also in a more secure financial condition, with better access to funds in case of need.

- **HOUSEHOLD COMPOSITION AND GENDER EMPOWERMENT: Migration, of male members in this context, does not change the overall household size, but it does change household composition in interesting ways.** Upon migration of the male members, the remaining household members are more likely to stay together and are 5 percentage points (42 percent) less likely to split from their pre-lottery households. Migrants, by virtue of being away in their prime age, are also 6 percentage points (30 percent) less likely to get married since the G2G lottery.

  More interestingly, the migration of a male member increases the role of women in the household. Migration increases the likelihood of female-headed households and also increases the involvement of women in household decision-making. This increased involvement is apparent not just in areas traditionally associated with female decisions (such as children's schooling and health), but also in more substantive aspects of operating the household. Such improvements in the role of women for an extended period may persist even after the migrant returns.

- **INVESTMENTS IN HUMAN CAPITAL AND HOUSEHOLD ENTREPRENEURIAL ACTIVITIES:** Many migrants report their children's education as a top priority and motivation behind their decision to migrate. In the context of this study, schooling access and attendance does not seem be a binding constraint for the study sample as most of the children are already attending school. Hence, **migration has no impact on schooling attendance and attainment of children.** However, **migration increases educational expenditures on children,** particularly on girls, by 20 percent. The higher expenditures go towards purchasing quality inputs such as hiring better tutors. Furthermore, migration reduces children's involvement in wage-work for children ages 10–14.

However, **migration does not lead to an increase in household entrepreneurial activities.** Migration lowers the likelihood of the household operating a nonfarm enterprise by 12 percentage points (27 percent). Similarly, migration lowers expenditures in capital inputs as well as labor for household business as well as family farms. This result is potentially driven by the fact that migrants tend to be the most entrepreneurial family members, and in their absence household investments in entrepreneurial activity fall. The evidence also suggests that once the migrants return, involvement in entrepreneurial activity is likely to increase.

Figure 2	Impact of migration on selected outcomes
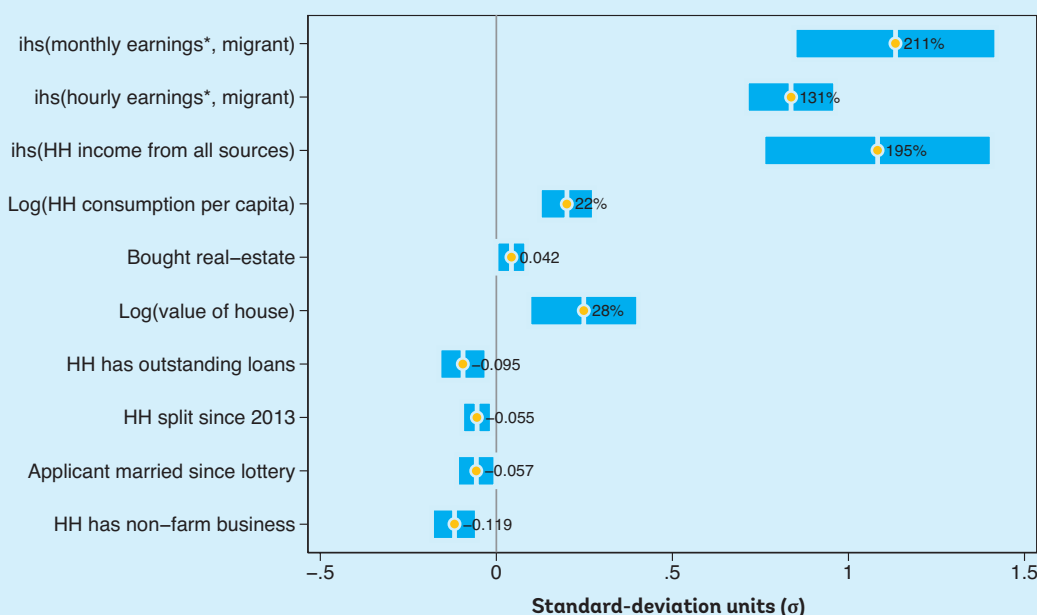
Source: Authors' estimates from the survey data collected for this study.

Note: Figure shows the impact of migration on outcomes indicated in the vertical axis. "ihs" refers to inverse hyperbolic sine transformation of the variables. "HH" refers to household. Each point represents the magnitude of the impact in standard deviation units and the bar represents the 95 percent confidence interval. The labels next to the point indicates the impact on non-standardized variant of the outcome. Lottery results used as instruments for migration. The estimations control for applicant height, age, religion, parental education, and indicators for survey Upazilas. Standard errors are clustered at the union level.

The asterisk (*) in the earnings outcome indicate that these are imputed measures to account for missing data. See Section IV for full details on imputation as well as other results.

Interpretation example: Migration increases monthly earnings of the migrant by 211 percent (first row). Migration reduces the likelihood of a HH having outstanding loans by 9.5 percentage points (seventh row).

COMPARISON OF MIGRANT EXPERIENCES UNDER THE G2G PROGRAM AND THE PRIVATE CHANNELS

Figure 3	Differences in pre-migration experiences between G2G and non-G2G migrants
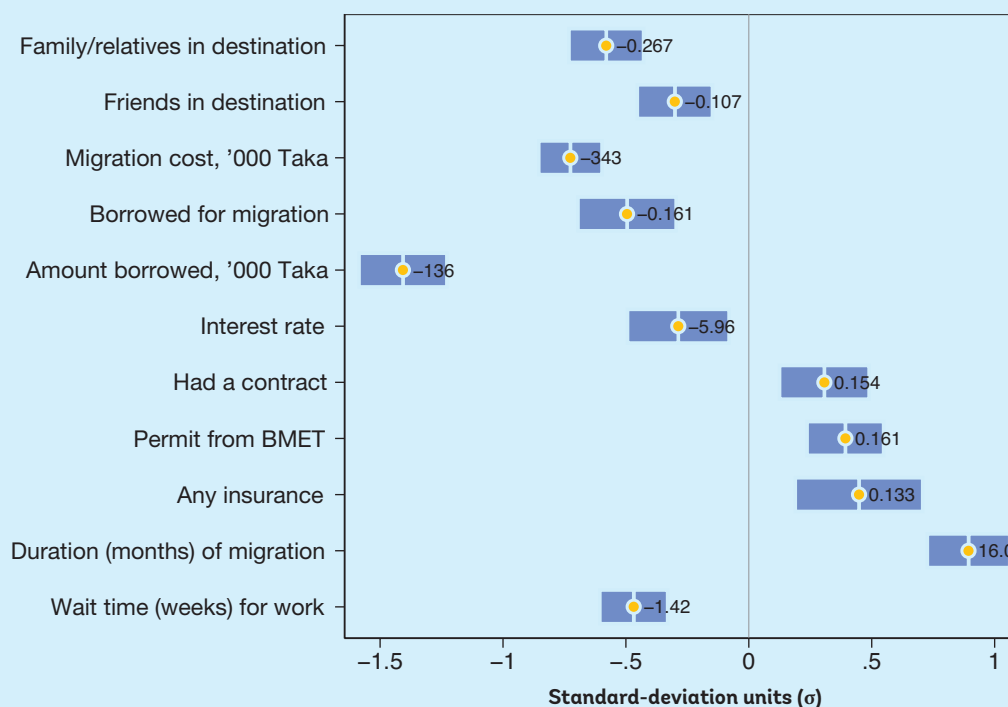
Note: Figure shows the impact of G2G intermediation on outcomes indicated in the vertical axis. Sample limited to migrants only. Each point shows the impact in standard-deviation units. The labels next to the point represent the (non-standardized) impact of migration. The bars show 95 percent confidence intervals.

Interpretation example: Compared to non-G2G migrants, G2G migrants were 26.7 percentage points less likely to have a family member or relative in the destination country (first row). The migration costs for G2G migrants was BDT 343,000 less than for the non-G2G migrants.

The large welfare impacts suggest that promoting temporary international migration for low-skilled work is beneficial for the migrants and their families. This study further compares the experience of migrants in the G2G program with that of migrants leaving through private channels to illustrate several benefits of the G2G program which could be driving the welfare impacts. As seen in Figure 3:

- **The G2G program was better at providing access to migration opportunities to those without social network contacts abroad.** Overall, a quarter of the migration from Bangladesh happens through arrangements initiated by the social network of family, relatives, and friends. Those without such a network are less likely to successfully migrate abroad. Among private channel migrants, 30 percent had family or relatives in the destination country. The rate was only 3.2 percent for G2G migrants. Moreover, those who are disadvantaged in terms of social networks abroad are also likely to have poorer jobs outcomes domestically.

- **The G2G program made migration more affordable.** Overall, migrants from Bangladesh pay an average of around BDT 390,000 to migrate. With the G2G program, migrants paid only BDT 45,000. The lower cost made migration more affordable to poorer migrants and those with borrowing constraints.

- **The G2G program resulted in a lower debt burden among migrants.** Migrants typically borrow to migrate, with almost a third borrowing from moneylenders at high interest rates. The G2G program reduced borrowing by 16 percentage points (19 percent), the average amount borrowed by BDT 136,000 (72 percent), and lowered average interest rates by 6 percentage points (40 percent). That is, the G2G program resulted in migrants borrowing less, and even when they do borrow, they do so from a cheaper source of credit.

- **Due to reduced cost and debt burden, the net earnings from a three-year migration, after deducting the cost and interest payments, are 87 percent higher under the G2G program compared to private channels.** For a two-year migration, net earnings from private channel migration are similar to the earnings they could have in Bangladesh without migrating.

- **The G2G program ensured uptake of better orientation, training, and more appropriate social protection before migrating.** Compared to private channel migrants, G2G migrants were more likely to migrate with necessary clearances, training, orientation, employment contracts, and proper insurance. They were also likely to start work earlier upon arrival and have contracts that allow for extensions.

POLICY RECOMMENDATIONS

This study demonstrates the large benefits of a low-cost temporary international migration scheme for low-skilled work. This highlights the important role that the Government of Bangladesh has to play to increase access to such opportunities, make it more affordable and accessible, and make it an effective tool for poverty reduction. To achieve this, the government needs to:

i. **Increase access** to migration opportunities for more people through bilateral agreements with more countries and in more occupations. Successful agreements are likely to be those that are also beneficial to the destination countries. Targeting occupations in the destination countries where the local supply of labor is scarce and where the demand for certain services is increasing would be an effective way to increase the migration of workers from Bangladesh.

ii. **Lower the cost** of temporary international migration. The gains from migration estimated in this study resulted from the lower costs of migration under the G2G program. To ensure such gains from migration, the government needs to take active steps in lowering the costs. Further studies on various ways to lower costs, including learning from international experiences, will be essential to identify the right mix of policy options that suits the current context. Government and civil society/ NGO-provided recruitment alternatives – possibly targeted to specific populations – alongside robust and well-regulated private recruitment, could potentially be effective in achieving the objective.

iii. **Offer affordable financing options,** in combination with lower costs, for the poor, who are likely to benefit the most from migration. Migration costs, even under a government intermediated program, might still be a barrier for the poor. Introducing affordable financing options, including options where poor migrants pay from their earnings abroad, can improve their access to migration opportunities. Such financing schemes, when combined with lower costs as well as other services to the migrants and their families, can drastically improve the poverty reduction potential of international migration.

I INTRODUCTION

Bangladesh has made considerable progress in increasing incomes and reducing poverty in the recent decades. Since 2000, Bangladesh has sustained a period of high growth. Real GDP per-capita more than doubled between 2000 and 2017, with an annual growth rate of 4.6 percent. The GDP growth gained momentum after 2010, with an annual growth rate of 5.4 percent. This growth has also translated into a large reduction in poverty rates. The extreme poverty rate (PPP$1.90 per day) fell from 34 percent in 2000 to below 13 percent in 2016, and the number of poor people was reduced by more than a half over the same period.

A large part of the progress has been driven by remittances sent by migrant workers. Between 2000 and 2017, remittance inflows increased by almost seven times with an annual growth of about 12 percent. At its peak, between 2008 and 2012, remittances made up one-tenth of the national GDP, making them a significant source of national income. In 2015, Bangladesh was the 10th largest remittance-receiving country globally. Remittance from workers abroad has been one of the key drivers of poverty reduction in Bangladesh, and it continues to be a large share of household income for poorer households (Hill and Endara, 2019; World Bank, 2013, 2015).

With increased migration of low-skilled workers, labor markets abroad have become an important source of employment for Bangladesh. The rise in remittance income has been driven by increases in the migration of Bangladeshi workers for low-skilled work. Data from the Bureau of Manpower, Employment, and Training (BMET) show that the annual outflow of low-skilled workers from Bangladesh has increased from about 0.2 million workers in 2000 to well over 0.5 million in recent years. The outflow increased to a record high of 1 million workers in 2017, with over half of them going to Saudi Arabia. Historically, Saudi Arabia (30 percent), the UAE (19 percent), Oman (12 percent), Malaysia (9 percent), Qatar (6 percent), and Singapore (6 percent) have been the major destination countries for low-skilled Bangladeshi workers. Estimates suggest that about 10 percent of the Bangladeshi male workforce are international migrant workers.

Access to labor markets abroad will become increasingly important for Bangladesh. Recent analyses show that the pace of domestic job creation has slowed sharply in recent years (Farole and Cho, 2017). From 2003 to 2010, total employment in the working-age population grew by 3.1 percent annually, faster than the growth of the working-age population. That means the pace of job creation was enough to absorb the expanding working-age population, providing enough opportunities for the youth entering the labor market. However, employment grew at a much slower pace of 1.8 percent during 2010–16, even though the economy was growing at a faster rate. This suggests that the recent spell of growth has not generated enough jobs to accommodate the entrants to the labor market. The pace of jobs being created domestically is not enough to keep a booming young demographic gainfully employed. Bangladesh needs to find more opportunities for its largely low- or semi-skilled labor force in labor markets abroad.

At the same time, the demand for low-skilled workers continues to be high in a few key markets abroad. Key destination countries in the Middle East and East Asia continue to have a high demand for low-skilled migrant workers. Large-scale infrastructure projects in the Gulf countries (such as the World Cup 2022-related construction projects in Qatar, metro and airport projects in Kuwait, and megacities and real estate development projects in the UAE) have created, and will continue to create, a demand for low- and semi-skilled labor in construction and related sectors that is not met by their domestic workforce. Similarly, there are large unmet demands for workers in agricultural sectors in countries like Saudi Arabia and Malaysia. Large improvements in living standards in the Gulf countries as well as the East Asian countries has also created a large demand for migrant labor in the hospitality and personal service sectors. The demand in these sectors is likely to continue in the short term. Aging demographics in many developed countries are expected to raise the demand for migrant workers in care industries as well.

Bangladesh has bilateral labor agreements (BLAs) with many of these countries, with various degrees of government involvement in migration management over time. Various BLAs with destination countries have been crucial in facilitating the temporary migration of Bangladeshi workers over the years.[1] However, the nature of BLAs differs by country. For example, a BLA with Korea features extensive government involvement in recruitment with almost no participation by the private sector, whereas the BLAs between Saudi Arabia and Bangladesh feature a mix where the private sector handles the bulk of the worker intermediation process and the government plays a monitoring and regulatory role in providing permits to the workers and recruitment agencies. The BLA between Bangladesh and Malaysia shifted from a greater involvement of the government in recruitment (studied in this report) toward a greater involvement of the private sector. The BLAs with other destination countries, such as Oman, Kuwait, Qatar, and Jordan, are similar to the one with Saudi Arabia in terms of government participation in intermediation.

One of the key challenges to international migration being an effective and sustainable employment and poverty reduction strategy for Bangladesh is the high costs of migration. Several studies have consistently found that the costs of migration are much higher in Bangladesh relative to comparator countries (World Bank 2013; Farole and Cho, 2017). For instance, the Global Knowledge Partnership on Migration and Development (KNOMAD) Migration Cost Survey of 2015 finds that Bangladeshis pay higher recruitment costs worldwide, ranging between $1,675 and $5,145, within the same range found in this study. Higher costs mean that the poorest households cannot participate in migration, and even for those who participate the returns to migration are much lower. This reduces the scope and effectiveness of migration in reducing poverty and may even increase indebtedness. Furthermore, the higher recruitment costs of private recruitment cause workers to seek to migrate through their personal networks abroad to circumvent those costs. Although this strategy works well for those with social networks, it makes migration opportunities out of reach for those who do not.

It is extremely important for Bangladesh to make migration opportunities more accessible and affordable. One of the potential solutions for lowering costs could be to introduce competition into the recruitment market. However, even with thousands of recruitment agencies, migration costs continue to be high. The nature of the recruitment market—that recruitment agencies have more information about specific job opportunities abroad than the potential migrants have—implies that recruitment agencies will extract rents from the potential migrants. Another solution could be more regulations involving recruitment practices and costs, although such policies are less likely to succeed because of enforcement and monitoring issues.

Yet another solution, clearly suboptimal but often practiced, is to ban migration. Due to recruitment malpractice and anecdotes of worker exploitation in certain corridors, Bangladesh (or the destination countries) often ban migration in certain corridors, or in certain occupation. For instance, Malaysia banned the migration of all Bangladeshi workers in 2008 for four years owing to recruitment malpractice. Finally, another solution could be the direct involvement of government in migrant recruitment processes. Indeed, the governments of Malaysia and Bangladesh signed an MOU in 2012 to start recruiting workers, on a limited scale, through a government intermediated government-to-government (G2G) mechanism.

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1   Please see Box 1 for a brief description of the BLAs for international labor migration.

This report studies the impact of G2G-intermediated migration on outcomes for the migrants as well as their families. The G2G program offered both access and intermediation to a limited number of jobs in the palm-oil sector of Malaysia. Due to an overwhelming demand for this migration opportunity, BMET, the government body managing the recruitment process, conducted a lottery to select people for intermediation. In this setting, we provide evidence on two key questions of policy interest:

i) What is the impact of low-skilled migration, as facilitated by the G2G program, on the welfare of the migrants and their families?

ii) How do the recruitment and migration processes differ, from the perspective of the migrants, between the government-intermediated G2G scheme and the private-sector intermediated scheme?

We then use the evidence to offer policy suggestions on the role of government to make temporary international migration a viable and sustainable jobs and poverty-reduction strategy.

BOX 1 BILATERAL LABOR AGREEMENTS FOR TEMPORARY INTERNATIONAL MIGRATION FOR LOW-SKILLED WORK

Managed temporary international work-migration provides a pathway, at least partially, to capture the gains from the unmatched demand and supply of low-skilled workers across countries. Given the high demand of low-skilled migrant workers in the destination countries and the enthusiastic supply of workers from the sending countries, temporary labor migration arrangements have emerged as a partial solution. Bilateral Labor Agreements (BLAs) between the sending and receiving countries are common policy instruments for such arrangements.

BLAs allow the destination countries to address the labor shortages in their countries in specific occupations, and/or at specific times in the year. They often tie migration opportunities with specific types of work (or even a specific job) and are explicitly temporary. Because of the temporary nature of the employment contract, migration under such schemes is not expected to pose strains to the welfare systems of the destination countries and are therefore more politically palatable. For the sending countries as well, BLAs provide a way to formalize and facilitate migration outflows.

BLAs for temporary international migration are common across the world. Such agreements have been used in the United States, the EU, and other OECD countries to recruit workers from neighboring countries for seasonal work, typically in agriculture and tourism (see, Gibson and McKenzie 2014 for a study of New Zealand's Recognized Seasonal Employer program with the Pacific Islands). BLAs for longer-term temporary migration are also popular among the countries in the Middle East (receiving) and South Asia (sending). Between 2012 and 2016, 2.5 to 3 million workers migrated temporarily from Bangladesh, India, Nepal, Pakistan, and Sri Lanka every year under such temporary labor agreements.

BLAs vary widely in content and nature, including the extent of government involvement in worker intermediation. One of the features of the BLAs as a policy instrument is the flexibility it offers. Sending and destination countries can mutually agree on various ways to manage the migration process, including in the degree of government involvement in intermediation.

II THE G2G MIGRATION LOTTERY PROGRAM

A state-managed recruitment system emerged as a solution to address concerns of malpractice in worker recruitment in the Bangladesh-Malaysia migration corridor. In November 2012, Bangladesh signed a memorandum of understanding (MOU) with Malaysia to recruit workers through a government-to-government (G2G) mechanism. This effectively ended the four-year ban on migration flows from Bangladesh to Malaysia. This mechanism meant that the government, and not private recruitment firms, would manage the recruitment process. The initial agreement was expected to send about 30,000 male workers from Bangladesh to work in the palm-oil sector of Malaysia. In early 2013, the Bangladesh Bureau of Manpower, Employment, and Training (BMET), under the Ministry of Expatriates' Welfare and Overseas Employment (MEWOE), started the recruitment process.

The recruitment process showed an overwhelming demand for migration opportunities. In January 2013, BMET started registering interested workers through all of its 4,529 rural Union Information and Service Centers (UISCs), the lowest-level administrative division in Bangladesh. To be eligible to apply, the applicant had to be male, aged between 18 and 45, at least 5 feet tall, at least 50kg or more in weight, and able to lift a weight of 20kg or more.[2] There was a small application fee of BDT 50-100 to register the application. During the two-week registration process, BMET registered 1.43 million applicants from all over rural Bangladesh. The overwhelming response suggests the high demand for opportunities to migrate abroad, even when these opportunities are known to be temporary (2-3 years), without the possibility of migrating with family members, and for work in low-skill manual jobs.

BMET conducted a first-lottery to select 36,038 workers to migrate under the G2G agreement. BMET wanted a fair process to select the workers from the pool of applicants and wanted to provide opportunity to workers from all over Bangladesh. Hence, in February 2013, it conducted a randomized lottery with the probability of selection being proportional to the size of the population in the respective upazila (subdistrict). However, by this time, Malaysia had reduced its initial demand and wanted to recruit 30,000 workers over three phases.

BMET conducted a second lottery to divide the 36,038 workers into three phases, with the first-phase winners receiving immediate recruitment. To accommodate the request from Malaysia, BMET conducted a second lottery, again with probability proportional to the size of the upazila, to divide the initial winners into three phases. The lottery was designed to ensure that every union (UISC) had at least one and at most five Phase 1 winners. The lottery produced 11,758 Phase 1 winners, 11,704 Phase 2 winners, and 12,576 Phase 3 winners. All winners were notified via SMS, and Phase 1 winners were asked to undergo a further recruitment process, which included a 10-day training and a basic medical screening exam. BMET started sending individual data and information on potential workers to Malaysia in March 2013, and by April 2013 it had already send information on about 8,500 Phase 1 winners. Workers selected by Malaysia would then have the migration process initiated.[3]

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2   Other eligibility criteria required that they have basic knowledge of Malaysian culture and social life; possess the ability to communicate either in English or Malay; have no prior criminal record; hold valid travel documents; and meet Malaysian medical fitness requirements.

3   Please see Shah (2015) and Wickramasekara (2016) for more details on the program. A short description of the nature of intermediation is provided in Box 2.

BOX 2 NTERMEDIATION PROCESS IN THE BANGLADESH-MALAYSIA G2G LOTTERY PROGRAM

The following steps provide an outline of the G2G intermediation process as was applied for the lottery program.

- Interested and eligible men apply for the G2G lottery program through their Union Information and Service Centers (UISCs). The application costs between BDT 50 and BDT 100.

- Lottery winners are notified via text messages. Winners go to the BMET website to print their confirmation cards with detailed instructions.

- Winners are asked to undergo a 10-day training at the closest Technical Training Centers (TTCs). Training is prepared following Malaysian government requirements.

- Winners (mostly Phase-I) undergo a medical test in one of the nine medical colleges across Bangladesh.

- TTCs prepare files for each applicant, which include copies of passport, full-size pictures, and biometrics, along with evidence of clearing the medical test and completing training and other required documents.

- Individuals files (scanned into DVDs) are sent to Malaysia. Malaysian firms decide which workers they want in their firms.

- Malaysian government sends 'Visas With Referral' to the selected workers through BMET.*

- BMET notifies the selected workers through SMS, asking them to come to the BMET office in Dhaka for final processing.

- Workers submit their passports and necessary documents to BMET for visa processing. They also deposit recruitment fees at the Expatriates' Welfare Bank.

- BMET conducts further processing to obtain visas as well as other documents, permits, and clearance.

- Workers sign employment contracts. The contracts are typically for a two-year period with the possibility of renewal. Lodging is typically provided by the employers, whereas food may not always be provided. The contracts ensure a basic salary of MYR 900 and allow the possibility of overtime work.

- BMET issues plane tickets for the workers.

- BMET conducts pre-departure training the day before departure. Workers spend the night at the training camp and leave for Kuala-Lumpur the next day.

- Migrant workers arrive in Kuala-Lumpur and are received by the employers in the presence of a representative from the Bangladesh High Mission in Kuala-Lumpur.

Source: Shah (2015) and consultations with BMET officials.

* Note: An analysis by Mobarak and Sharif (2015) finds that older workers and shorter workers are slightly more likely to get their visa referrals sooner. Other facial features as well as other information sent to Malaysia do not predict wait times for visa referrals.

The G2G initiative lost momentum shortly after its start and could not provide intermediation for Phase 2 and Phase 3 winners as they had expected. By June 2015, 2.5 years after implementation, only 7,616 lottery winners, most from Phase 1, were sent to Malaysia for work (Wickramsekara, 2016). The number had reached 9,892 as of March 2018.[4] This number is small relative to the original number agreed to with Malaysia, and it is also small relative to the volume of Bangladeshi workers willing to migrate abroad. The mechanism did not expand to other countries, or even to other sectors within Malaysia. The lack of involvement of the private sector recruiters is often argued as one the key reasons the G2G program failed to pick up steam. Newspaper articles and anecdotes also point toward issues both in Malaysia and Bangladesh and the nature of the recruiting environment, and not necessarily the program itself, as the reasons behind the program's losing steam (see, for example, Palma, 2015).

Migration to Malaysia has undergone several changes of mechanism in recent years. After the failure of the formal G2G mechanism, a G2G-plus mechanism was put in place, by which the private sector did the recruitment with the government providing regulatory oversight. This mechanism was able to intermediate more than 160,000 workers in a matter of a couple of years. However, this mechanism also faced much criticism, as fewer than 10 recruitment firms in Bangladesh handled all the recruitment interactions with Malaysia. The concerns of high cost and malpractice reemerged, and the program has been suspended since mid-2018. Migrant outflow to Malaysia virtually stopped in 2019, with BMET records showing outflow of only 97 workers as of April (compared to over 56,000 in the first four months of 2018).[5] Bilateral talks are currently underway to resolve the issues and resume the flow of workers.

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4   Based on interviews with BMET officials managing the process.

5   http://www.old.bmet.gov.bd/BMET/stattisticalDataAction

III METHODOLOGY

The lotteries conducted to select work migrants offer a unique opportunity to evaluate the impact of G2G intermediation and the impact of low-skilled temporary international migration on both migrants' and their families' outcomes. This study exploits the randomized lottery design and surveys a subsample of lottery applicants from three groups. The first group is the Phase 1 lottery winners, referred to as T1, who won the lottery to migrate and were put in the first phase of intermediation. The second group comprises both Phase 2 and Phase 3 winners, referred to as T2, who won the lottery to migrate but were put into a deferred phase of intermediation. Eventually, this group received some intermediation. The third group is the lottery losers, referred to as C, which will serve as the control group. Figure 4 shows the various steps of the lottery program and the final study sample.

Figure 4	Various stages of lottery and treatment status

REGISTRATION

All applicants
Actual: 1.43m
Interviewed sample: 3,512

FIRST LOTTERY

Winners
Actual: 36,038
Sample: 2,265

Losers (C)
Actual: 1.40m
Sample: 1,247

SECOND LOTTERY

Phase 1 (T1)
Actual: 11,758
Sample: 1,127

Phase 2,3 (T2)
Actual: 24,280
Sample: 1,138
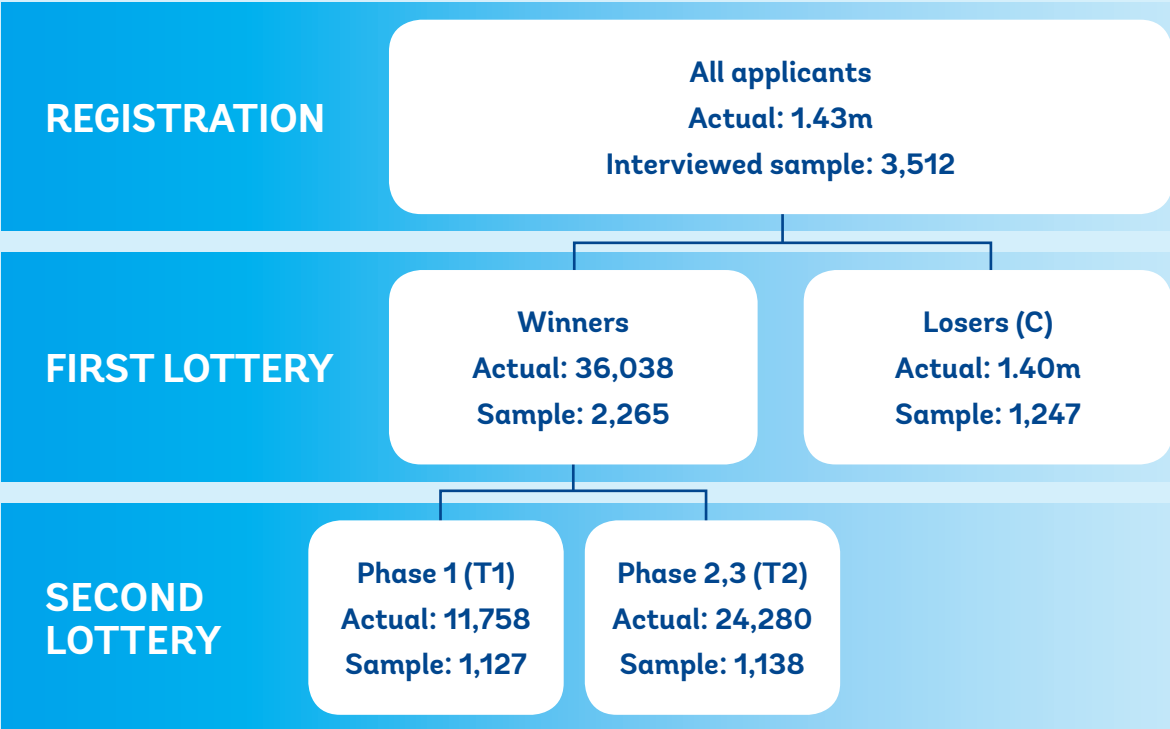
Note: Study design.

The study collects data from 522 unions in the Dhaka (Mymensingh) and Chittagong Divisions.[6] Since the Phase 1 winners were spread thinly across Bangladesh, with a maximum of five winners per union, we decided to do the study in the two most populous divisions of the country. In 2011, these divisions housed 53 percent of the entire population, including 48 percent of the rural population (BBS, 2015). These divisions constitute 38 percent of the lottery applicants and 50 percent of the lottery winners. These divisions are also the two most prosperous divisions of Bangladesh. To the extent that migration improves outcomes, the results can be interpreted as a lower-bound of the impact on the entire country. We then randomly selected 49 out of 223 upazilas from these divisions.[7] The survey was conducted in all 522 unions within the selected 49 upazilas.[8]

The field protocol for the survey was influenced by two issues specific to this study. First, due to the nature of the lottery, there were very few T1 potential respondents compared to the T2 group and, especially, to the control group. Second, we had only scant information on the lottery losers and the winners. For the control group, we had information on their names, their parents' names, phone numbers, and the name of their unions. Unions typically consist of several villages, with an average population of 25,000 (6,000 households). For the treated groups, we had similar information, except that we only had phone numbers for a subset of the applicants. We originally had phone numbers for 73 percent of the T1s and only 3.6 percent of the T2s.[9]

To overcome these issues, we opted for a combination of phone and field-based tracking of respondents. In each of the sampled unions, enumerators were instructed to find all the T1 individuals. Applicants in the T2 and control groups were randomly ordered, and enumerators were instructed to follow the order in finding respondents. Enumerators would keep going down the randomized order until the number of successful interviews in that group (T2 or control) matched the number of successful interviews in the T1 group. This way, the final survey would have similar sample sizes across treatment groups within each union.

To find the respondents in a sampled union, enumerators first tried calling the applicants for whom we had phone numbers. Each applicant would be called up to five times over the course of several days. If somebody picked up the phone, we also asked if they knew the phone numbers of additional people in the treated groups. With this method, we ended up having phone numbers for 77 percent of the T1 group and 16 percent of the T2 group. Lottery applicants not found by phone were searched in the field. Enumerators would use the information available to locate the respondents. This would include making visits to and consulting with local union officials and asking local residents.

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6   The Mymensingh Division was formed in 2015, after the G2G lottery program, by combining the northern districts of the Dhaka Division. The survey was conducted in current Dhaka, Mymensingh, and Chittagong divisions.

7   The data extract we got from BMET had data from applicants in 223 out of 258 upazilas. The discrepancy could be a result of the lottery not collecting data from upazilas with very high urban penetration.

8   We conduct a detailed analysis of how our study sample differs from the rest of the population in the working paper version of this report.

9   We received the data extracts from BMET separately for lottery winners and losers. We were not able to get ahold of the initial registration data for the winners and hence could not get phone numbers for all the winners.

With this protocol, we were able to interview 3,512 lottery applicants, of which 1,127 were Phase 1 winners (group T1), 1,138 were Phase 2 and Phase 3 winners (group T2), and 1,247 were the lottery losers (Control group). As discussed in detail in Appendix A, the lottery winners were easier to find in the field, because they had better records with the union officials (because of the nature of intermediation process as described in Box 2), as well as their local popularity after winning the lottery. Interviews were conducted with the applicants if they were present or with their families if the applicants were still abroad. The evidence collected through the surveys, discussed in Appendix A, is consistent with a well-conducted randomization for the lottery.

The fact that the lottery is randomized makes it a good instrument of government intermediated low-skilled migration. The G2G lotteries were randomized, which means the differences in pre-lottery outcomes and unobserved characteristics are balanced, on average, across the different study groups. Appendix Figure 2 and related discussions in Appendix A indeed confirm this. This means that the comparison of post-lottery outcomes can be attributed to the impact of the lottery. We exploit this feature in our estimation, as detailed in Box 3. Furthermore, since the lottery status does not affect other outcomes directly, except through the channel of government intermediated migration, the lotteries essentially form an exogenous instrument of government intermediated low-skilled migration. We exploit this feature to describe the causal impact of such migration on a wide array of outcomes. The exact econometric specification is presented in Box 3 and discussed in detail in Appendix A, section A.2.

In the presentation that follows, we show our key results through figures that plot the impact of the lottery or migration on a family of outcomes grouped thematically. We standardize the outcomes and plot the impacts on comparable standard-deviation units. To ease interpretation, we also report the impacts on the nonstandardized variant of the outcomes alongside the point estimates in the figures. The appendix tables in Appendix B present the full set of results on nonstandardized outcomes, including some robustness analysis, as well as adjustments for multiple-hypotheses testing.

BOX 3 EMPIRICAL STRATEGY AND ESTIMATING EQUATIONS

The following summarizes the empirical specifications used for various sections of this study.

1. IMPACT OF WINNING THE LOTTERY

To study the impact of the lottery, we estimate the following specification:

$$y_i = \beta_1 T1_i + \beta_2 T2_i + \gamma X_i + \varepsilon_i \tag{1}$$

where y_i is the outcome for applicant $_i$, $T1_i$ and $T2_i$ indicate whether the applicant won the Phase 1 lottery or the Phase 2 and Phase 3 lottery, X_i controls for baseline characteristics, including upazila fixed effects, and ε_i represents the error terms assumed to be clustered at the union level.

Since the lottery outcomes T1 and T2 are randomized, the differences between the groups can be interpreted as a causal impact of winning the lottery.

2. IMPACT OF GOVERNMENT-INTERMEDIATED LOW-SKILLED INTERNATIONAL MIGRATION

We proceed by estimating the following system of equations for the sample that excludes the T2 group:

$$y_i = \delta M_i + \eta X_i + \varepsilon_i$$
$$M_i = \alpha T1_i + \xi X_i + v_i \tag{2}$$

where M_i indicates whether the applicant migrated abroad at any point after the initial lottery, and ε_i and v_i are error terms uncorrelated with each other.

We exclude group T2 for this estimation for a couple of reasons. First, the T2 group was initially offered a government intermediation, but only a small portion of this group received intermediation. Even those who received the government intermediation did so at least a year later, when the G2G program itself was under widespread public criticism with a lot of skepticism about the future of the program. Hence, the kind of applicants in the T2 groups who were induced by the program to migrate might be fundamentally different from the average applicant population. Hence, we exclude this group to make the interpretation cleaner. However, including this group as another instrument does not qualitatively and substantively change the results.

3. DIFFERENCES BETWEEN G2G AND PRIVATE CHANNEL MIGRATION

The empirical specification for this descriptive exercise is

$$y_i = \theta G_i + \gamma X_i + \varepsilon_i \tag{3}$$

where y_i is the migration characteristics (outcomes) of individual i, G_i is an indicator for government intermediation (whether they migrated under the G2G program), X_i represents individual level controls, and ε_i represents error terms assumed to be clustered at the union level. To overcome any measurement error on government intermediation, we treat winning the Phase 1 lottery as an instrument. This specification is estimated only among international migrant workers.

IV   RESULTS AND DISCUSSIONS

IMPACT OF G2G LOTTERY ON MIGRATION AND PRE-DEPARTURE INVESTMENTS

The G2G lottery program was implemented on a large nationwide scale during the registration phase. This modality certainly provided access to migration opportunities to interested workers all over Bangladesh. However, it is not clear whether that increase in access translated to an actual act of migration. In this section, we examine whether the desire to migrate, as indicated by a low-cost application to the lottery, translates into the act of migration if given an opportunity. Furthermore, we also investigate whether a credible opportunity to migrate translates into premigration investments that workers could make which could increase their returns from migration.

IMPACT ON MIGRATION, INTERMEDIATION, AND CURRENT WHEREABOUTS

Credible access to migration opportunities translates to actual migration among the applicants. By the time of our survey in 2018, over five years after the lottery, 76 percent of the Phase 1 lottery winners (group T1) had migrated abroad (Figure 5). This is 58 percentage points higher than the migration rates in the control group. Most of the T1 migrants, 70 percent of group T1, were intermediated through the government channels. This suggests that, for the large share of applicants, the low-cost application into the lottery program translates to the act of migration when given a credible opportunity. However, as the G2G program started losing steam, it could only intermediate a small share of the Phase 2 and Phase 3 winners (group T2). Still, the migration rate among the T2 group was 10 percentage points higher than that of the control group. The difference between group T2 and the control group comes directly from the G2G intermediation.

The survey migration rates match the migration numbers provided by BMET. Assuming the same migration rate for the entire lottery program, our estimates suggest that about 10,700 have migrated from the entire pool of applicants. This is quite close to 9,800, the number provided by BMET officials in March 2018. This suggests that the rate of government intermediation in our sample is similar to that of the entire program even though we surveyed in divisions closer to the capital.

G2G intermediation led to migrants migrating much earlier than the control group. By the time of our survey, it had been 33 months since the migrants in the control group had migrated. That is, among those in the control group who migrated, they did so about 34 months after the lottery was conducted in February 2013. The T2 group migrated at about the same time as the control group – 33 months after the lottery. The T1 group migrated about 19 months earlier – 15 months after the lottery. Among the G2G migrants, the average T1 (Phase 1 winner) migrant migrated 14 months after the lottery, whereas the average T2 (Phase 2 and 3 winner) migrant migrated 26 months after the lottery. As expected, Malaysia was the most popular destination for the migrants in the T1 and T2 groups because of the nature of the government intermediation. Even without the government intermediation, Malaysia was still the destination for about a quarter of migrants in the control group. In that group, about two-thirds migrated to Gulf countries, including 22 percent going to Saudi Arabia, 21 percent to Oman, and 14 percent to Qatar.

Figure 5 Impact of winning the lottery on migration
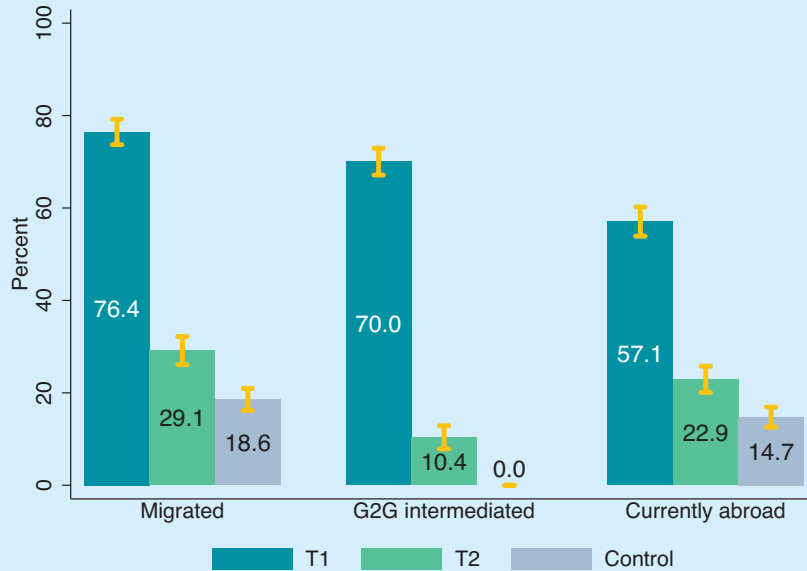
Source: Authors' estimates from the survey data collected for this study.

Note: Figure shows the impact of winning the lottery on migration. The bar shows the migration rates and the vertical lines denote 95 percent confidence interval.

A large share of applicants who migrated were still abroad at the time of the survey. About 75 percent of the applicants from group T1 who migrated were still abroad at the time of the survey. The proportion is slightly higher for applicants who migrated from group T2 or the control group, at 78 percent. On average, the time of the survey was almost four years after the initial migration of applicants in group T1. This suggests that these applicants were able to either extend their stay abroad or were able to get another job abroad. Even though the government intermediation was only for one contract term, these migrants were able to use the first migration opportunity to extend the length of their migration episodes.

The difference in migration rates between the groups suggest that affordable migration opportunities are scare. The migration results above show that at least three-quarters of the applicants would migrate if given an access to such an opportunity. What is perhaps surprising is that, even after five years, fewer than 20 percent of the control group migrated. That is, about 55 percent of applicants in the control group would have migrated if they had a credible opportunity. These people could not migrate, either because they could not find an opportunity to migrate from the private sector or because the cost of migration through the private sector was too high for them to be able to afford it. We will revisit this issue again in Section V of this report, where we compare migrants who migrated through government intermediation with those who migrated through nongovernment channels.

IMPACT ON INVESTMENTS FOR MIGRATION

We investigate whether the lottery winners take any initiative to better prepare themselves for work abroad. To elicit these investments, we asked applicants whether they made any investments in their language skills, other skills, or their health after the outcome of the lottery and before (any) migration. Such investments could potentially make their lives better in the destination and might also increase their income. Figure 6 shows the results, which are discussed below.

Winning the lottery has a large impact on investments to learn Malay. In general, migrants in the control group were not particularly keen about learning the language before they migrate. For instance, about 5 percent of the control group ended up going to Malaysia, but only 0.9 percent learned some Malay before migrating. However, the situation was much better for the lottery winners. About 72 percent of group T1 migrated to Malaysia, and 38 percent learned some Malay before migration. Similarly, 15 percent of group T2 eventually migrated to Malaysia, and 8.3 percent learned some Malay before migration. More surprisingly, about 0.6 percent of T1 learned Arabic even though only 3.1 percent ended up migrating there. Only 1.5 percent of the control group learned Arabic, although 12 percent ended up migrating there.

Lottery winners are more likely to take some form of skills training. Three-quarters of applicants in group T1 took some form of skills training, a much higher rate than the one-fifth of applicants in group T2, while both rates are much higher than the control group rate of one-twentieth. Much of this could be driven by the mandatory training before BMET would process the lottery winners' paperwork (see Box 2). However, a larger share of the lottery winners, particularly those in group T2, took skills training compared to the proportion migrating through government intermediation.

Lottery winners are more likely to make investments to improve their physical strength, but the higher investments are commensurate with the higher migration rates. Having better physical health could help the migrants adjust to the physically strenuous work abroad or even increase income by improving their productivity or stamina. We do find that lottery winners were more likely than the control group to eat more (nutritious) food, do more exercise, and even take out a gym membership. However, the ratio of these investments to the migration rates were similar for group T1 and the control group, but much higher for group T2. It appears that group T2 overestimated their migration probabilities while making these investment decisions relative to what eventually transpired with the G2G program.

SUMMARY

These results show two key features about the demand for temporary international migration for low-skilled work. First, credible opportunities for these kinds of migration are extremely scarce. Far more people are credibly interested in migrating compared to the opportunities available to them through private or public channels. Second, given credible opportunities and enough time, these workers are willing to make the necessary investments to improve their returns from migration. These investments are not just limited to the required financial investments and the mandated trainings, but also extend to other investments that could improve their returns or well-being once abroad.

Figure 6   Impact of winning the lottery on investments
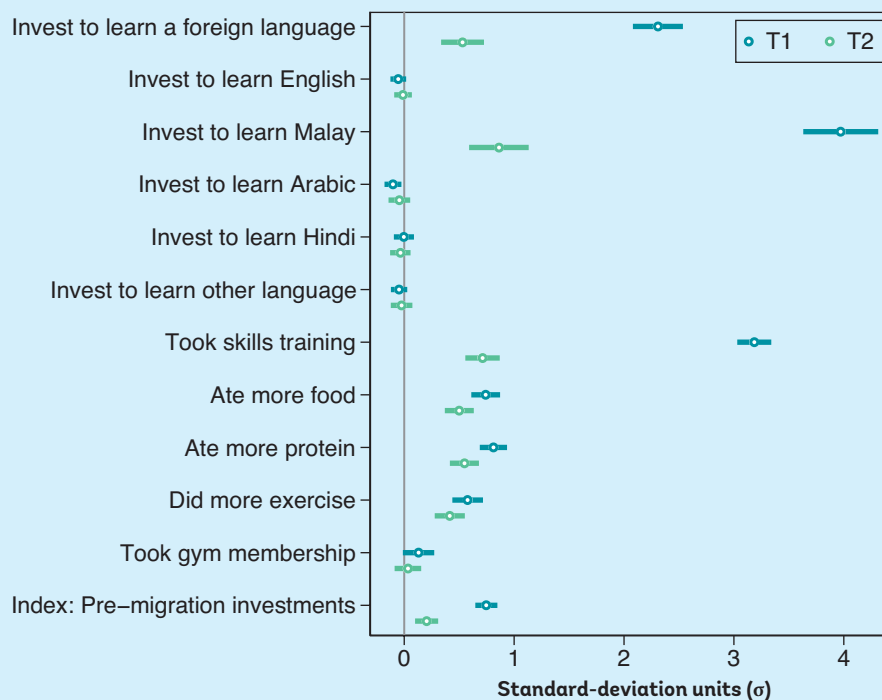
Source: Authors' estimates from the survey data collected for this study.

Note: Figure shows the impact of winning the lottery on investment outcomes indicated in the vertical axis. Each point represents the magnitude of the impact (in standard deviation units) and the line represents the 95 percent confidence interval estimated using Equation (1). The bottom-most outcome (the index) is the mean of all other outcomes in the figure. Lottery results used as instruments for migration. The estimations control for applicant height, age, religion, parental education, and indicators for survey Upazilas. Standard errors are clustered at the union level. Appendix Table 3 presents the relevant regression results.

Interpretation example: T1 increased the index of pre-migration investments by 0.76σ, and T2 increased the the index of pre-migration investments by 0.24σ (last row).

IMPACT OF MIGRATION ON LABOR, INCOME, AND EXPENDITURES

As seen in the previous section, the lotteries increased migration among the winners, particularly those in group T1. We now use the lotteries as a statistical instrument that increases migration to assess the impact of government- intermediated low-skilled temporary international migration on a wide array of outcomes. Box 3 (in Section III) presents the empirical specifications in detail. In this section, we first examine whether such migration leads to an increase in incomes of the migrants and their families and whether that increased income leads to increased consumption and expenditures.

MIGRATION LEADS TO SUBSTANTIAL GAINS IN INCOMES FOR APPLICANTS THROUGH INCREASED WAGE-WORK ABROAD.

Figure 7 shows the impact of migration on the labor and income characteristics of the applicants. Migration does not change the total labor supply of the applicants. However, migration does change the nature of labor supply in wage work, because nonmigrants are often involved in nonwage labor work as well. Even among wage workers, migration increases their hours spent in wage work by 33 percent. This suggests that migration increases wage work both in intensive as well as extensive margins. Consequently, migration reduces the hours applicants spend in farming and self-employment by 90 percent and 85 percent respectively.

As expected, migration nearly triples the income of the applicants.[10] As seen in Figure 7, we have several measures of income for the applicants. The first measure is retroactive and asks about the applicants' monthly income in 2015, about one year after the migration for group T1. Migration increases this measure by 1.02 log points (178 percent). The second measure directly asks for monthly income in the month preceding the survey. Migration increases this direct measure of income by 0.76 log points (113 percent). The third measure computes income by adding up their wage income, profits from farms and family business, and profits shared among involved household members in proportion to the hours they put in the farm or family business. Migration increases this last measure of income by 0.96 log points (160 percent). However, this last measure is not reported for about a quarter of the applicants that are currently abroad. To overcome any biases due to missing data, we make an assumption that those currently abroad with missing income earn an income equivalent to the 10th percentile of earnings made by other migrants in the same destination and with similar age, gender, and education. Migration increases this extreme measure of income by 1.13 log points (211 percent). This is because group T1, who are more likely to be currently abroad, are disproportionately missing income data, which leads to a significant understatement of their income gains. Even with the most extreme assumption – that those with missing income data earn zero – migration still increases earnings by 48 percent.[11]

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10 Note that for migrants who are away, the income measures are reported by their household members. Studies have shown that their family members often underestimate migrants' income abroad (Seshan and Zubrickas, 2017). If that is the case in this context as well, then the estimates presented here underestimate the income gains from migration. However, comparing reports of income during their migration between current returnees (self-reported) and current migrants (family-reported) finds no statistical differences in this context, suggesting that such misreporting might not be too large.

11 If migrants with missing income are assumed to have the median earnings of comparable migrants in the same destinations, this increases the income gains from migration to 1.19 log points (230 percent). "ihs" refers to inverse hyperbolic sine transformation of the variables.

Figure 7   Impact of migration on applicants' labor supply and wage income
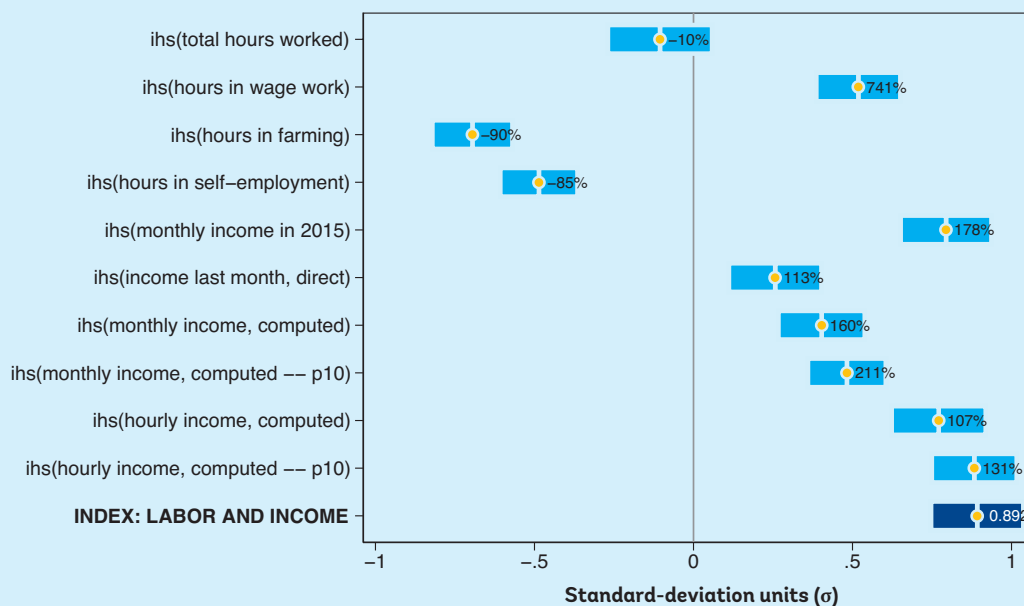
Source: Authors' estimates from the survey data collected for this study.

Note: Figure shows the impact of migration on outcomes indicated in the vertical axis. "ihs" refers to inverse hyperbolic sine transformation of the variables. Each point represents the magnitude of the impact (in standard deviation units) and the bar represents the 95 percent confidence interval. The labels next to the point indicates the impact on non-standardized variant of the outcome. The bottom-most outcome is a covariance-weighted index of all other outcomes in the figure with outcomes aligned so that positive value means more wage jobs hours and income. Lottery results used as instruments for migration. The estimations control for applicant height, age, religion, parental education, and indicators for survey Upazilas. The "—p10" at the end of income indicates that missing reports of income are replaced by 10th percentile of income of similar individuals (see text for more details). Standard errors are clustered at the union level. Appendix Table 4 presents the full regression results.

Interpretation example: Migration reduces total hours worked by 10 percent (first row). The overall impact of migration on the index of labor and income outcomes is 0.892σ (last row).

Increase in income leads to an increase in productivity as well. The increased income is not simply an increase in labor supply, but also an increase in productivity, or hourly wage rate. Hourly productivity increases by 0.73 log points (107 percent) for our computed measure of income. Since this measure is not reported for about a quarter of migrants that are currently abroad, we impute productivity for the missing data, assuming that they earn at the 10th percentile of the earnings of migrants in the same destination and have similar age, gender, and education. Migration improves this measure of their hourly wage rate by 0.84 log points (131 percent). Even under the most extreme assumption, namely that the individuals with missing income data earn zero, migration improves hourly productivity by 66 percent.

MIGRATION HAS NO SIGNIFICANT EFFECT ON THE LABOR SUPPLY AND INCOME OF NONAPPLICANT ADULT HOUSEHOLD MEMBERS.

The migration of a household member could affect labor supply and income of nonapplicant members in multiple ways. Migration can lead to increased income for the household, which could make the household members consume more leisure, leading to fewer hours of work. Migration also lowers the total supply of labor from the household (domestically). If local labor markets are imperfect, with constraints in hiring, particularly for farming or household business, then the migration of a member could increase the labor supply of the remaining household members. Similarly, migration could increase the reservation wage for the remaining household members, which could lower labor supply, but it would increase productivity (as measured by hourly income).

Figure 8   Impact of migration on labor supply and earnings of nonapplicant adult household members
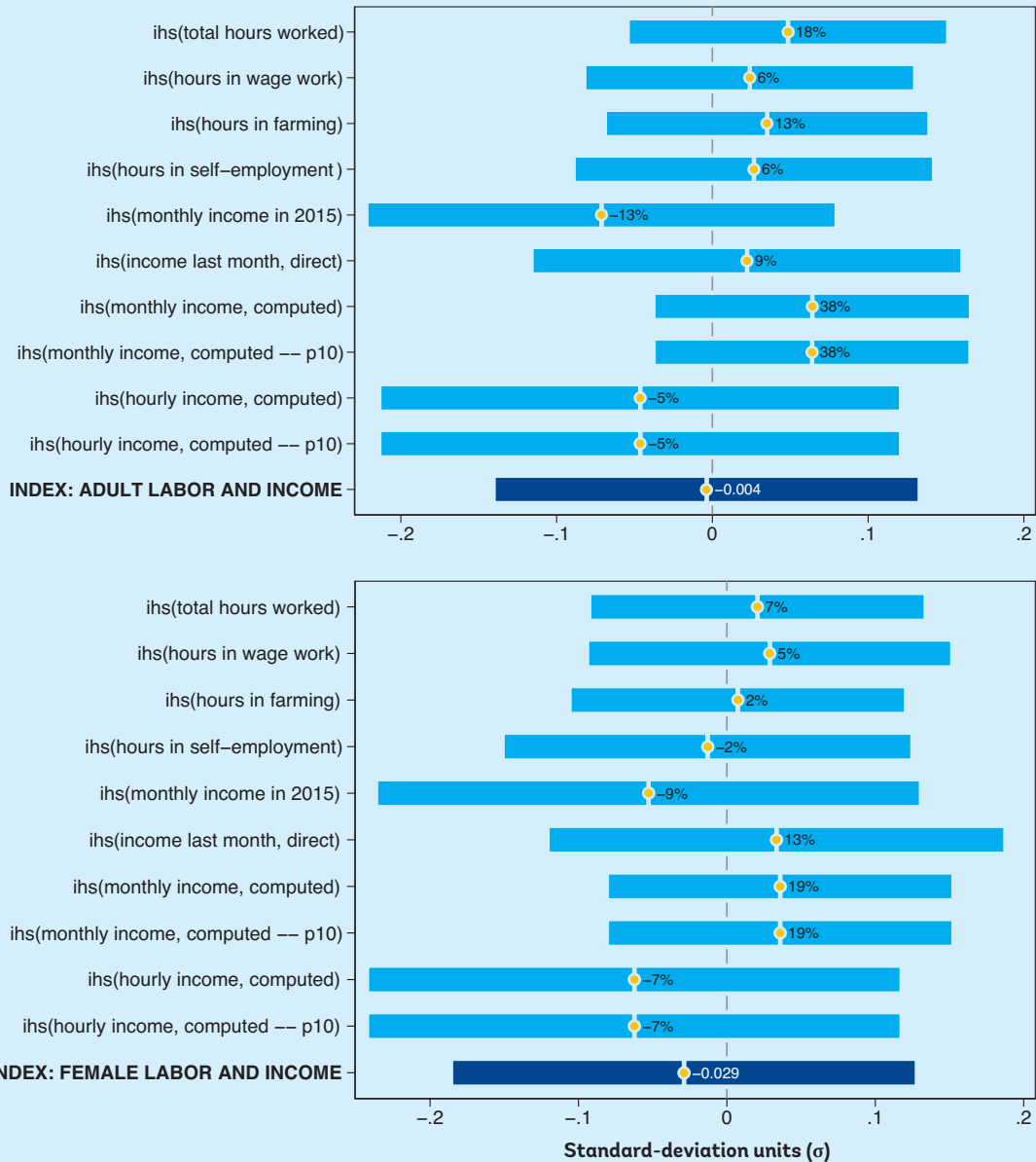
Source: Authors' estimates from the survey data collected for this study.

Note: Figure shows the impact of migration on the outcomes of nonapplicant adult household members ages 15-64, indicated in the vertical axis. The top panel shows the impact on all adult household members, whereas the bottom panel shows the impact on adult female household members. "ihs" refers to inverse hyperbolic sine transformation of the variables. Each point represents the magnitude of the impact (in standard deviation units) and the bar represents the 95 percent confidence interval. The labels next to the point indicates the impact on non-standardized variant of the outcome. The bottom-most outcome is a covariance-weighted index of all other outcomes in the figure. Lottery results of the applicant used as instruments for migration status of the applicant. The estimations control for applicant height, age, religion, parental education of the applicant, and indicators for survey Upazilas. The "—p10" at the end of income indicates that missing reports of income are replaced by 10th percentile of income of similar individuals (see text for more details). Standard errors are clustered at the union level. Appendix Tables 5 and 6 present the full regression results.

Interpretation example: Migration increases total hours worked by adults in the household by 18 percent (first row) and the result is statistically insignificant. Migration increases the index of adult labor and income by 0.004σ (last row) and the result is statistically insignificant.

However, as Figure 8 shows, migration has very little impact on various measures of labor supply and income for adult and adult-female household members. Not only are the impacts statistically insignificant, the point estimate is also small. For instance, none of the estimated impacts exceeds 0.1 standard deviation units. This might be the result of a lot of variability in income and labor supply across households, even in the absence of migration. The large standard errors on the estimated impact are consistent with such high variability.

MIGRATION LEADS TO SUBSTANTIAL INCOME GAINS FOR THE APPLICANT'S FAMILY, MOSTLY DRIVEN BY MIGRANT INCOME.

Consistent with the impacts of migration on the labor supply of both applicant and nonapplicant household members, we find large impacts of migration on household income, driven by the income earned away from the location of the household.

Migration has no impact on the average farm income of the household. As seen above, migration leads to a reduction in total labor supplied in farming by the household (mostly, by the applicants). However, as Figure 9 shows, migration has no impact on net income (profits) from farming. This suggests the possibility of surplus labor in agriculture, as the total output does not fall despite a fall in total labor supplied. Though this might be true on average, more in-depth analysis suggests another plausible channel. In the control group, households in which the applicant did not migrate had higher average farm income but also a higher variance compared to households in which the applicant did migrate. The pattern holds true in group T1 as well. This suggests that by removing the applicant from farming, migration reduces risk-taking in farming. In fact, migration reduces the probability of a household incurring a loss in farming by 2 percentage points,

Figure 9	Impact of migration on household income

Source: Authors' estimates from the survey data collected for this study.

Note: Figure shows the impact of migration on outcomes indicated in the vertical axis. "ihs" refers to inverse hyperbolic sine transformation of the outcome variables. Each point represents the magnitude of the impact (in standard deviation units) and the bar represents the 95 percent confidence interval. The labels next to the point indicates the impact on non-standardized variant of the outcome. The bottom-most outcome is a covariance-weighted index of all other outcomes in the figure. Lottery results used as instruments for migration. The estimations control for applicant height, age, religion, parental education, and indicators for survey Upazilas. Standard errors are clustered at the union level. The "—p10" at the end of income indicates that missing reports of income are replaced by 10th percentile of income of similar individuals (see text for more details). Appendix Table 7 presents the full regression results.

Interpretation example: Migration increases household farm income by 32 percent (first row), remittance income by 7.5 log points (fourth row). The overall impact of migration on the index of household income measures is 0.344σ (last row).

almost half of the probability in the control group without a migrant applicant. Similarly, migration also reduces the probability of a household making a profit of BDT 50,000 by 6 percentage points, which is a quarter of the probability in the control group households.

Migration lowers household income from nonfarm business by 160 percent, and most of this decline is driven by migrant households not operating nonfarm businesses. This impact is mostly driven by impact at the extensive margin rather than the intensive margin. Migration reduces the probability of a household having a nonfarm business by 12 percentage points (25 percent of the control group mean). With the applicant away, it may have been difficult for group T1 households to maintain an existing household enterprise or to start a new one. Conditional on operating a nonfarm enterprise, however, migration lowers profits by an imprecisely estimated 30 percent. Here as well, having a migrant in the household lowers the probability that the business is operating at a loss, but it does not significantly increase the probability of the profits being in the top 25th percentile.

As expected, migration increases remittance income, and lowers total wage income made at home. This fact is, again, driven by the migrants working for wages abroad rather than at the home location. As a result of high migrant incomes abroad, household remittance income increases several times over. Nonmigrant households receive about BDT 16,000 per year on remittances, and migration increases that by more than BDT 82,000. This impact is a combination of extensive and intensive margin. Migration increases the likelihood of a household receiving (or sending) any remittance by 52 percentage points (compared to the control group mean of 21 percent). This suggests that not all migrants remit income back home. It is possible that some remit their income directly to moneylenders to pay back a debt or else save it while abroad. Among the households that receive or send any remittances, migration increases the amount by BDT 59,000 per year. Again, this is only a fraction of the income gains from migration, suggesting that migrants may not remit all of their income back home. However, the amount remitted is higher than the loss in wage income at home. As a result of migration, wage income earned at home falls by about BDT 33,000, much less than the BDT 82,000 households receive in remittance income. Overall, income at home (earned at home plus any remittances) increases by 70 percent upon migration.

Across all income sources, a household doubles its income when a member migrates. Migration substantially increases total income made by all household members. The estimates using logarithm of incomes shows that the increase is over 100 percent.

MIGRATION INCREASES THE PER-CAPITA CONSUMPTION OF THE HOUSEHOLD MEMBERS ACROSS A WIDE ARRAY OF ITEMS.

The higher income of migrant members, which leads to more income being available in the household, translates to higher per-capita expenditures. As Figure 10 shows, migration significantly improves a wide array of expenditure measures.

Consumption of food, particularly animal proteins, increases. An average nonmigrant household in the control group consumes about BDT 33,000 per capita on food and BDT 12,000 per capita on animal proteins (eggs, fish, and meat).[12] Migration raises per-capita expenditures on food by 7 percent and on animal proteins by 17 percent. Animal proteins are both nutritious and more expensive than other food items. Migration increases food consumption of these households, and also changes the food basket toward more expensive and nutritious items.

Health, education, and other nonfood expenditures also increase. About 95 percent of the nonmigrant households in the control group have some health expenditures and spend about BDT 5,000 per capita. Migration increases these expenditures by 92 percent. Since migration does not directly affect the health of the household members, we interpret these increases as households receiving better healthcare. Similarly, per-capita education expenditure also increases

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12   The consumption also includes the value of home-produced goods.

by 54 percent, which as we will show later is driven by purchasing better quality education for their children. In addition, nonmigrant households in the control group spend about BDT 20,000 per capita on other nonfood expenditures. This measure includes expenditures on regular nonfood items such as clothing, fuel, travel, utilities, household essentials, and minor repairs, but does not include expenditures on larger items (which we examine separately). Migration increases regular nonfood expenditures per capita by 26 percent.

However, consumption of temptation goods remains unchanged. One of the concerns raised over households suddenly earning much higher income, particularly remittance, is that households would spend it on undesirable goods. Generally, it is difficult to classify what those items are, but recent studies have focused on consumption of 'temptation' goods such as cigarettes and alcohol. The consumption of alcohol in Bangladesh is extremely low due to restrictions placed on it. The reported expenditures for cigarettes and related tobacco products are also low, with only 6 percent reporting any expenses. Consequently, we do not find any significant impacts of migration on the consumption of these goods.

Figure 10	Impact of migration on household consumption and expenditure
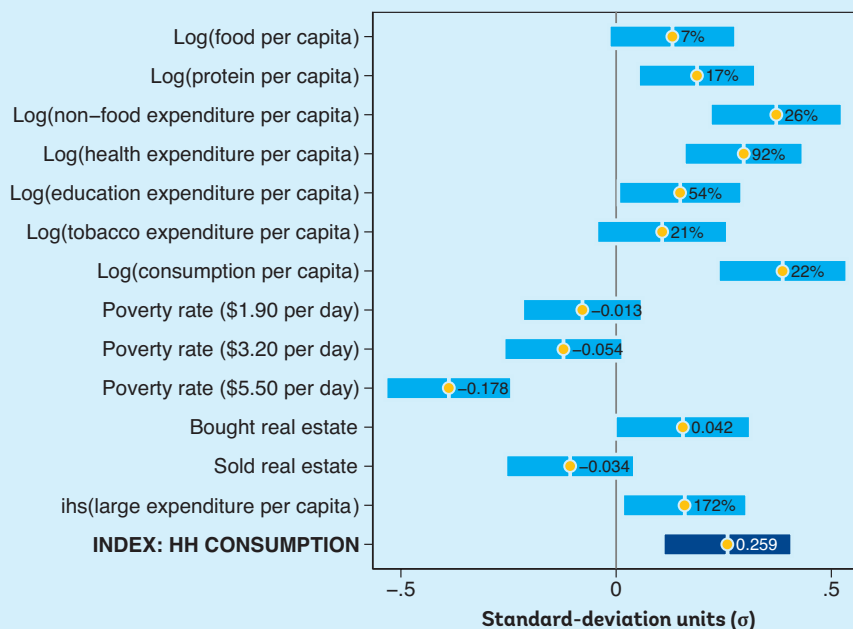
Source: Authors' estimates from the survey data collected for this study.

Note: Figure shows the impact of migration on outcomes indicated in the vertical axis. "ihs" refers to inverse hyperbolic sine transformation of the outcome variables. "HH" refers to household. Each point represents the magnitude of the impact (in standard deviation units) and the bar represents the 95 percent confidence interval. The labels next to the point indicates the impact on non-standardized variant of the outcome. The bottom-most outcome is a covariance-weighted index of all other outcomes in the figure where outcomes are aligned so that positive number refers to higher expenditures and lower poverty. Lottery results used as instruments for migration. The estimations control for applicant height, age, religion, parental education, and indicators for survey Upazilas. Standard errors are clustered at the union level. Appendix Table 8 presents the full regression results.

Interpretation example: Migration increases per-capita food consumption by 7 percent (first row), and reduces poverty rate, at PPP$ 5.50, by 0.178 percentage points (tenth row). The overall impact of migration on these consumption measures is 0.259σ (last row).

Migration increases per-capita incomes and reduces poverty at higher expenditure thresholds. Consequently, migration drastically increases the per-capita consumption of household members. Nonmigrant households in the control group have a per-capita consumption of BDT 58,000 per year, which increases by 22 percent due to migration.

However, temporary international work migration, given the costs, is not effective at reducing extreme poverty (at PPP$ 1.90 per day). Part of the reason for this is that only 2.2 percent of nonmigrant households in the control group were poor by this measure. As we will see in the next section, though the government intermediation brought down the cost of migration it still cost applicants BDT 45,000, which translates to more than two years of consumption at PPP$ 1.90 per day. Hence, only people who expected to be able to finance this amount applied for the lottery. Many households who were living under the extreme poverty line would be unable to finance the costs of migration and therefore did not apply for the lottery.

But temporary international work migration lowers poverty at higher thresholds. Among nonmigrant households in the control group, 27 percent were living under the PPP$ 3.20 per-day threshold and 71 percent were living under the PPP$ 5.50 per-day threshold. Migration reduces poverty rates at these thresholds by 6 percentage points (to 21 percent) and 18 percentage points (to 25 percent).

Figure 11	Impact of migration on household conditions and assets

Source: Authors' estimates from the survey data collected for this study.

Note: Figure shows the impact of migration on outcomes indicated in the vertical axis. "ihs" refers to inverse hyperbolic sine transformation of the outcome variables. Each point represents the magnitude of the impact (in standard deviation units) and the bar represents the 95 percent confidence interval. The labels next to the point indicates the impact on non-standardized variant of the outcome. The bottom-most outcome is a covariance-weighted index of all other outcomes in the figure. Lottery results used as instruments for migration. The estimations control for applicant height, age, religion, parental education, and indicators for survey Upazilas. Standard errors are clustered at the union level. Appendix Table 9 presents the full regression results.

Interpretation example: Migration increases the likelihood of the household having a pakka or semi-pakka dwelling by 8.2 percentage points (first row), and the value of dwelling by 28 percent. Migration increases the index of household conditions and assets by 0.211σ (last row).

Migration also increases large and uncommon expenditures, such as on real estate.[13] Migration increases the likelihood of a household purchasing land by 4 percentage points, a 50 percent increase from the rate for non-migrant households in the control group. Similarly, the probability of a migrant household selling land falls by 3 percentage points, again a 33 percent decrease from the rate for nonmigrant households in the control group. Consequently, the overall expenditure per-capita in land and housing (purchases as well as major housing repairs) almost doubles. This could explain why the increase in total household income is less than the income gains made from migration – migrants could be saving their earned income in the destination countries to be used for large expenses.

MIGRATION IMPROVES THE CONDITION OF THE HOUSEHOLD AND IMPROVES OWNERSHIP OF SOME ASSETS.

As seen in Figure 11, migration not only improves the expenditures, but also improves the quality of their housing as well as ownership of land and other smaller assets.

Migration leads to the households having an improved quality of dwelling. Among nonmigrant households in the control group, only 22 percent had a dwelling made of permanent materials. Migration improves the likelihood of having such an improved dwelling by 8 percentage points, a 37 percent increase. Similarly, the value of the dwelling was 28 percent higher among migrant households and the dwelling was more likely to have concrete walls and floors. The probability of the household having a private latrine improves by 11 percentage points from a base of 73 percent.

Migration also increases the likelihood of possession of certain assets more than others. For example, migrant households were more likely to possess fans, mobile phones, jewelry, or stocks, but not more likely to possess other items, such as TVs. Migration reduces the likelihood of households owning a motorcycle, which is explained by the absence of a male member from the household due to migration.

SUMMARY

This section showed that, as migrants expect, incomes abroad are much higher than those they would have earned in Bangladesh. Even though the work abroad still involves manual low-skilled work, the earnings are about twice as much as they would have made in Bangladesh. Because of the incomes remitted by the migrants, the household income also goes up. The higher household income translates into improved living standards, including increased consumption, purchase of real-estate, and improved dwelling conditions. The high revealed demand for migration opportunities is indeed consistent with the returns. Furthermore, migration and the resulting remittance income does not distort the labor supply of remaining household members.

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13   In addition to the regular expenses, we asked households about expenses in less common, but largely consequential, expenditures in the purchase and sale of land and residences. Since only a small proportion of these transactions are captured with a 12 month recall window, we used a 36-month recall window to capture them.

IMPACT OF MIGRATION ON FINANCIAL SECURITY AND HOUSEHOLD VULNERABILITY

As discussed earlier in Section I, the high cost of such low-skilled international migration has been of great policy concern. Indeed, migrants from Bangladesh pay much more in migration costs compared to migrants from other countries that send migrant workers for similar jobs in the same destination countries. Most migrants borrow to finance migration and, in the absence of cheaper financing options, resort to moneylenders who charge exorbitant interest rates. Consequently, policymakers and experts in Bangladesh fear that migrants will be debt-ridden even after their return and that the workers will get caught in a debt-migration spiral where they engage in repetitive migration episodes to repay their earlier loans. This could further lead to household vulnerability to various kinds of shocks to their household income.

In this study, we look at this issue in two different ways. In this section, we look at the impact of government-intermediated migration on the level of indebtedness of households several years after the migration has taken place. In Section V, we return to this issue and compare G2G migrants with other migrants on the costs of migration and the associated financing mechanisms. The latter exercise will provide a better sense of how government intermediation, and not just migration itself, helps with migration financing.

Figure 12 — Impact of migration on household debt
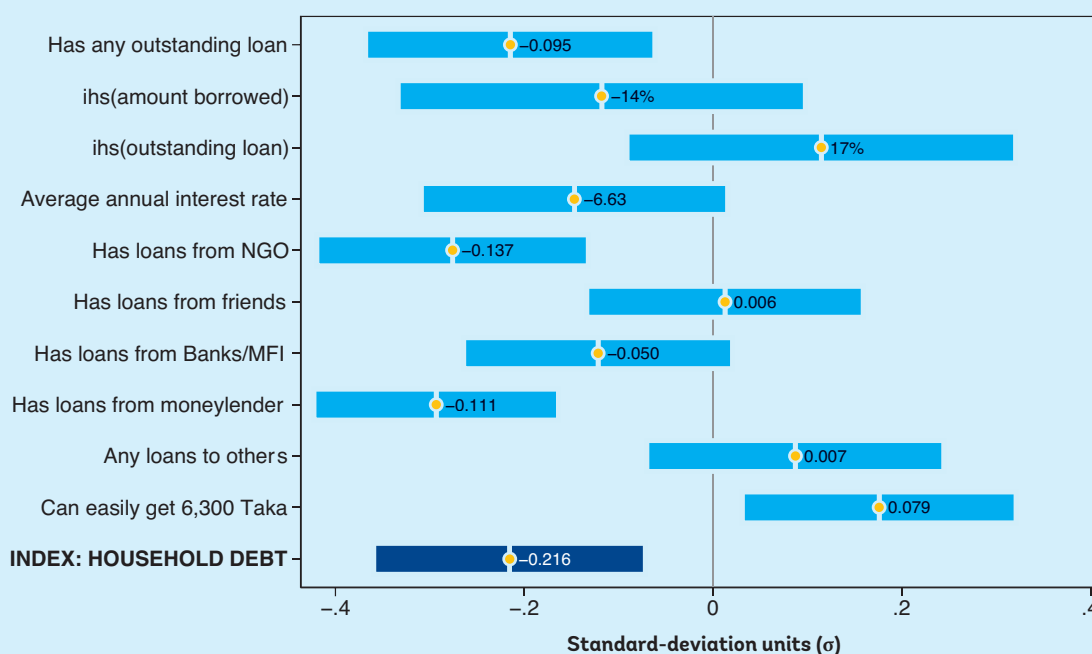
Source: Authors' estimates from the survey data collected for this study.

Note: Figure shows the impact of migration on outcomes indicated in the vertical axis. "ihs" refers to inverse hyperbolic sine transformation of the outcome variables. Each point represents the magnitude of the impact (in standard deviation units) and the bar represents the 95 percent confidence interval. The labels next to the point indicates the impact on non-standardized variant of the outcome. The bottom-most outcome is a covariance-weighted index of all other outcomes in the figure where outcomes are aligned so that positive number refers to higher debt. Lottery results used as instruments for migration. The estimations control for applicant height, age, religion, parental education, and indicators for survey Upazilas. Standard errors are clustered at the union level. Appendix Table 10 presents the full regression results.
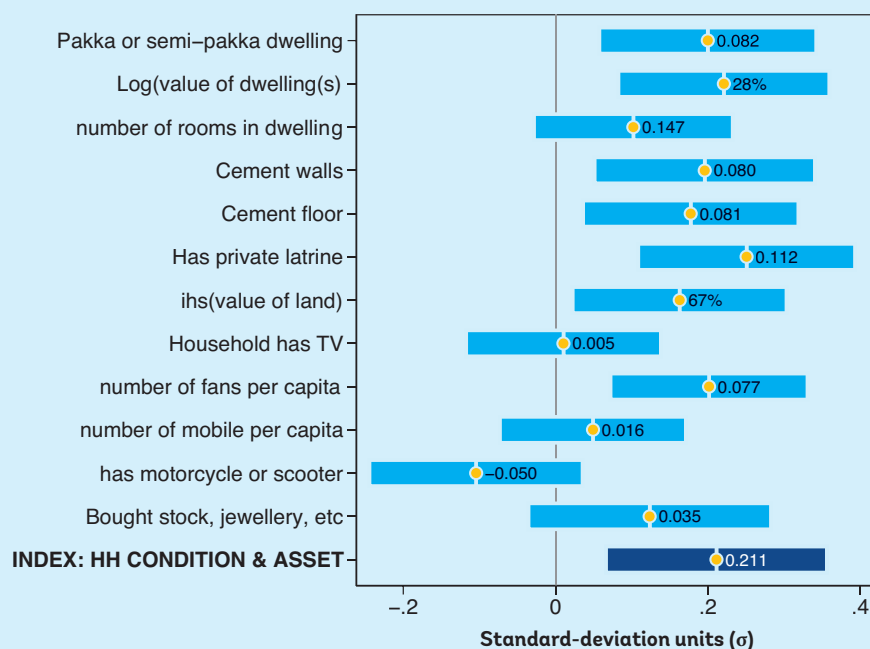
Interpretation example: Migration lowers the likelihood of the household having any outstanding loans by 9.5 percentage points (first row), and lowers amount borrowed by 14 percent (second row). Migration lowers the index of household debt outcomes by 0.216σ (last row).

MIGRATION IMPROVES THE DEBT POSITION OF THE HOUSEHOLDS

Migration reduces household indebtedness, particularly from high-interest sources. Contrary to the concerns, as seen in Figure 12, migration has lowered the indebtedness of households. About 73 percent of the nonmigrant households in the control group had outstanding loans – migration reduced this by 10 percentage points. Among those who had outstanding loans, migration had no impact on the amount borrowed or the amount of outstanding loans, but it seems to reduce the average interest rates on the loans. The reduction is prominent for loans from local moneylenders (11 percentage points, or 67 percent), NGOs (14 percentage points, or 30 percent), and formal financial institutions (5 percentage points, or 24 percent), whereas there was no impact on the loans taken out from relatives and friends.

A clear pattern emerges from these reductions: the largest (proportional) reductions are from the most expensive credit sources. The average annual interest rate for loans from moneylenders is 58 percent; from NGOs it is 24 percent, and from formal financial institutions it is 22 percent, which are all much higher than the average interest rate of 8 percent for loans from friends and relatives. Migration leads to a reduction in indebtedness as well as a shift toward cheaper sources of credit. However, migration does not lead to increased lending by the household members.

The impact of migration on indebtedness in this context could be a joint effect of a lowered cost of migration due to government intermediation, and the length of time since migration began. The lower migration cost would help lower indebtedness related to financing migration (see the next section). Migrant income would then be used to pay off existing loans or avoid having to take out loans to finance other activities of the household. In this context, it appears that migration, on average, does not worsen the debt situation of the households, and in fact it does the opposite.

Migration also leads toward greater financial security. Migration also makes households more confident about their household finances. The share of households that think it is very possible to come up with BDT 6,300 in case of need increases by 8 percentage points (28 percent).

HOWEVER, MIGRATION DOES NOT AFFECT HOUSEHOLD VULNERABILITY AS MEASURED BY INCIDENCE OF SHOCKS

As Figure 13 shows, migration has no impact on measures of food insecurity or on the incidence of shocks and related coping strategies. As with the impact on extreme poverty, this result is also potentially driven by the fact that the sample of lottery applicants is not the poorest of Bangladeshi households. It could be that the poorest chose not to participate in the lottery simply because the cost of migration, even under the government intermediation, would be too high for them. For instance, only 2 percent of the nonmigrant households in the control group reported that they have to go to bed without enough food. Similarly, only 5 percent of them have had to resort to extreme coping mechanisms (had to borrow food, or eat inadequately, or migrate, or send children to work). About a fifth either did nothing or could use their savings to cope with the shocks.

Figure 13 — Impact of migration on household shocks and vulnerability

Source: Authors' estimates from the survey data collected for this study.

Note: Figure shows the impact of migration on outcomes indicated in the vertical axis. "ihs" refers to inverse hyperbolic sine transformation of the outcome variables. Each point represents the magnitude of the impact (in standard deviation units) and the bar represents the 95 percent confidence interval. The labels next to the point indicates the impact on non-standardized variant of the outcome. The bottom-most outcome is a covariance-weighted index of all other outcomes in the figure. Lottery results used as instruments for migration. The estimations control for applicant height, age, religion, parental education, and indicators for survey Upazilas. Standard errors are clustered at the union level. Appendix Table 11 presents the full regression results.

Interpretation example: Migration lowers the likelihood of households not having enough food by 0.4 percentage points (first row) and the effect is statistically insignificant. Migration lowers the index of shock and vulnerability outcomes by 0.013σ (last row) and the effect is statistically insignificant.

IMPACT OF MIGRATION ON HOUSEHOLD COMPOSITION AND GENDER EMPOWERMENT

Migration mechanically changes the nature and structure of the household. In this context, migration removes a male member of the household for several years. For a patriarchal society like Bangladesh, this could involve structuring the household in a way that involves greater participation of women in various aspects of operating the households. This section assesses the impact of migration along these dimensions.

MIGRATION DOES NOT CHANGE HOUSEHOLD SIZE, BUT IT CHANGES HOUSEHOLD COMPOSITION IN SIGNIFICANT WAYS.

Figure 14 shows the impact of migration on various measures of household size and composition. To ensure that the measures are not mechanically affected by the migration status of the applicant, we either include or exclude all applicants in the following measures.

Migration does not affect the overall household size or the migration of other household members. Nonmigrant households in the control group have 5.7 members, including all migrants, and 4.2 members residing at home (excluding the applicant). Winning the lottery, or migration, does not affect the overall household size. Similarly, migration also does not affect the probability that a household has any nonapplicant migrant members.

However, migration reduces the likelihood of forming new households and having newer members. Because applicants in the treatment group migrated for several years, their families were less likely to split from the households they belonged to in 2013. That is, migration delays the process of new household formation as applicants (or their spouses) are more likely to cohabitate with their parents or siblings instead of forming their own households. Similarly, migration delays marriage among applicants. Four years after migration, migrants were 6 percentage points (30 percent) less likely to be married than the control group. Consequently, migration lowers the probability of the household having a new member by 13 percentage points (28 percent) and increases the probability that an applicant is still living in the household with an elderly person by 7 percentage points (22 percent).

Migration shifts the position of household heads toward women and parents of the applicants. Because the applicants (or their spouse and children) are more likely to be living with their parents, the household heads are more likely to be parents of the applicant, by 6.5 percentage points (18 percent). In particular, the chances of the wife of the applicant being the household head substantially increase. Only 9 percent of the households in the control group had an applicant's wife as a household head. The number was even lower, at 5 percent, for nonmigrant control group households. The proportion increased by 24 percentage points upon migration. This, however, doesn't necessarily represent changing household structure or norms; rather, it appears to be a mechanical impact of the applicant being a migrant. That is, the share of wife-headed households is the same for the treatment and control groups among households where the applicant is not a current migrant.

MIGRATION INCREASES FEMALE INVOLVEMENT IN HOUSEHOLD DECISIONS.

Another aspect of gender-skewed migration such as this is that, in the absence of a key male member, women are disproportionately likely to be involved in managing several aspects of household operations. As Figure 15 shows, female involvement in several measures of household decision-making improves drastically because of male migration. In the survey, we asked about female involvement in making decisions across various dimensions involving children (schooling, childcare), household expenses (expenses in healthcare, food, clothing, necessities, and managing daily finances), and

Figure 14 — Impact of migration on household composition
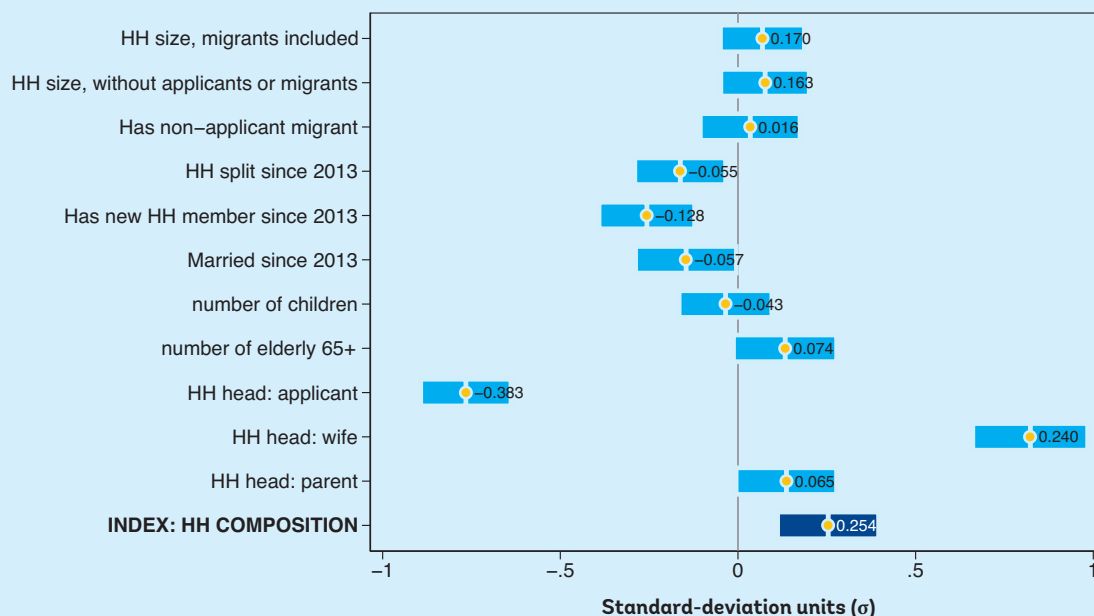
Source: Authors' estimates from the survey data collected for this study.

Note: Figure shows the impact of migration on outcomes indicated in the vertical axis. "HH" represents households. Each point represents the magnitude of the impact (in standard deviation units) and the line represents the 95 percent confidence interval. The labels next to the point indicates the impact on non-standardized variant of the outcome. The bottom-most outcome (the index) is the mean of all other outcomes in the figure. Lottery results used as instruments for migration. The estimations control for applicant height, age, religion, parental education, and indicators for survey Upazilas. Standard errors are clustered at the union level. Appendix Table 12 presents the full regression results.

Interpretation example: Migration increases total household size by 0.17 persons. Migration reduces the likelihood that a household split since 2013 by 5.5 percentage points (fourth row). Overall, migration changes household composition index by 0.254σ (last row).

other large decisions related to household business or entrepreneurial activities (selling household assets, decisions related to farming such as crop/seed choice and fertilizers, decisions related to household debt, and large purchases such as of a house, land, or large appliances).

Female involvement in decision-making improved across all dimensions. Though females were partly involved in making these decisions for about 60 percent of the households in the control group, decisions were made exclusively by female members in only 10 percent of households. Migration increased female involvement in these decisions by 6 percentage points (10 percent) and exclusive female involvement by 13 percent (126 percent). Exclusive female involvement increased by 12 percentage points (43 percent) in matters involving children, by 16 percentage points (193 percent) in matters of household expenses, and by 11 percentage points (213 percent) in matters involving large decisions. That is, migration increases female decision-making in all areas, and disproportionately so in areas where the traditional involvement of females is lower.

Migration mechanically lowers the involvement of the applicant in household decisions. Applicant involvement falls by 27 percentage points (47 percent) across all dimensions. Whereas one could expect the mechanical effects to be larger for regular household decisions and smaller for irregular and large decisions where remote participation of the applicants may be possible, we find the proportional falls to be similar (28–33 percent) across the different dimensions.

Figure 15 Impact of migration on household decision-making

Outcome	
Female: all matters	0.061
Only female: all matters	0.134
Female: child matters	−0.012
Only female: child matters	0.125
Female: big decisions	0.072
Only female: big decisions	0.106
Female: HH expense related	0.082
Only female: HH expense related	0.159
Applicant: all matters	−0.268
INDEX: FEMALE DECISIONMAKING	0.495

Standard-deviation units (σ)

Source: Authors' estimates from the survey data collected for this study.

Note: Figure shows the impact of migration on outcomes indicated in the vertical axis. "ihs" refers to inverse hyperbolic sine transformation of the outcome variables. "HH" refers to household. Each point represents the magnitude of the impact (in standard deviation units) and the bar represents the 95 percent confidence interval. The labels next to the point indicates the impact on non-standardized variant of the outcome. The bottom-most outcome is a covariance-weighted index of all other outcomes in the figure aligned so that positive number refers to higher female decision-making and lower applicant decision-making. Lottery results used as instruments for migration. The estimations control for applicant height, age, religion, parental education, and indicators for survey Upazilas. Standard errors are clustered at the union level. Appendix Table 13 presents the full regression results.

Interpretation example: Migration increases female involvement in decision=making by 6.1 percentage points (frist row). Overall, migration increases female decisionmaking index by 0.495σ (last row).

SUMMARY

This section showed that low-skilled temporary international migration of male members changes the household composition in a few key ways. The absence of a member means that the original, potentially joint households are more likely to stay together. Migrants who left to migrate while unmarried are more likely to stay unmarried than their nonmigrant counterparts. Household head-ship moves away from the migrants toward their parents, and more importantly it moves toward their wives. The direct involvement of women in key household decisions also improves, and women are more likely to take decisions, even in areas where females are typically only marginally involved. This improvement is, no doubt, driven by the absence of other male members in the households. It is possible that the higher involvement of women, while the male member is away, disappears after the male migrant member returns. Alternatively, it is possible that due to the prolonged nature of female involvement, the effects could persist. If the effect is indeed persistent, then female empowerment could be a positive spillover impact of male migration. However, more research with a longer-term follow-up is required to draw such conclusions.

IMPACT OF MIGRATION ON INVESTMENTS IN HUMAN CAPITAL AND ENTREPRENEURIAL ACTIVITIES

When asked about the reasons for migration, migrants frequently bring up child education as one of the key motivations. Migration could increase investments on child human capital in two ways. First, an increase in household income means that the household can purchase more education, or higher quality education, or that the household does not have to rely on children working or performing household chores to free up parental time for economic activities. Second, migration could expose the migrant, and the households, to knowledge about the higher returns to education in domestic as well as foreign labor markets, which would increase investments in schooling as they would value education more.

Similarly, migration is also expected to spur household investments in entrepreneurship. Policymakers may have this expectation because migration increases the resources available for such investments and improves entrepreneurial knowledge through exposures abroad. However, migration also removes a household member, oftentimes the most entrepreneurial one, from the household, which would lower such investments until the migrants themselves return.

In this section, we investigate the impact of migration on investments on human capital of household members and on entrepreneurial activities.

MIGRATION IMPROVES SOME INDICATORS OF CHILD SCHOOLING AND REDUCES CHILD LABOR IN WAGE WORK.

In this context, however, as Figure 16 shows, migration affects only certain aspects of child schooling outcomes. Migration has no impact on the educational attainment, enrollment, or probability of having a private tutor for children ages 5-14 or youths ages 15-24. However, for both demographics, migration increases expenditures in education by 20 to 24 percent. It seems that the higher expenditure is not put toward improving schooling in the extensive margin (even for youths for whom the control group attendance rate is only 42 percent, as opposed to 90 percent for children). Rather, it could be going toward the purchase of inputs (such as school bags) or toward improving the quality of education. Indeed, expenditures are high because of increased expenditures in school fees as well as fees to tutors. This could suggest that families are purchasing better quality schooling through more expensive schools or tutors.

The impacts on educational expenditures reduce any pre-existing gender gaps. The impact on schooling expenditures for children ages 5 to 14 is driven by the impact on girls. Girls in households with a migrant see an increase of 36 percent in educational expenditures, whereas boys only see a modest, and statistically insignificant, improvement of 13 percent. Note that, in this context, girls ages 5 to 14 in nonmigrant households in the control group had 14 percent lower educational expenditure compared to boys. On the other hand, there is no gender difference in the impact of migration on the educational expenditure on youths ages 15 to 24. Unlike the case with younger children, however, there is no gender difference in educational expenditures for youths this age among nonmigrant households in the control group either. This suggests that the impacts of migration on educational expenditures narrows pre-existing gender gaps.

For children ages 10 to 14, migration also leads to a decline in the probability that a child works for wages; 1.6 percent of children in control group households worked for wages, and this number essentially disappeared for children in the treatment group. The impacts on child wage work do not differ by gender of the child. However, child involvement in farm work is not affected by migration. For the youth, migration does not change their involvement in any type of work activities.

Figure 16

Impact of migration on outcomes of children and youth

Source: Authors' estimates from the survey data collected for this study.

Note: Figure shows the impact of migration on outcomes indicated in the vertical axis. Each point represents the magnitude of the impact (in standard deviation units) and the line represents the 95 percent confidence interval. The labels next to the point indicates the impact on non-standardized variant of the outcome. The bottom-most outcome (the index) is the mean of all other outcomes in the figure. Lottery results used as instruments for migration. The estimations control for applicant height, age, religion, parental education, and indicators for survey Upazilas. Standard errors are clustered at the union level. Appendix Tables 14 and 15 present the full regression results.
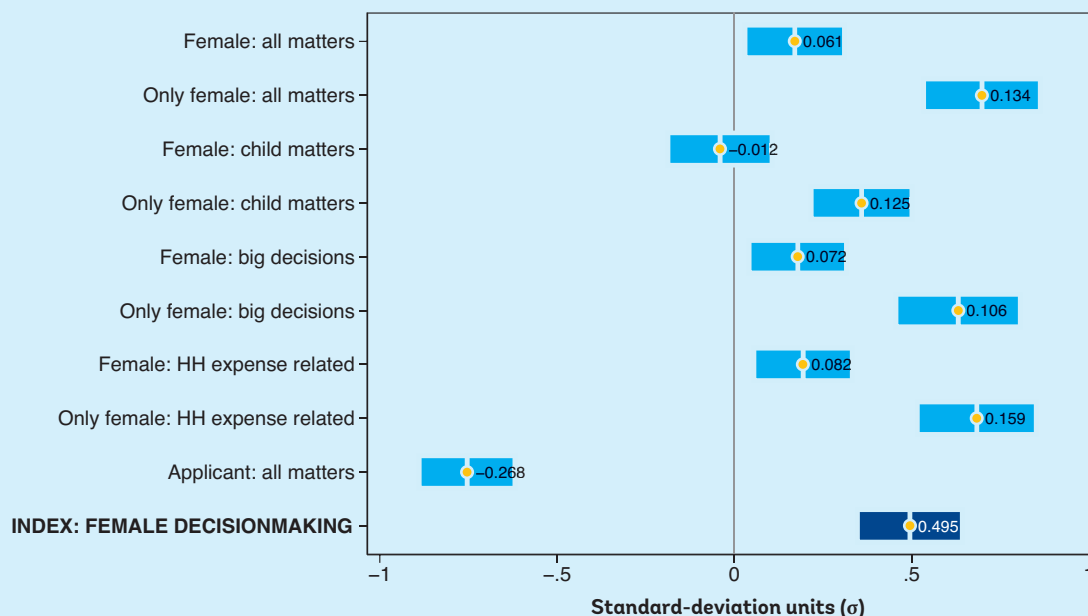
Interpretation example: Migration reduces years of schooling of children aged 5-14 by 0.194 years (first row) and the likelihood of attending school by 0.4 percentage points (second row). Both effects are statistically insignificant. Migration increases education expenditure on children by 20 percent (sixth row). Overall, migration increases the index of child (aged 5-14) outcomes by 0.078σ (last row) and the effect is statistically insignificant.

MIGRATION DOES NOT LEAD TO AN INCREASE IN ENTREPRENEURIAL ACTIVITIES CONDUCTED BY THE HOUSEHOLDS.

Migration could affect household entrepreneurial activities, including farming, in multiple ways. Increased household income from migration could finance new business ideas, or provide existing businesses with inputs, such as machinery, that would not have otherwise been financed. This is particularly true if households face credit constraints in starting or expanding their enterprises. On the other hand, migration also results in the absence of a household member, arguably the more entrepreneurial member. This could increase hiring of external labor to compensate for the labor supply of the absent migrant member, or the absence of an entrepreneurial member could lower the quality, as well as scale, of existing enterprises.

| Figure 17 | Impact of migration on household entrepreneurial activities |

Source: Authors' estimates from the survey data collected for this study.

Note: Figure shows the impact of migration on outcomes indicated in the vertical axis. "ihs" refers to inverse hyperbolic sine transformation of the outcome variables. Each point represents the magnitude of the impact (in standard deviation units) and the bar represents the 95 percent confidence interval. The labels next to the point indicates the impact on non-standardized variant of the outcome. The bottom-most outcome is a covariance-weighted index of all other outcomes in the figure. Lottery results used as instruments for migration. The estimations control for applicant height, age, religion, parental education, and indicators for survey Upazilas. Standard errors are clustered at the union level. Appendix Table 16 presents the full regression results.

Interpretation example: Migration lowers the likelihood of the household having any crop income by 2.1 percentage points (first row) and the effect is statistically insignificant. Overall, migration lowers the index of household entrepreneurial activities by 0.181σ (last row).

As Figure 17 shows, the latter channels are likely more important in this context. Migration does not change the probability that a household will have any income from crops. However, among households that do have a crop income, migration leads to a lower likelihood of spending on inputs or hired labor. The probability of having any expenditures on fertilizers fell by 6 percentage points (8 percent); of having any capital expenditures fell by 9 percentage points (13 percent); and of employing an external worker fell by 10 percentage points (15 percent). Migration also does not affect the likelihood of operating a livestock farm nor, if one is operating one, the value of the livestock farm or the likelihood of any expenditure in equipment or hired labor.

However, migration reduces the likelihood that the household operates a nonfarm business. This likelihood falls by 12 percentage points, which is 25 percent of the likelihood in the nonmigrant households in the control group. This further suggests that the absence of the applicant, who is likely to be more entrepreneurial among household members, lowers the chances that the household operates a nonfarm enterprise. Conditional on operating an enterprise, the migration of the applicant further lowers the likelihood of hiring an external worker by 12 percentage points (60 percent) and of having capital expenditures by 10 percentage points (13 percent).

If it is the absence of an entrepreneurial member that is behind the lowered entrepreneurial activities, then we can expect those activities to bounce back once the migrant member returns. Further, with greater exposure abroad, along with accumulated financial resources, migration could have a positive impact on entrepreneurship in the longer run. There is some evidence supporting this in the data. For instance, households with a returnee applicant were 11 percentage points more likely to operate a nonfarm family business than households with a nonmigrant applicant.

SUMMARY

This section showed that migration also has non-negligible impacts on investment in the human capital of household members and on entrepreneurial activities conducted by the households. Although migration does not affect investments in the schooling of youth and children at the extensive margin (enrollment and attainment measures), it increases such investments at the intensive margin (expenditures and inputs). It also lowers the gender gap in schooling investments for younger children. Migration seems to lower household entrepreneurial activities, particularly outside farming, which could be driven by the absence of the entrepreneurial members from the household. There is some indicative evidence that such activities are likely to increase once the migrant members return.

V COMPARISON OF MIGRANTS' EXPERIENCES UNDER THE G2G PROGRAM AND PRIVATE CHANNELS

The previous sections show the *causal* impact of a government intermediated low-skilled international migration. In this section, we present *descriptive* evidence on how government intermediation differs from other modalities of international migration by comparing the experiences of G2G migrants with private-channel (non-G2G) migrants.[14] By contrasting G2G intermediation with private channel intermediation, we highlight areas in which government intermediation can add value. While the previous section looked at the impact of providing *access* and *intermediation* to temporary low-skilled migration, this section delves deeper, albeit in a descriptive sense, into the *intermediation* aspect of the program.

Private channel migration takes place largely, but not completely, through recruitment by middlemen who connect the migrant workers to recruitment companies. Among the sample of private-channel migrants in our data, two-thirds were intermediated through middlemen (and recruitment companies). A quarter were recruited through their social networks, mostly through their relatives (or friends) currently abroad. The remainder followed other channels, including responding directly to advertisements.

In addition to the nature of intermediation, G2G migrants differ from private-channel migrants in terms of migration destinations, occupations, and duration of migration. While G2G migrants only go to Malaysia, only 30 percent of private-channel migrants go to Malaysia. Gulf countries are the most popular destination for private-channel migrants, with 60 percent of them going to these countries. Furthermore, all migrants differ in terms of the occupations for which they migrate. G2G migrants worked in the palm-oil sector, whereas only 12 percent of private-channel migrants worked in the forestry sector at all. Most private-channel migrants worked in construction (40 percent) or as low-skilled labor in other industries (41 percent). Additionally, G2G migrants migrated much earlier than private-channel migrants in our sample. On average, G2G migrants migrated four years before the survey, whereas private-channel migrants migrated only 2.4 years before the survey. These differences are important to keep in mind for the comparisons below.

G2G INTERMEDIATION SIGNIFICANTLY IMPROVED PRE-DEPARTURE CHARACTERISTICS.

Government intermediation significantly changed the pre-migration characteristics of the migration process. Figure 18 shows the comparison of several pre-migration characteristics among migrants who migrated under the G2G program with those who migrated on their own. In what follows, we expand on these outcomes.

Government intermediation allowed people to migrate without prior contacts in the destination. About 45 percent of private-channel migrant knew someone—either a family member, relative, friend, or acquaintance—in the destination country, compared to only 7 percent of the G2G migrants. This suggests that, without government intermediation, the probability of finding a job abroad could be much lower if a worker does not have a connection with someone at the destination.

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14   See point 3 in Box 3, in Section III, for a detailed empirical specification.

Government intermediation lowered the cost of migration. Private-channel migrants paid on average BDT 390,000 to migrate, while the G2G program migrants paid only BDT 45,000, a 79 percent reduction compared to the private channels. The reported costs of migration are only slightly higher than the official fees collected by BMET from the potential migrants (see Box 4 for the official cost breakdown under the G2G program). The difference is largely driven by the high fees to the private intermediaries, which the government subsidized for G2G migrants. However, the G2G migrants also paid slightly less in non-fee costs, such as airfare, medical checks, and paperwork. Private channel migrants paid BDT 110,000 in non-fee costs compared to BDT 40,000 for G2G migrants. The government was able to negotiate the cost of paperwork with Malaysia as well as the costs with airlines to bring the non-fee costs lower for G2G migrants.

BOX 4 RECRUITMENT COSTS UNDER THE G2G INTERMEDIATION

Migrants under G2G paid about BDT 33,000 to BMET as a recruitment fee. The following table presents a breakdown of the recruitment fees charged by BMET:

Item	Cost (BDT)
Airfare (negotiated)	23,000
Medical test	3,500
Welfare fee	2,000
Non-judicial stamp	300
Visa fee	600
Orientation training	1,000
Tax	200
Service charge	2,000
TOTAL:	**32,600**

Migrants may still incur additional cost related to the government intermediation. This could include the cost of obtaining a passport and related documentations and the cost of transport and lodging for their trips to hospitals, training centers, or to Dhaka at different stages of the intermediation process.

Source: Shah (2015).

Family or relatives in destination −0.267
Friends in destination −0.107
Migration cost, '000 Taka −343
Non–fee cost, '000 Taka −73.8
Borrowed for migration −0.161
–– from moneylenders −0.190
–– from relatives/friends −0.134
–– from formal institutions −0.129
Amount borrowed, '000 Taka −136
Interest rate −5.96

Had a contract 0.154
Contract has overtime −0.032
Contract has lodging 0.096
Contract has food provision −0.270
Permit from BMET 0.161
Any insurance 0.133
Took skills training 0.705
Duration (months) of migration 16.0
Wait time (weeks) to begin work −1.42

Standard-deviation units (σ)

Source: Authors' estimates from the survey data collected for this study.

Note: Figure shows the difference between G2G and private channel migration on outcomes indicated in the vertical axis. Each point represents the magnitude of the difference (in standard deviation units) and the bar represents the 95 percent confidence interval. The labels next to the point indicates the difference on non-standardized variant of the outcome. Winning the Phase 1 lottery, T1, is used as instrument for G2G-migration. The estimations control for applicant height, age, religion, parental education, and indicators for survey Upazilas. The estimations are restricted to applicants who have migrated abroad after the initiation of the lottery program. Standard errors are clustered at the union level. Appendix Table 17 presents the full regression results.

Interpretation example: Compared to non-G2G migrants, G2G migrants were 26.7 percentage points less likely to have a family member or a relative in the destination country (first row). G2G migrants paid 343,000 Taka less than non-G2G migrants for their migration (third row).

Consequently, G2G migrants borrowed less to finance migration and did so under better terms. The lower cost of migration means that migrants borrow less, or less often, to finance migration. Over 80 percent of private-channel migrants borrow for migration. The borrowing rate was 16 percentage points (19 percent) lower for the G2G migrants. Compared to private-channel migrants, G2G migrants were 65 percent less likely to borrow from moneylenders and 54 percent less likely to borrow from formal financial institutions – the two most expensive sources of credit. Borrowing from cheaper sources of credit—from relatives and friends—also fell under the G2G program by 13 percentage points, or 20 percent, among the migrants under the private channel.

Even among those who borrowed, the G2G program substantially lowered the debt burden among migrants. G2G migrants borrowed about BDT 50,000, compared to BDT 190,000 for migrants under the private channel, a reduction of 72 percent. Due to the changes in their source of credit, the average annual interest rate per loan for migrants under the G2G program was 8.5 percent, 6 percentage points (40 percent) lower than the average interest rate obtained by private-channel migrants.

Government intermediation improves pre-departure procedures. Among private-channel migrants, about half migrated without a contract, about a fifth did not take employment permits from BMET, nine out of ten did not purchase any kind of insurance, and more than two-thirds did not take any pre-departure training. Government intermediation increased the probability of having a contract by 15 percentage points, more than double the probability of having some form of insurance, and virtually guaranteed that workers obtained some training and took appropriate permits from BMET. However, by virtue of the nature of the agreement, the employment contract of G2G migrants was less likely to include food provision.

Government intermediated migration lasts longer with work beginning promptly upon arrival. G2G migrants started work with lower wait times than typical migrants. Private channel migrants waited, on average, about 12 days before starting to work, whereas G2G migrants started work within about three days of arrival. This could be a result of better clarity in terms of work arrangements prior to departure. The duration of the migration episode was also longer for G2G migrants. The average duration for private-channel migrant was 2.5 years; it was 16 months longer for G2G migrants.[15] The possibility of getting a contract extension under the government's intermediation may have made it easier for migrants to stay longer without having to return home.

AT THE DESTINATIONS, THE OUTCOMES ARE SIMILAR FOR G2G AND PRIVATE CHANNEL MIGRANTS.

As Figure 19 shows, work and pay characteristics of migrants are not very different for G2G migrants compared with private-channel migrants. Private-channel migrants work about 60 hours per week, with over a third of them working overtime, while G2G migrants work 5 fewer hours per week, but are 17 percentage points more likely to work at an overtime rate. Since overtime pays about 30 percent more, G2G migrants end up earning about the same as private-channel migrant workers. On average, they make about BDT 31,000 per month. G2G migrants spend more than private-channel migrant workers on lodging and they spend much more on food, a finding that is consistent with their pre-migration contractual arrangements. Net of food and lodging, these migrants make BDT 27,000 per month abroad and spend about BDT 2,000 per month in other expenses.

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15   This result is partly driven by the choice of destination, as workers sent to Malaysia tend to have a longer work duration than those who go to the Gulf countries. However, even within Malaysia, the duration of the G2G migrant work term is still longer by 13 months.

Working conditions are, if anything, slightly worse for government-intermediated migration. About 44 percent of these migrant workers work in environments of extreme heat, and 3 percent work in extreme cold. In this regard, there is no statistically significant difference between the G2G and private-channel migrants. However, G2G migrants are more likely to experience or witness injuries at the workplace. Almost two-thirds of the G2G migrants have experienced injury at the workplace, which is 24 percentage points higher than private-channel migrants. Similarly, 30 percent of G2G migrants are likely to witness a workplace injury at least once a week, which is also 8 percentage points higher than for private-channel migrants. This reflects the fact that the government- intermediated migrants are in the agricultural palm-oil sector, whereas private-channel migrants are in other sectors as well, including some that might be less prone to workplace accidents.

These results present a strong case for active government involvement in intermediation for several reasons. First, government intermediation improved the access of migration opportunities to those without social network contacts abroad. If migration opportunities are restricted to those without a social network contact abroad, it would reduce the potential of international migration to serve as a sustainable employment strategy for Bangladesh. Those without social networks abroad are, perhaps, more disadvantaged in terms of access to domestic jobs as well. For instance, Dhaka and Chittagong, the two most economically prosperous divisions, are also home to 70 percent of international migrants. If social networks keep playing a large role in access to migration opportunities, then workers in other divisions, with scarce local job opportunities, will also have lower access to job opportunities abroad.

Figure 19	Differences in G2G vs private channel migration – during migration

Source: Authors' estimates from the survey data collected for this study.

Note: Figure shows the difference between G2G and private channel migration on outcomes indicated in the vertical axis. Each point represents the magnitude of the difference (in standard deviation units) and the line represents the 95 percent confidence interval. The labels next to the point indicates the difference on non-standardized variant of the outcome. Winning the Phase 1 lottery, T1, is used as instrument for G2G-migration. The estimations control for applicant height, age, religion, parental education, and indicators for survey Upazilas. The estimations are restricted to applicants who have migrated abroad after the initiation of the lottery program. Standard errors are clustered at the union level. Appendix Table 18 presents the full regression results.

Interpretation example: Compared to non-G2G migrants, G2G migrants worked 5.34 hours less (first row), but were 16.8 percentage points more likely to work for overtime (second row).

BOX 5 NET EARNINGS FROM MIGRATION UNDER G2G PROGRAM AND PRIVATE SECTOR MIGRANTS

Compared to a G2G migrant, a privately intermediated migrant pays a higher cost of migration, borrows more, and borrows at a higher interest rate. However, the earnings from their jobs are similar. Because of this difference, the net earnings of migration – monetary gains after deducting costs and interest payments – is higher for migrants under the G2G program compared to migrants who were privately intermediated.

In addition, because of the higher debt burden of migration under private channels, the net earnings from migration only become substantive over a longer migration duration. As the table below shows, for a two-year migration period, the net earnings from the G2G program are almost three times those from private channels. In fact, the net earnings from migration from a two-year episode are lower than what migrants could earn in Bangladesh (about BDT 113,000 per year). Only for a migration episode lasting three years or more do the net earnings from privately intermediated migration exceed the earnings they could have made in Bangladesh. When the migration episode is five years long, the net earnings from privately intermediated migration are much higher than what they would have earned in Bangladesh; but the net earnings under the G2G program are still 46 percent higher.

Duration of migration	G2G-migrants ('000 BDT)	Private-channel migrants ('000 BDT)	Gains (in percent) from G2G program
2 years	613	206	197%
3 years	942	503	87%
4 years	1,271	801	59%
5 years	1,600	1,098	46%
6 years	1,929	1,395	38%
7 years	2,258	1,693	33%

The large discrepancy in earnings between the government intermediated program suggests that lower costs played a crucial role in the gains of migration estimated in Section IV. The gains are likely to have been much lower with the higher costs and debt burden of private intermediation.

Second, government intermediation can drastically lower the cost of migration and lower debt burden among migrants. For private-channel migrants, the costs of migration alone are equivalent to more than 14 months of migrant income, net of food and lodging costs. By contrast, migration costs under the government intermediation were less than two months of net migrant income. This lower cost of migration implies a reduction in borrowing to finance the migration. Even when migrants do borrow, they borrow smaller amounts and from cheaper sources (mostly relatives and friends).

The lower cost and debt burden drastically improve the attractiveness of migration under the government-intermediated program compared to migration under private channels. Simple calculations, illustrated in detail in Box 5, show that in a two-year migration episode, migrants under private channels earn about BDT 206,000 in the net – after paying back recruitment costs and interest payments. This amount is comparable to the earnings made by non-migrants in Bangladesh. This suggests that the net benefit of a two-year migration episode is likely to be very small under the private channel migration. However, migrants under the G2G program earned BDT 613,000 in the net, almost three times more than through private channels. Net earnings from private channel migration increases with the duration of the migration episode, because the costs are spread over a longer earning horizon. Even then, the net earnings are significantly lower than in the G2G program. For instance, with a five-year migration episode, G2G migrants are likely to earn 46 percent more than private channel migrants, on net.

The lower debt burden under the government intermediation means that migration opportunities become more affordable to the poor and the credit-constrained. It also reduces the likelihood that migrants will fall into a debt-migration spiral in which they keep migrating to pay back the loans from previous migration episodes. It could also lower the likelihood that migrants extend their stay, potentially unlawfully, in the destination country.

Third, government intermediation makes migration more informed and migrants better prepared. Migrants travel with necessary clearances, training, insurances, and a contract. While the training may not have a direct impact on earnings while abroad, it might still be useful in orienting the workers before they migrate, ensuring that they are well informed about the work abroad, have the necessary paperwork and clearance to travel, have insurance against injuries and death, and know the appropriate steps to take in case of unfavorable incidents.

VI CONCLUSIONS AND POLICY RECOMMENDATIONS

This study shows that government-intermediated temporary international migration for low-skilled work is welfare enhancing for the migrants as well as their families. Migrants earn more than three times more than they would have earned in Bangladesh. The high return to migration is reflected in the high and credible demand for such opportunities within Bangladesh. The study also establishes that government intermediation changes migrants' experiences in substantial ways, particularly in lowering the costs of migration, providing access to those without social networks, and increasing compliance with pre-migration guidelines. These changes, particularly those stemming from the lower cost of migration, are likely to be driving the large impacts of the programs.

The Government of Bangladesh has an important role to play in making low-skilled temporary international migration a sustainable employment strategy as well as an effective poverty reduction strategy. The following policy recommendations organize the role of the government along three broad areas:

1. Increase access to migration opportunities for more people through bilateral agreements with more countries and in more occupations.

2. Lower the costs of temporary international migration.

3. Offer affordable financing options, in combination with lower costs, for the poor, who are likely to benefit the most from migration.

1. INCREASE ACCESS TO TEMPORARY INTERNATIONAL MIGRATION OPPORTUNITIES FOR MORE PEOPLE THROUGH BILATERAL AGREEMENTS WITH MORE COUNTRIES AND IN MORE OCCUPATIONS.

Identifying countries and occupations with high demand for low-skilled migrant labor could prove tremendously beneficial for Bangladesh. Given the large returns to temporary international migration for low-skilled work, facilitating such migration could be an important part of the jobs strategy for Bangladesh. Bilateral agreements with more countries, and covering more occupations, could be an effective policy instrument to provide access to labor markets abroad. Such agreements are likely to succeed when migration benefits both the sending and the destination countries.

Two features of such agreements can enhance the likelihood of their success. First, such migration needs to be *temporary* – something that is tied specifically to work and not designed for long-term emigration. This helps policymakers in the destination countries focus on the economic aspect of migration – that it is beneficial both for the workers

from the sending countries and for firms in the destination countries – and not on the broader social aspects of an emigration reform. Second, such migration opportunities need to be for *specific occupations* in which the demand for migrant workers in the destination countries is high. Oftentimes, such occupations tend to be in low-skilled agriculture, manufacturing, or services. The advantage of having agreements on these specific occupations is that it will lower the (perceived) threats to domestic jobs in the destination countries. For instance, the G2G agreement studied in this report is specific to jobs in the palm-oil sector, where the demand for workers exceeds the supply of domestic workers willing to work in this occupation.

Future labor agreements can used to diversify the sectors and markets. For a country like Bangladesh that relies heavily on remittances, it is important to diversify migrants into multiple sectors and multiple economies. Such diversification will insure the individual and national remittance income against global shocks to a sector or negative shocks to a country. Unfortunately, most migrant workers from Bangladesh go to work in a handful of destination countries in the Persian Gulf. For instance, more than half of the 1 million workers who migrated in 2017 for low-skilled work went to Saudi Arabia. Expanding the foreign labor market to other middle- and high-income countries, and into sectors where migrant labor demand is less likely to be affected by macroeconomic shocks, will be important for Bangladesh moving forward. The demand for foreign workers is likely to increase in upper-middle-income countries for household and related services as their populations continue to grow richer. Similarly, middle- and high-income countries with aging demographics are likely to have an increased demand for affordable elderly care.

2. LOWER THE COSTS OF TEMPORARY INTERNATIONAL MIGRATION.

The government needs to take active steps in lowering the costs of migration. The gains from migration estimated in this study are driven by the low costs and debt burden faced by the migrants. As Box 5 shows, the net earnings gain from migration is much smaller with privately intermediated migration. In fact, for a shorter duration of migration, the net earnings gain from private channels is comparable to the earnings migrants could make in Bangladesh without migrating. This suggests that under the status-quo of private-channel intermediation, high migration costs prevent the poor from taking advantage of the opportunities. Worse, even for those who migrate under the private channel for a period of two years (a typical contract length), the net earnings are similar to what they would have made in Bangladesh due to their high debt burden. This makes migration opportunities out of reach for the poor and those without a social network that can help them migrate. It also reduces the effectiveness of temporary international migration as a pathway to lower poverty. Further government interventions are required to lower migration costs and increase the impacts of temporary international migration.

Various potential policy instruments and interventions could potentially lower migration costs. Government provision of recruitment services, as demonstrated by the G2G program with Malaysia, was successful in drastically lowering recruitment costs compared to private channels. Migration costs under other government-intermediated program, such as the Korean Employment permit system, are also substantially lower than under private-channel-intermediated migration (Cho et al. 2018).[16] Furthermore, interventions conducted by NGOs such as BRAC have also been effective in lowering migration costs for the migrants. On the other hand, regulations – often in the form of a cap in recruitment service fees – have faced implementation challenges and have not yet been successful in the Bangladeshi context.

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16   Average migration costs under the Korean program were US$ 908 (BDT 71,000) in 2013. Though these costs are higher than under the G2G program with Malaysia, the earnings in South Korea are also expected to be higher.

Neither an exclusive government intermediation nor an exclusive private-sector intermediation is likely to deliver stable and low-cost migration. Even though the Malaysia G2G program was successful in lowering costs and providing access to those without a social network, government provision of intermediation has its own limitations. For instance, the G2G program with Malaysia was scrapped due to criticism from the private sector for excluding them from intermediation. Similarly, the costs may increase as the program is scaled up to accommodate a higher volume of migrants. The G2G program was able to send only a small fraction of total migrant outflow from Bangladesh. Scaling similar initiatives to accommodate higher volume would require higher implementation capacity and costs. Government intermediation may also require a substantial degree of cooperation from and coordination with the governments and/ or the employers in the destination countries, which could present further challenges. Furthermore, governance issues could also hinder the effectiveness of such programs.

However, the Bangladeshi experience with recruiting workers for Malaysia suggests that relying solely on privately provided intermediation can have negative consequences in addition to the high migration costs. The 'G2G Plus' program, under which the private sector provided the intermediation services, was put in place to replace the G2G program. However, in practice, a handful of private recruitment agencies managed the recruitment of all workers. Migration costs soared, and malpractice became commonplace. Consequently, in September 2018 the Government of Malaysia completely banned recruitment of Bangladeshi workers due to the high recruitment costs and recruitment malpractice under the new scheme. Such drastic actions from destination countries can remove a transformative opportunity from hundreds of thousands of Bangladeshi workers.

Further study of various ways to lower costs, including learning from international experiences, will be essential to identify the right mix of policy options. Bangladesh needs to conduct a careful study examining the advantages and disadvantages of each of the policy options. International experiences, alongside domestic ones, suggest that regulating alone will not help lower the costs. The nature of the recruitment market makes it difficult for the government to observe and regulate the nature of transactions between migrants and recruitment companies and agents. Interventions that develop a system of accountability – for example, through platforms where migrants can rate their local agents and recruitment companies based on their experiences – have shown promises in some international contexts. Governments and NGOs can also help discipline the market by providing low-cost recruitment services as a credible alternative to the private-channel migration, albeit at a smaller scale. These services could be targeted to populations that are under-served or excluded: the poor who cannot afford to go or people in areas where migration rates are low. Such targeting would redistribute gainful migration opportunities to the poor and the underserved who, because of high costs or the lack of social networks, have as of now been excluded. A comprehensive policy approach is likely to be effective in achieving the objective of a stable, low-cost, and less exploitative migration. It would need to be an approach that combines government- and NGO- or civil society–provided recruitment services with appropriate regulation of a robust private sector and includes other systems that build accountability and information into the multilayered intermediation process.

3. OFFER AFFORDABLE FINANCING OPTIONS, IN COMBINATION WITH LOWER COSTS, FOR THE POOR, WHO ARE LIKELY TO BENEFIT THE MOST FROM MIGRATION.

The high costs of migration limit the role of international migration as a successful poverty reduction strategy for Bangladesh. International migration, even with government intermediation, is expensive. Even under the G2G program, the costs borne by the migrants were around BDT 45,000, about half the annual GDP per capita in 2013. Many poor households will not be able to finance this cost themselves or have proper credit access to borrow this amount. The fact that only 3 percent of the lottery applicants were poor (under a PPP$1.90 poverty line) shows that the poorest do not even consider international migration to be an option within their reach, even with government intermediation lowering the costs drastically. The costs under the private channels are much higher and effectively exclude the poor from participating. Without further interventions, international migration is unlikely to be an effective poverty reduction strategy for Bangladesh.

Financing schemes for the poor can increase access to migration opportunities among the poor, making migration an effective poverty reduction tool. Temporary international migration can be an extremely profitable venture for the migrants, which can improve their incomes and the living standards of their families. With low-cost migration, any difficulty financing migration stems from a lack of liquidity. It demands payment up-front, whereas the gains are realized only after migration happens. For formal lenders, this is a difficult environment, because their ability to enforce repayment is diminished once the borrower is abroad. Hence, we see such types of lending mostly among relatives and friends, where trust and familial connection make it possible to enforce repayment. Local moneylenders, another common lender to migrants, also know the migrant's families and can enforce repayment through other means (such as by seizing assets of the family). However, lending for migration is becoming more common among NGOs that are also in close contact with the families of migrants. BRAC, for instance, offers migration loans combined with their own intermediation and pre-migration and post-migration support. This further ensures that they are in contact with the workers even when they are abroad and when they return, making it easier to enforce repayment. The Government of Bangladesh could also follow a similar approach.

The Government of Bangladesh has also started offering migrant loan services through its Expatriates' Welfare Bank. However, take-up of this program has been low. This could be because the loans are offered late in the migration cycle, after the workers have received work visas. By that time, migrants would have already found a way to pay the intermediaries. Offering such loans earlier in the migration cycle, when migrants need it, could be more effective in increasing take-up. Combining a lending program with additional services—such as information provision, help with intermediation for workers, support to the families of migrants, and further support upon migrants' return—is likely to increase take-up of the loans as well as increase repayment rates. Such comprehensive programs targeted to the poor, or in areas with high poverty rates or low migration rates, could drastically improve the poverty reduction potential of international migration.

Furthermore, the government can also incentivize microfinance institutions (MFIs) to lend to migrant workers. The cost of migration, especially those under a government-intermediated scheme, is within the range of loans offered by MFIs in Bangladesh. Enabling potential migrants to receive such a combined package of intermediation and financing could be more effective, both in terms of take-up and repayment and for improving access to migration opportunities among the poor.

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APPENDIX A
TECHNICAL APPENDIX

A.1 SURVEY FINDING RATES AND BALANCE

With the field protocol described in Section III, we were able to find and interview a higher share of T1 group compared to T2 and C, the control group. As Appendix Figure 1 shows, the overall interview rates were 94 percent for T1, 69 percent for T2, and 68 percent for control group. The large follow-up rates for T1 is seen in both the phone-based tracking as well as field-based tracking. While 47 percent of the control group were found through phone calls, conditional on having us having a phone, or getting phone numbers from fellow applicants, 55 percent of T1 were found and 89 percent of the T2 were found. The reason for this discrepancy is that the phone records we got from BMET, albeit incomplete, were more up-to-date as they kept interacting with the winners for further recruitment processes.[17] Among respondents who we tracked on-field (all those not found by phone), the finding rate for the control group was about 40 percent whereas the finding rates for the treated groups were significantly higher at 89 percent and 64 percent for T1 and T2 respectively. Enumerators found it much easier to track the treated individuals in the villages because their information were more up to date with the local authorities. The winners had to interact with local authorities to submit the necessary information for their recruitment processing. Additionally, the treated applicants also became more well known in the local community as a result of winning the lottery.

Appendix Figure 1	Survey finding rates
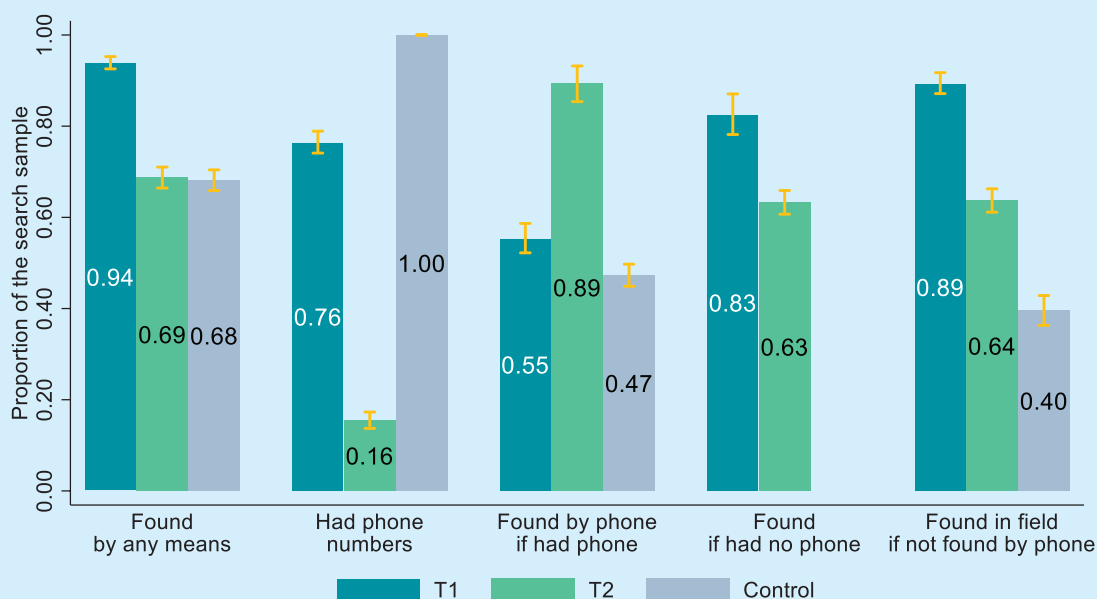
Note: The figure shows the finding rates for the treated and control groups. The error bars show 95 percent confidence intervals.

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17   Consistent with this, the phone finding rate for T2s for whom we got phone numbers from BMET is only 56 percent. The rate increases to 89 percent when we include those for whom we found updated phone numbers from other applicants.

The low finding rates for the control group reflect the inherent difficulty of finding people over a large area. Additional analysis conducted in Mobarak, Sharif, and Shrestha (2019), henceforth MSS, shows that finding rates are lower in unions with higher population, and in central unions. This suggests that, indeed, the difficulty of finding the control group is a result of having to search for an individual with limited information from a large pool.[18] MSS also construct bounds on the magnitude of impact with extreme assumptions on those who were not found. Common bounding approaches, such as the Lee (2009) bounds, penalize differential finding rates heavily and lead to very wide, and uninformative, bounds. The paper explores ways to use measures of efforts and inherent search difficulty to construct tighter bounds.

Moreover, among the interviewed applicants, baseline characteristics are balanced across lottery outcomes. Though we did not have a baseline survey collected before the outcome of the lottery, we collected data on several individual specific characteristics that are unlikely to change over time. We also collected retrospective data on outcomes before the lottery was conducted. As Appendix Figure 2 shows, except for a couple of characteristics, most are balanced across the lottery outcomes for most characteristics. Group T1 is 0.22 inches (0.3 percent) taller on average than the control group. Group T2 is 0.16 inches (0.2 percent) taller than the control group. Similarly, group T2 is 2.5 percentage points less likely to be a Muslim, whereas group T1 is 1.5 percentage points more likely to be a Muslim compared to the control group. A joint test across all of these outcomes, however, fails to rule out that the characteristics are balanced across the lottery outcomes. In any case, the subsequent estimates control for these baseline characteristics.[19]

Appendix Figure 2	Survey finding rates
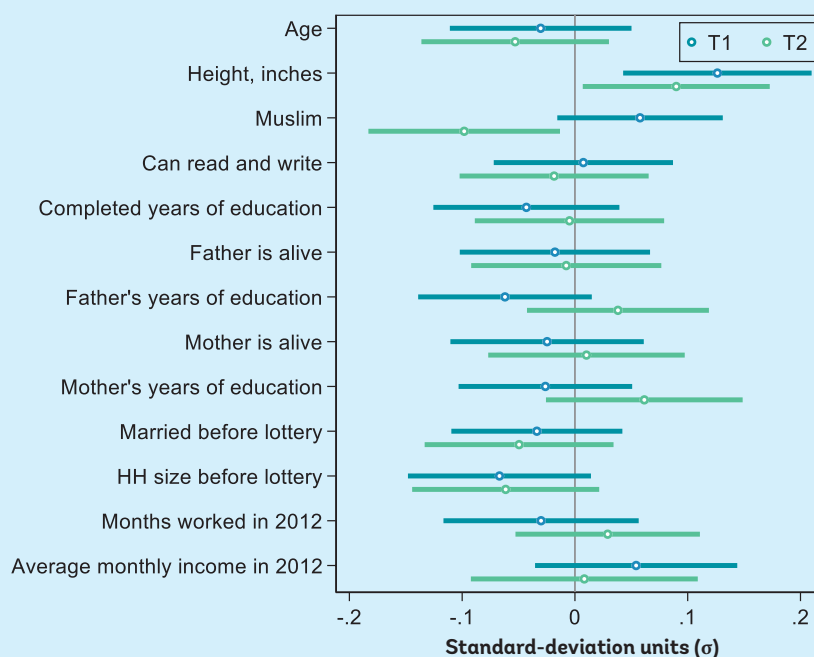
Note: The figure shows the relationship between individual characteristics indicated in the vertical axis and the treatment status. The magnitude of the effects, presented in the horizontal axis, are in standard-deviation units. Outcomes are standardized by dividing by the control group standard deviation for each outcome after subtracting away the control group means. The regressions control for upazila fixed effects and the standard errors are clustered at the union level. The regressions are weighted to match the lottery quota assigned for each union. The point shows the magnitude of the difference and the line represents 95 percent confidence interval. Detailed results are presented in Appendix Table 2.

18   For instance, it is very common in Bangladesh for people to have legal names, reported to BMET during registration, that are different from name they are known in their community.

19   Inclusion of the baseline characteristics do not substantially change the results. See MSS for more robustness of the impacts to reweighting to match baseline characteristics.

A.2 FURTHER DETAILS ON IV SPECIFICATION AND MULTIPLE-HYPOTHESES TESTING

The G2G lotteries provided an exogenous shock to the winners which increased their migration rates for low-skilled manual work in the palm-oil sector of Malaysia. Since the lottery results were randomized (conditional on location), an estimation of Equation (1) (see Section III of this report, Box 3) gives a causal estimate on the impact of winning the lottery. To the extent that the result of the lotteries did not influence the outcomes through channels other than migration, the lottery outcomes serve as a valid instrument of migration.

As seen in the previous sections, the lottery was quite effective for those in group T1, with 70 percent of the group migrating with government intermediation. Those who migrated, did so on average 14 months after the lottery. However, for those in group T2, the lottery was only mildly effective in increasing migration rates. Those who migrated, did so much later when the viability of the G2G program had become a public concern. Furthermore, the outcome of the lottery itself could have direct effects on the outcomes for this group as they may have felt frustrated about the program not keeping its promise. Hence, we omit this group in our further analysis of the impacts of migration.

We proceed with estimating the following system of equation in the sample that excludes the T2 group:

$$y_i = \delta M_i + \eta X_i + \varepsilon_i$$
$$M_i = \alpha T1_i + \xi X_i + v_i \qquad\qquad\qquad (2)$$

where M_i indicates whether the applicant migrated abroad at any point after the initial lottery, and ε_i and v_i are error terms uncorrelated with each other.

One concern with an exercise like this one, where we analyze several outcomes, is that some outcomes will be statistically significant purely based on chance. To ensure that our results are not driven by an artifact of our testing multiple outcomes, we present several adjustments to account for multiple inference. First, for each group of outcomes, we construct an inverse-covariance weighted summary index of all outcomes within the family. The summary index is less prone to incorrect inference due to multiple hypotheses testing than the individual outcomes. Second, we control for Family Wise Error Rate (FWER) when we analyze outcomes across families of outcomes in Appendix Table 1 and present the adjusted p-values for the reduced form specification of equation (2). Third, when reporting results for specific outcomes, we control the False Discovery Rate (FDR) and present corrected q-values for the reduced form (all other Appendix Tables).[20]

In our presentation of the results, we show our key results in terms of figures that plot the impact of migration on standardized versions of each outcomes estimated through 2-SLS using the lottery assignment as instruments. Standardization is convenient for presentation of a host of outcomes, but the magnitudes, which are reported on standard deviation units, are often not easily interpretable. We also report the impact on the non-standardized variant of the outcomes alongside the point estimates in the figures. The appendix tables that follow (Appendix B) present the full reduced forms (with and without controls, and with inverse-probability weights) as well as the instrumental variable results.

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20   See Anderson (2008) for a detailed description of these methods, and Casey et al. (2012) for another application of the methods. As suggested in these studies, we employ a free step-down resampling method of Westfall and Young (1993) to compute the FWER adjusted p-values, and Benjamini, Krieger, and Yekutieli (2006) approach to computing the FDR q-values. The codes to compute the adjustments for this study are adapted from the replication files of Casey et al. (2012).

APPENDIX B
DETAILED RESULTS

Appendix Table 1:
Impact of winning the lottery and of migration on index of outcomes

	(1)	(2)	(3)	(4)	(5)	(6)
	N	Control group	ITT	ITT (Controls)	ITT (IPW)	IV
Index: Labor and Income	1954	0	0.514***	0.517***	0.526***	0.892***
		(0.0331)	(0.0458)	(0.0468)	(0.0453)	(0.0739)
FWER p-value				[0.000]		
Index: HH income	2103	0	0.193***	0.194***	0.189***	0.344***
		(0.0332)	(0.0444)	(0.0467)	(0.0461)	(0.0805)
FWER p-value				[0.000]		
Index: HH consumption	2342	0	0.131***	0.150***	0.153***	0.259***
		(0.0304)	(0.0433)	(0.0448)	(0.0438)	(0.0766)
FWER p-value				[0.004]		
Index: HH condition & asset	2326	0	0.0668	0.122***	0.130***	0.211***
		(0.0309)	(0.0436)	(0.0436)	(0.0427)	(0.0739)
FWER p-value				[0.013]		
Index: Household debt	2370	0	-0.101**	-0.125***	-0.128***	-0.216***
		(0.0300)	(0.0419)	(0.0430)	(0.0422)	(0.0734)
FWER p-value				[0.013]		
Index: Entrepreneurial	2373	0	-0.130***	-0.105***	-0.106***	-0.181***
		(0.0301)	(0.0384)	(0.0398)	(0.0390)	(0.0671)
FWER p-value				[0.024]		
Index: HH Composition	2368	0	0.186***	0.147***	0.146***	0.254***
		(0.0300)	(0.0443)	(0.0431)	(0.0426)	(0.0724)
FWER p-value				[0.004]		
Index: Female decisionmaking	2369	0	0.334***	0.287***	0.294***	0.495***
		(0.0290)	(0.0452)	(0.0466)	(0.0458)	(0.0753)
FWER p-value				[0.000]		
Index: Shock and vulnerability	2369	0	0.00504	-0.00726	-0.00297	-0.0125
		(0.0317)	(0.0422)	(0.0428)	(0.0420)	(0.0725)
FWER p-value				[0.863]		

Note: This table shows the impact of winning the lottery (T1) and of migration on indexes of outcomes estimated using Equation (2). The first two columns show the sample size and control group means. Column (3) shows the ITT estimates with only Upazila indicators, Column (4) adds other controls (applicant height, age, religion, and parental education). Column (5) presents the estimate of the reduced form with inverse-probability-weights (IPW) estimated using the controls. Column (6) presents the 2-SLS estimates of the impact of migration. The rows indicate the outcome variables. Each index is covariance-weighted index of a family of outcomes presented in subsequent tables. Standard errors, reported in parentheses, are clustered at the union level. Column (4) also presents the (Family Wise Error Rate) FWER adjusted p-values that adjust for multiple-hypotheses testing. *:p>0.1; **: p>0.05; ***: p>0.01

Appendix Table 2:
Balance check

	(1)	(2)	(3)	(4)	(5)
	N	C	T1-C	T2-C	T1-T2
Age	3511	34.01***	-0.220	-0.383	0.164
		(0.208)	(0.297)	(0.307)	(0.319)
Height, inches	3269	64.98***	0.220***	0.157**	0.0636
		(0.0545)	(0.0744)	(0.0738)	(0.0815)
Muslim	3511	0.928***	0.0149	-0.0253**	0.0402***
		(0.00785)	(0.00965)	(0.0112)	(0.0108)
Can read and write	3511	0.808***	0.00295	-0.00727	0.0102
		(0.0123)	(0.0160)	(0.0168)	(0.0155)
Completed years of education	3511	6.833***	-0.175	-0.0196	-0.155
		(0.129)	(0.171)	(0.174)	(0.154)
Father is alive	3511	0.588***	-0.00874	-0.00380	-0.00494
		(0.0144)	(0.0212)	(0.0212)	(0.0212)
Father's years of education	3489	3.157***	-0.255	0.157	-0.411**
		(0.125)	(0.161)	(0.169)	(0.176)
Mother is alive	3511	0.835***	-0.00916	0.00380	-0.0130
		(0.0117)	(0.0162)	(0.0165)	(0.0158)
Mother's years of education	3490	1.669***	-0.0749	0.176	-0.251*
		(0.0899)	(0.112)	(0.127)	(0.128)
Married before lottery	3511	0.615***	-0.0164	-0.0241	0.00767
		(0.0141)	(0.0188)	(0.0208)	(0.0206)
HH size before lottery	3511	4.975***	-0.185	-0.170	-0.0152
		(0.0847)	(0.114)	(0.117)	(0.109)
Months worked in 2012	3512	11.37***	-0.0508	0.0492	-0.1000
		(0.0530)	(0.0748)	(0.0706)	(0.0685)
Average monthly income in 2012	2835	8810.1***	565.4	86.65	478.7
		(329.7)	(476.5)	(534.7)	(550.3)
Joint p-value	.	.	0.225	0.339	0.319

Note: This table tests for balance across treatment groups estimated using Equation (1). The column heads show the appropriate comparison along with control group mean and sample size. The row indicates the outcome variables being compared. The estimations include indicators for survey Upazilas. Standard errors, reported in parentheses, are clustered at the union level.

Appendix Table 3:
Impact of lottery on pre-migration outcomes

	(1)	(2)	(3)	(4)	(5)
	N	C	T1-C	T2-C	T1-T2
Invest to learn a foreign language	3512	0.0215***	0.330***	0.0720***	0.258***
		(0.00420)	(0.0162)	(0.0115)	(0.0169)
Invest to learn English	3512	0.0152***	-0.00748*	-0.000621	-0.00686
		(0.00336)	(0.00433)	(0.00480)	(0.00439)
Invest to learn Malay	3512	0.00907***	0.370***	0.0732***	0.297***
		(0.00269)	(0.0160)	(0.0105)	(0.0174)
Invest to learn Arabic	3512	0.0140***	-0.00896**	-0.000331	-0.00863**
		(0.00374)	(0.00414)	(0.00514)	(0.00416)
Invest to learn Hindi	3512	0.00375**	0.000655	-0.000133	0.000787
		(0.00172)	(0.00264)	(0.00253)	(0.00271)
Invest to learn Other language	3512	0.00306	-0.00222	-0.000555	-0.00167
		(0.00194)	(0.00213)	(0.00244)	(0.00168)
Took skills training	3328	0.0531***	0.706***	0.146***	0.561***
		(0.00646)	(0.0174)	(0.0155)	(0.0190)
Ate more food	3511	0.0600***	0.179***	0.126***	0.0530***
		(0.00735)	(0.0156)	(0.0146)	(0.0179)
Ate more protein	3511	0.0730***	0.213***	0.150***	0.0626***
		(0.00777)	(0.0160)	(0.0158)	(0.0181)
Did more exercise	3511	0.0400***	0.111***	0.0827***	0.0286**
		(0.00615)	(0.0136)	(0.0121)	(0.0145)
Took gym membership	3511	0.00310**	0.00691*	0.00234	0.00456
		(0.00156)	(0.00406)	(0.00275)	(0.00439)
Index: Pre-migration investments	3328	0	0.760***	0.243***	0.518***
		(0.0313)	(0.0488)	(0.0459)	(0.0495)

Note: This table shows the impact of migration on pre-migration outcomes estimated using Equation (1). The column heads show the appropriate comparison along with control group mean and sample size. The row indicates the outcome variables. The estimations control for applicant height, age, religion, parental education, and indicators for survey Upazilas. The bottom-most outcome is a covariance-weighted index of all other outcomes in the figure with positive number indicating greater investments. Standard errors, reported in parentheses, are clustered at the union level. *:p>0.1; **: p>0.05; ***: p>0.01

Appendix Table 4:
Impact of winning the lottery and of migration on applicant labor and income

	(1)	(2)	(3)	(4)	(5)	(6)
	N	Control group	ITT	ITT (Controls)	ITT (IPW)	IV
ihs(Total hours worked)	2315	8.350***	-0.0320	-0.0626	-0.0616	-0.109
		(0.0294)	(0.0470)	(0.0503)	(0.0488)	(0.0863)
FDR q-value				[0.022]		
ihs(Hours in wage work)	2315	5.050***	1.490***	1.225***	1.219***	2.130***
		(0.126)	(0.163)	(0.173)	(0.169)	(0.277)
FDR q-value				[0.001]		
ihs(Hours in farming)	2363	2.877***	-1.474***	-1.354***	-1.344***	-2.337***
		(0.106)	(0.131)	(0.136)	(0.134)	(0.216)
FDR q-value				[0.001]		
ihs(Hours in self-employment)	2363	2.644***	-1.203***	-1.097***	-1.105***	-1.893***
		(0.118)	(0.145)	(0.149)	(0.146)	(0.241)
FDR q-value				[0.001]		
ihs(monthly income in 2015)	2141	9.659***	0.570***	0.596***	0.592***	1.022***
		(0.0390)	(0.0524)	(0.0561)	(0.0547)	(0.0937)
FDR q-value				[0.001]		
ihs(income last month, direct)	2146	9.205***	0.520***	0.437***	0.433***	0.758***
		(0.0901)	(0.124)	(0.131)	(0.129)	(0.219)
FDR q-value				[0.001]		
ihs(monthly income, computed)	2131	11.83***	0.593***	0.536***	0.519***	0.957***
		(0.0691)	(0.0912)	(0.0963)	(0.0977)	(0.164)
FDR q-value				[0.001]		
ihs(monthly inc, computed -- p10)	2346	11.88***	0.714***	0.657***	0.649***	1.133***
		(0.0673)	(0.0854)	(0.0897)	(0.0869)	(0.147)
FDR q-value				[0.001]		
ihs(hourly income, computed)	2048	3.757***	0.406***	0.406***	0.409***	0.726***
		(0.0290)	(0.0422)	(0.0433)	(0.0426)	(0.0710)
FDR q-value				[0.001]		
ihs(hourly income, computed -- p10)	2236	3.789***	0.484***	0.483***	0.483***	0.837***
		(0.0288)	(0.0401)	(0.0415)	(0.0402)	(0.0645)
FDR q-value				[0.001]		
Index: Labor and Income	1954	0	0.514***	0.517***	0.526***	0.892***
		(0.0331)	(0.0458)	(0.0468)	(0.0453)	(0.0739)

Note: This table shows the impact of winning the lottery (T1) and of migration on labor and income of the applicant estimated using Equation (2). The first two columns show the sample size and control group means. Column (3) shows the ITT estimates with only Upazila indicators, Column (4) adds other controls (applicant height, age, religion, and parental education). Column (5) presents the estimate of the reduced form with inverse-probability-weights (IPW) estimated using the controls. Column (6) presents the 2-SLS estimates of the impact of migration. The rows indicate the outcome variables. ihs refers to the inverse-hyperbolic sine transformation of the variables. The bottom most outcome is a covariance-weighted index of all other outcomes with positive values representing increased income and labor supply. Standard errors, reported in parentheses, are clustered at the union level. Column (4) also presents the (False Discovery Rate) FDR adjusted q-values that adjust for multiple-hypotheses testing. *:p>0.1; **: p>0.05; ***: p>0.01

Appendix Table 5:
Impact of winning the lottery and of migration on non-applicant adult labor and income

	(1)	(2)	(3)	(4)	(5)	(6)
	N	Control group	ITT	ITT (Controls)	ITT (IPW)	IV
ihs(Total hours worked)	5554	5.008***	0.114	0.0861	0.0923	0.149
		(0.0785)	(0.101)	(0.104)	(0.103)	(0.179)
FDR q-value				[1.000]		
ihs(Hours in wage work)	6376	0.703***	0.0111	0.0246	0.0267	0.0425
		(0.0482)	(0.0696)	(0.0711)	(0.0711)	(0.122)
FDR q-value				[1.000]		
ihs(Hours in farming)	6376	3.750***	0.102	0.0554	0.0674	0.0957
		(0.0777)	(0.107)	(0.108)	(0.105)	(0.185)
FDR q-value				[1.000]		
ihs(Hours in self-employment)	6376	0.581***	0.0225	0.0269	0.0224	0.0466
		(0.0469)	(0.0667)	(0.0697)	(0.0681)	(0.120)
FDR q-value				[1.000]		
ihs(monthly income in 2015)	2863	7.414***	-0.0677	-0.0785	-0.0900	-0.135
		(0.0605)	(0.0852)	(0.0909)	(0.0873)	(0.155)
FDR q-value				[1.000]		
ihs(income last month, direct)	3424	5.028***	-0.0308	0.0367	0.0148	0.0632
		(0.121)	(0.154)	(0.164)	(0.161)	(0.279)
FDR q-value				[1.000]		
ihs(monthly income, computed)	6244	6.948***	0.196	0.174	0.181	0.300
		(0.111)	(0.149)	(0.154)	(0.152)	(0.265)
FDR q-value				[1.000]		
ihs(monthly inc, computed -- p10)	6364	6.969***	0.196	0.174	0.181	0.301
		(0.110)	(0.149)	(0.154)	(0.152)	(0.265)
FDR q-value				[1.000]		
ihs(hourly income, computed)	3542	2.921***	-0.0642	-0.0329	-0.0419	-0.0577
		(0.0404)	(0.0565)	(0.0599)	(0.0591)	(0.104)
FDR q-value				[1.000]		
ihs(hourly income, computed -- p10)	3542	2.921***	-0.0642	-0.0329	-0.0419	-0.0577
		(0.0404)	(0.0565)	(0.0599)	(0.0591)	(0.104)
FDR q-value				[1.000]		
Index: Adult labor and income	3419	0	-0.0155	-0.0112	-0.00905	-0.0193
		(0.0291)	(0.0359)	(0.0397)	(0.0394)	(0.0676)

Note: This table shows the impact of winning the lottery (T1) and of migration on labor and income of non-applicant adults in the households estimated using Equation (2). The first two columns show the sample size and control group means. Column (3) shows the ITT estimates with only Upazila indicators, Column (4) adds other controls (applicant height, age, religion, and parental education). Column (5) presents the estimate of the reduced form with inverse-probability-weights (IPW) estimated using the controls. Column (6) presents the 2-SLS estimates of the impact of migration. The rows indicate the outcome variables. ihs refers to the inverse-hyperbolic sine transformation of the variables. The bottom most outcome is a covariance-weighted index of all other outcomes with positive values representing increased income and labor supply. Standard errors, reported in parentheses, are clustered at the union level. Column (4) also presents the (False Discovery Rate) FDR adjusted q-values that adjust for multiple-hypotheses testing. *:p>0.1; **: p>0.05; ***: p>0.01

Appendix Table 6:
Impact of winning the lottery and of migration on non-applicant adult female labor and income

	(1)	(2)	(3)	(4)	(5)	(6)
	N	Control group	ITT	ITT (Controls)	ITT (IPW)	IV
ihs(Total hours worked)	3870	4.822***	0.0575	0.0302	0.0398	0.0521
		(0.0851)	(0.110)	(0.113)	(0.110)	(0.193)
FDR q-value				[1.000]		
ihs(Hours in wage work)	3870	0.387***	-0.00247	0.0230	0.0190	0.0397
		(0.0474)	(0.0613)	(0.0629)	(0.0624)	(0.107)
FDR q-value				[1.000]		
ihs(Hours in farming)	3870	4.430***	0.0531	0.00216	0.0171	0.00373
		(0.0835)	(0.111)	(0.114)	(0.111)	(0.194)
FDR q-value				[1.000]		
ihs(Hours in self-employment)	3870	0.297***	-0.0223	-0.0161	-0.0132	-0.0278
		(0.0431)	(0.0557)	(0.0574)	(0.0556)	(0.0982)
FDR q-value				[1.000]		
ihs(monthly income in 2015)	1846	6.925***	-0.0252	-0.0454	-0.0497	-0.0776
		(0.0689)	(0.0946)	(0.102)	(0.0972)	(0.171)
FDR q-value				[1.000]		
ihs(income last month, direct)	2274	4.403***	0.000383	0.0543	0.0463	0.0925
		(0.128)	(0.162)	(0.173)	(0.167)	(0.289)
FDR q-value				[1.000]		
ihs(monthly income, computed)	3865	6.388***	0.105	0.0870	0.0944	0.150
		(0.126)	(0.165)	(0.169)	(0.166)	(0.289)
FDR q-value				[1.000]		
ihs(monthly inc, computed -- p10)	3865	6.388***	0.105	0.0871	0.0944	0.151
		(0.126)	(0.165)	(0.169)	(0.166)	(0.289)
FDR q-value				[1.000]		
ihs(hourly income, computed)	2304	2.854***	-0.0766	-0.0429	-0.0462	-0.0746
		(0.0439)	(0.0603)	(0.0650)	(0.0629)	(0.111)
FDR q-value				[1.000]		
ihs(hourly income, computed -- p10)	2304	2.854***	-0.0766	-0.0429	-0.0462	-0.0746
		(0.0439)	(0.0603)	(0.0650)	(0.0629)	(0.111)
FDR q-value				[1.000]		
Index: Female labor and income	2270	0	-0.0416	-0.0264	-0.0231	-0.0450
		(0.0353)	(0.0414)	(0.0462)	(0.0450)	(0.0775)

Note: This table shows the impact of winning the lottery (T1) and of migration on labor and income of non-applicant female adults in the households estimated using Equation (2). The first two columns show the sample size and control group means. Column (3) shows the ITT estimates with only Upazila indicators, Column (4) adds other controls (applicant height, age, religion, and parental education). Column (5) presents the estimate of the reduced form with inverse-probability-weights (IPW) estimated using the controls. Column (6) presents the 2-SLS estimates of the impact of migration. The rows indicate the outcome variables. ihs refers to the inverse-hyperbolic sine transformation of the variables. The bottom most outcome is a covariance-weighted index of all other outcomes with positive values representing increased income and labor supply. Standard errors, reported in parentheses, are clustered at the union level. Column (4) also presents the (False Discovery Rate) FDR adjusted q-values that adjust for multiple-hypotheses testing. *:p>0.1; **: p>0.05; ***: p>0.01

Appendix Table 7:
Impact of winning the lottery and of migration on household income

	(1)	(2)	(3)	(4)	(5)	(6)
	N	Control group	ITT	ITT (Controls)	ITT (IPW)	IV
ihs(Farm income)	2373	8.371***	0.111	0.159	0.168	0.275
		(0.162)	(0.211)	(0.218)	(0.214)	(0.371)
FDR q-value				[0.130]		
ihs(Non-farm business income)	2373	5.131***	-1.099***	-0.887***	-0.927***	-1.530***
		(0.182)	(0.230)	(0.243)	(0.238)	(0.406)
FDR q-value				[0.001]		
ihs(Rental and other income)	2373	5.233***	-0.129	-0.0908	-0.103	-0.157
		(0.151)	(0.199)	(0.206)	(0.202)	(0.349)
FDR q-value				[0.171]		
ihs(Remittance income)	2373	2.379***	4.675***	4.362***	4.389***	7.520***
		(0.186)	(0.273)	(0.293)	(0.285)	(0.444)
FDR q-value				[0.001]		
ihs(Labor income, home)	2373	5.191***	-1.555***	-1.557***	-1.560***	-2.685***
		(0.174)	(0.238)	(0.250)	(0.248)	(0.419)
FDR q-value				[0.001]		
ihs(Labor income, away)	1856	4.891***	3.759***	3.679***	3.700***	7.011***
		(0.202)	(0.305)	(0.310)	(0.305)	(0.493)
FDR q-value				[0.001]		
ihs(Labor inc., away --p10)	2103	5.194***	4.247***	4.053***	4.082***	7.192***
		(0.198)	(0.279)	(0.284)	(0.277)	(0.421)
FDR q-value				[0.001]		
ihs(Total income, all sources)	1856	12.51***	0.538***	0.568***	0.580***	1.083***
		(0.0789)	(0.0931)	(0.0912)	(0.0870)	(0.166)
FDR q-value				[0.001]		
ihs(Total income -- p10)	2103	12.54***	0.602***	0.612***	0.603***	1.085***
		(0.0786)	(0.0991)	(0.0997)	(0.0958)	(0.168)
FDR q-value				[0.001]		
Index: HH income	2103	0	0.193***	0.194***	0.189***	0.344***
		(0.0332)	(0.0444)	(0.0467)	(0.0461)	(0.0805)

Note: This table shows the impact of winning the lottery (T1) and of migration on income aggregated at the household level estimated using Equation (2). The first two columns show the sample size and control group means. Column (3) shows the ITT estimates with only Upazila indicators, Column (4) adds other controls (applicant height, age, religion, and parental education). Column (5) presents the estimate of the reduced form with inverse-probability-weights (IPW) estimated using the controls. Column (6) presents the 2-SLS estimates of the impact of migration. The rows indicate the outcome variables. ihs refers to the inverse-hyperbolic sine transformation of the variables. The bottom most outcome is a covariance-weighted index of all other outcomes with positive values representing increased income and labor supply. Standard errors, reported in parentheses, are clustered at the union level. Column (4) also presents the (False Discovery Rate) FDR adjusted q-values that adjust for multiple-hypotheses testing. *:p>0.1; **: p>0.05; ***: p>0.01

Appendix Table 8:
Impact of winning the lottery and of migration on household consumption and poverty

	(1)	(2)	(3)	(4)	(5)	(6)
	N	Control group	ITT	ITT (Controls)	ITT (IPW)	IV
Log(food per capita)	2364	10.26***	0.0344	0.0386*	0.0429*	0.0664*
		(0.0168)	(0.0221)	(0.0226)	(0.0220)	(0.0383)
FDR q-value				[0.072]		
Log(protein per capita)	2355	9.076***	0.0789**	0.0886***	0.0960***	0.153***
		(0.0282)	(0.0326)	(0.0334)	(0.0324)	(0.0568)
FDR q-value				[0.013]		
Log(non-food exp. per capita)	2361	9.681***	0.122***	0.136***	0.138***	0.235***
		(0.0196)	(0.0280)	(0.0290)	(0.0287)	(0.0496)
FDR q-value				[0.001]		
Log(health exp. per capita)	2361	7.118***	0.346***	0.378***	0.375***	0.653***
		(0.0637)	(0.0883)	(0.0908)	(0.0885)	(0.156)
FDR q-value				[0.001]		
Log(education exp. per capita)	2365	4.153***	0.197	0.249**	0.257**	0.431**
		(0.0823)	(0.125)	(0.125)	(0.124)	(0.212)
FDR q-value				[0.051]		
Log(tobacco per capita)	2365	-1.076***	0.138*	0.109	0.0926	0.188
		(0.0539)	(0.0733)	(0.0807)	(0.0803)	(0.137)
FDR q-value				[0.093]		
Log(Consumption per capita)	2356	10.83***	0.106***	0.116***	0.119***	0.200***
		(0.0168)	(0.0222)	(0.0230)	(0.0228)	(0.0396)
FDR q-value				[0.001]		
Poverty rate ($1.90 per day)	2356	0.0266***	-0.00559	-0.00730	-0.00699	-0.0126
		(0.00463)	(0.00629)	(0.00674)	(0.00662)	(0.0115)
FDR q-value				[0.117]		
Poverty rate ($3.20 per day)	2356	0.267***	-0.0324*	-0.0314*	-0.0323*	-0.0542*
		(0.0135)	(0.0175)	(0.0184)	(0.0183)	(0.0313)
FDR q-value				[0.072]		
Poverty rate ($5.50 per day)	2356	0.701***	-0.0924***	-0.103***	-0.105***	-0.178***
		(0.0143)	(0.0197)	(0.0200)	(0.0196)	(0.0343)
FDR q-value				[0.001]		
Bought real-estate	2372	0.0819***	0.0269**	0.0246*	0.0268**	0.0425*
		(0.00768)	(0.0123)	(0.0130)	(0.0126)	(0.0221)
FDR q-value				[0.058]		
Sold real-estate	2372	0.112***	-0.0200	-0.0195	-0.0189	-0.0337
		(0.00933)	(0.0131)	(0.0142)	(0.0139)	(0.0242)
FDR q-value				[0.093]		
ihs(Large exp. per capita)	2364	2.024***	0.667**	0.580**	0.687**	1.001**
		(0.187)	(0.261)	(0.274)	(0.267)	(0.465)
FDR q-value				[0.044]		
Index: HH consumption	2342	0	0.131***	0.150***	0.153***	0.259***
		(0.0304)	(0.0433)	(0.0448)	(0.0438)	(0.0766)

Note: This table shows the impact of winning the lottery (T1) and of migration on household consumption and poverty estimated using Equation (2). The first two columns show the sample size and control group means. Column (3) shows the ITT estimates with only Upazila indicators, Column (4) adds other controls (applicant height, age, religion, and parental education). Column (5) presents the estimate of the reduced form with inverse-probability-weights (IPW) estimated using the controls. Column (6) presents the 2-SLS estimates of the impact of migration. The rows indicate the outcome variables. ihs refers to the inverse-hyperbolic sine transformation of the variables. The bottom most outcome is a covariance-weighted index of all other outcomes with positive values representing increased consumption and lower poverty. Standard errors, reported in parentheses, are clustered at the union level. Column (4) also presents the (False Discovery Rate) FDR adjusted q-values that adjust for multiple-hypotheses testing. *:p>0.1; **: p>0.05; ***: p>0.01

Appendix Table 9:
Impact of winning the lottery and of migration on household conditions and assets

	(1) N	(2) Control group	(3) ITT	(4) ITT (Controls)	(5) ITT (IPW)	(6) IV
Pakka or semi-pakka dwelling	2373	0.216***	0.0386**	0.0477***	0.0472***	0.0822***
		(0.0131)	(0.0175)	(0.0177)	(0.0172)	(0.0299)
FDR q-value				[0.014]		
Log(value of dwelling(s))	2330	11.65***	0.106**	0.144***	0.151***	0.248***
		(0.0355)	(0.0463)	(0.0466)	(0.0456)	(0.0793)
FDR q-value				[0.009]		
# rooms in dwelling	2372	2.634***	0.0306	0.0852	0.0838	0.147
		(0.0445)	(0.0586)	(0.0566)	(0.0561)	(0.0958)
FDR q-value				[0.077]		
Cement walls	2373	0.215***	0.0365**	0.0467***	0.0461***	0.0805***
		(0.0132)	(0.0176)	(0.0179)	(0.0174)	(0.0303)
FDR q-value				[0.015]		
Cement floor	2373	0.294***	0.0312	0.0469**	0.0462**	0.0808**
		(0.0147)	(0.0191)	(0.0193)	(0.0189)	(0.0328)
FDR q-value				[0.019]		
Has private latrine	2373	0.727***	0.0530***	0.0648***	0.0659***	0.112***
		(0.0136)	(0.0188)	(0.0189)	(0.0186)	(0.0323)
FDR q-value				[0.007]		
ihs(value of land)	2373	13.46***	0.204	0.298**	0.325**	0.514**
		(0.0935)	(0.129)	(0.134)	(0.134)	(0.226)
FDR q-value				[0.024]		
has TV	2372	0.500***	-0.0186	0.00300	0.00294	0.00517
		(0.0168)	(0.0186)	(0.0192)	(0.0188)	(0.0326)
FDR q-value				[0.208]		
# fans per capita	2368	0.500***	0.0365**	0.0445***	0.0458***	0.0769***
		(0.0118)	(0.0157)	(0.0148)	(0.0146)	(0.0252)
FDR q-value				[0.009]		
# mobile per capita	2369	0.502***	0.00505	0.00954	0.00877	0.0165
		(0.00983)	(0.0131)	(0.0123)	(0.0122)	(0.0209)
FDR q-value				[0.206]		
has Motorcycle or scooter	2372	0.359***	-0.0417**	-0.0291	-0.0262	-0.0502
		(0.0156)	(0.0193)	(0.0202)	(0.0198)	(0.0342)
FDR q-value				[0.077]		
Bought stock, jewellery, etc	2372	0.0858***	0.0164	0.0201	0.0215	0.0346
		(0.00854)	(0.0130)	(0.0134)	(0.0131)	(0.0227)
FDR q-value				[0.077]		
Index: HH condition & asset	2326	0	0.0668	0.122***	0.130***	0.211***
		(0.0309)	(0.0436)	(0.0436)	(0.0427)	(0.0739)

Note: This table shows the impact of winning the lottery (T1) and of migration on household conditions and assets estimated using Equation (2). The first two columns show the sample size and control group means. Column (3) shows the ITT estimates with only Upazila indicators, Column (4) adds other controls (applicant height, age, religion, and parental education). Column (5) presents the estimate of the reduced form with inverse-probability-weights (IPW) estimated using the controls. Column (6) presents the 2-SLS estimates of the impact of migration. The rows indicate the outcome variables. ihs refers to the inverse-hyperbolic sine transformation of the variables. The bottom most outcome is a covariance-weighted index of all other outcomes with positive values representing better conditions and more assets. Standard errors, reported in parentheses, are clustered at the union level. Column (4) also presents the (False Discovery Rate) FDR adjusted q-values that adjust for multiple-hypotheses testing. *:p>0.1; **: p>0.05; ***: p>0.01

Appendix Table 10:
Impact of winning the lottery and of migration on household debt

	(1)	(2)	(3)	(4)	(5)	(6)
	N	Control group	ITT	ITT (Controls)	ITT (IPW)	IV
Any loan	2373	0.734***	-0.0484**	-0.0551***	-0.0541***	-0.0949***
		(0.0131)	(0.0192)	(0.0203)	(0.0197)	(0.0345)
FDR q-value				[0.017]		
ihs(amount borrowed)	1594	11.67***	-0.0652	-0.0829	-0.0933	-0.152
		(0.0473)	(0.0753)	(0.0788)	(0.0778)	(0.142)
FDR q-value				[0.186]		
ihs(outstanding loan)	1443	11.22***	0.0843	0.0890	0.0728	0.160
		(0.0517)	(0.0808)	(0.0839)	(0.0831)	(0.147)
FDR q-value				[0.186]		
Average annual interest rate	1589	21.37***	-3.803*	-3.638*	-4.347**	-6.632*
		(1.577)	(1.996)	(2.097)	(2.007)	(3.740)
FDR q-value				[0.101]		
Loans from NGO	2370	0.434***	-0.0725***	-0.0793***	-0.0794***	-0.137***
		(0.0154)	(0.0201)	(0.0214)	(0.0213)	(0.0364)
FDR q-value				[0.001]		
Loans from friends	2370	0.352***	0.0196	0.00353	0.00506	0.00610
		(0.0143)	(0.0194)	(0.0210)	(0.0207)	(0.0357)
FDR q-value				[0.462]		
Loans from Banks/MFI	2370	0.215***	-0.0243	-0.0290*	-0.0349**	-0.0500*
		(0.0132)	(0.0170)	(0.0176)	(0.0173)	(0.0298)
FDR q-value				[0.000]		
Loans from Moneylender	2370	0.174***	-0.0551***	-0.0645***	-0.0624***	-0.111***
		(0.0117)	(0.0142)	(0.0147)	(0.0145)	(0.0251)
FDR q-value				[0.001]		
Loan to others	2370	0.00695***	0.00389	0.00420	0.00455	0.00725
		(0.00247)	(0.00410)	(0.00392)	(0.00377)	(0.00667)
FDR q-value				[0.186]		
Can easily get 6,300 Taka	2373	0.274***	0.0320*	0.0456**	0.0466**	0.0786**
		(0.0134)	(0.0183)	(0.0195)	(0.0187)	(0.0330)
FDR q-value				[0.032]		
Index: Household debt	2370	0	-0.101**	-0.125***	-0.128***	-0.216***
		(0.0300)	(0.0419)	(0.0430)	(0.0422)	(0.0734)

Note: This table shows the impact of winning the lottery (T1) and of migration on household debt positions estimated using Equation (2). The first two columns show the sample size and control group means. Column (3) shows the ITT estimates with only Upaẓila indicators, Column (4) adds other controls (applicant height, age, religion, and parental education). Column (5) presents the estimate of the reduced form with inverse-probability-weights (IPW) estimated using the controls. Column (6) presents the 2-SLS estimates of the impact of migration. The rows indicate the outcome variables. ihs refers to the inverse-hyperbolic sine transformation of the variables. The bottom most outcome is a covariance-weighted index of all other outcomes with positive values representing higher debt and worse conditions. Standard errors, reported in parentheses, are clustered at the union level. Column (4) also presents the (False Discovery Rate) FDR adjusted q-values that adjust for multiple-hypotheses testing. *:p>0.1; **: p>0.05; ***: p>0.01

Appendix Table 11:
Impact of winning the lottery and of migration on incidence of household shocks and vulnerability

	(1)	(2)	(3)	(4)	(5)	(6)
	N	Control group	ITT	ITT (Controls)	ITT (IPW)	IV
Not enough food	2370	0.0231***	0.000881	-0.00218	-0.00226	-0.00376
		(0.00448)	(0.00620)	(0.00607)	(0.00603)	(0.0103)
FDR q-value				[1.000]		
Any shock	2369	0.438***	0.0160	0.0216	0.0217	0.0372
		(0.0161)	(0.0198)	(0.0210)	(0.0205)	(0.0356)
FDR q-value				[1.000]		
Number of shocks	2373	0.541***	-0.0112	0.000503	0.000679	0.000868
		(0.0229)	(0.0269)	(0.0288)	(0.0285)	(0.0488)
FDR q-value				[1.000]		
Extreme coping measures	2369	0.0516***	0.00165	-0.00292	-0.000849	-0.00503
		(0.00670)	(0.00965)	(0.00967)	(0.00944)	(0.0164)
FDR q-value				[1.000]		
Easy coping measures	2369	0.196***	0.00961	0.0166	0.0164	0.0286
		(0.0124)	(0.0156)	(0.0163)	(0.0159)	(0.0276)
FDR q-value				[1.000]		
Extreme coping, Natural shocks	208	0.0790***	-0.0296	-0.0162	0	-0.0230
		(0.0287)	(0.0309)	(0.0399)	(.)	(0.0471)
FDR q-value				[1.000]		
Extreme coping, crop shocks	241	0.0562***	0.0222	0.0151	0	0.0235
		(0.0200)	(0.0379)	(0.0397)	(.)	(0.0526)
FDR q-value				[1.000]		
Extreme coping, health shocks	617	0.124***	0.00126	-0.0165	-0.0143	-0.0279
		(0.0180)	(0.0272)	(0.0265)	(0.0256)	(0.0423)
FDR q-value				[1.000]		
Index: Shock and vulnerability	2369	0	0.00504	-0.00726	-0.00297	-0.0125
		(0.0317)	(0.0422)	(0.0428)	(0.0420)	(0.0725)

Note: This table shows the impact of winning the lottery (T1) and of migration on household shocks and vulnerability estimated using Equation (2). The first two columns show the sample size and control group means. Column (3) shows the ITT estimates with only Upazila indicators, Column (4) adds other controls (applicant height, age, religion, and parental education). Column (5) presents the estimate of the reduced form with inverse-probability-weights (IPW) estimated using the controls. Column (6) presents the 2-SLS estimates of the impact of migration. The rows indicate the outcome variables. ihs refers to the inverse-hyperbolic sine transformation of the variables. The bottom most outcome is a covariance-weighted index of all other outcomes with positive values representing higher incidence of shocks and difficulty of coping measures. Standard errors, reported in parentheses, are clustered at the union level. Column (4) also presents the (False Discovery Rate) FDR adjusted q-values that adjust for multiple-hypotheses testing. *:p>0.1; **: p>0.05; ***: p>0.01

Appendix Table 12:
Impact of winning the lottery and of migration on household composition

	(1)	(2)	(3)	(4)	(5)	(6)
	N	Control group	ITT	ITT (Controls)	ITT (IPW)	IV
HH size, incl migrants	2373	5.692***	0.0473	0.0983	0.0995	0.170
		(0.0751)	(0.102)	(0.0875)	(0.0873)	(0.148)
FDR q-value				[0.130]		
HH size, excl. appl. + migrants	2373	4.222***	0.0396	0.0944	0.0976	0.163
		(0.0643)	(0.0907)	(0.0797)	(0.0796)	(0.135)
FDR q-value				[0.130]		
Has non-applicant migrant	2373	0.295***	0.0100	0.00909	0.00938	0.0157
		(0.0141)	(0.0192)	(0.0192)	(0.0190)	(0.0326)
FDR q-value				[0.298]		
HH split since 2013	2373	0.132***	-0.0388***	-0.0319**	-0.0316**	-0.0550**
		(0.00966)	(0.0134)	(0.0130)	(0.0128)	(0.0220)
FDR q-value				[0.026]		
Has new HH member since 2013	2373	0.460***	-0.0658***	-0.0742***	-0.0730***	-0.128***
		(0.0161)	(0.0196)	(0.0202)	(0.0197)	(0.0342)
FDR q-value				[0.001]		
Married since 2013	2373	0.189***	-0.0299*	-0.0332**	-0.0335**	-0.0572**
		(0.0114)	(0.0163)	(0.0167)	(0.0165)	(0.0283)
FDR q-value				[0.065]		
# children	2373	1.630***	-0.0533	-0.0247	-0.0185	-0.0427
		(0.0366)	(0.0467)	(0.0475)	(0.0479)	(0.0807)
FDR q-value				[0.298]		
# elderly 65+	2368	0.339***	0.0256	0.0429*	0.0422*	0.0741*
		(0.0165)	(0.0236)	(0.0243)	(0.0237)	(0.0413)
FDR q-value				[0.079]		
HH head: applicant	2373	0.507***	-0.236***	-0.222***	-0.224***	-0.383***
		(0.0156)	(0.0205)	(0.0206)	(0.0201)	(0.0324)
FDR q-value				[0.001]		
HH head: wife	2373	0.0937***	0.143***	0.139***	0.139***	0.240***
		(0.00872)	(0.0147)	(0.0149)	(0.0146)	(0.0240)
FDR q-value				[0.001]		
HH head: parent	2373	0.359***	0.0480**	0.0379*	0.0395**	0.0653*
		(0.0143)	(0.0202)	(0.0204)	(0.0201)	(0.0346)
FDR q-value				[0.074]		
Index: HH Composition	2368	0	0.186***	0.147***	0.146***	0.254***
		(0.0300)	(0.0443)	(0.0431)	(0.0426)	(0.0724)

Note: This table shows the impact of winning the lottery (T1) and of migration on household composition estimated using Equation (2). The first two columns show the sample size and control group means. Column (3) shows the ITT estimates with only Upazila indicators, Column (4) adds other controls (applicant height, age, religion, and parental education). Column (5) presents the estimate of the reduced form with inverse-probability-weights (IPW) estimated using the controls. Column (6) presents the 2-SLS estimates of the impact of migration. The rows indicate the outcome variables. ihs refers to the inverse-hyperbolic sine transformation of the variables. The bottom most outcome is a covariance-weighted index of all other outcomes with positive values representing smaller households headed by non-applicant members. Standard errors, reported in parentheses, are clustered at the union level. Column (4) also presents the (False Discovery Rate) FDR adjusted q-values that adjust for multiple-hypotheses testing. *:p>0.1; **: p>0.05; ***: p>0.01

Appendix Table 13:
Impact of winning the lottery and of migration on household decision-making

	(1)	(2)	(3)	(4)	(5)	(6)
	N	Control group	ITT	ITT (Controls)	ITT (IPW)	IV
Female: all matters	2369	0.597***	0.0464***	0.0354**	0.0356**	0.0610**
		(0.0105)	(0.0147)	(0.0153)	(0.0151)	(0.0256)
FDR q-value				[0.009]		
Only female: all matters	2369	0.106***	0.0878***	0.0778***	0.0814***	0.134***
		(0.00587)	(0.00987)	(0.0100)	(0.00995)	(0.0161)
FDR q-value				[0.001]		
Female: child matters	2373	0.836***	-0.00206	-0.00705	-0.00639	-0.0121
		(0.00887)	(0.0125)	(0.0131)	(0.0128)	(0.0223)
FDR q-value				[0.070]		
Only female: child matters	2373	0.293***	0.0829***	0.0724***	0.0762***	0.125***
		(0.0106)	(0.0147)	(0.0152)	(0.0149)	(0.0252)
FDR q-value				[0.001]		
Female: big decisions	2369	0.513***	0.0530***	0.0420**	0.0418**	0.0724**
		(0.0119)	(0.0165)	(0.0170)	(0.0167)	(0.0283)
FDR q-value				[0.007]		
Only female: big decisions	2369	0.0498***	0.0690***	0.0615***	0.0642***	0.106***
		(0.00515)	(0.00923)	(0.00910)	(0.00902)	(0.0150)
FDR q-value				[0.001]		
Female: HH expense related	2369	0.595***	0.0611***	0.0476***	0.0479***	0.0820***
		(0.0125)	(0.0172)	(0.0179)	(0.0177)	(0.0299)
FDR q-value				[0.005]		
Only female: HH expense related	2369	0.0825***	0.104***	0.0922***	0.0966***	0.159***
		(0.00688)	(0.0122)	(0.0124)	(0.0124)	(0.0199)
FDR q-value				[0.001]		
Applicant: all matters	2373	0.573***	-0.173***	-0.156***	-0.158***	-0.268***
		(0.0109)	(0.0155)	(0.0158)	(0.0154)	(0.0245)
FDR q-value				[0.001]		
Index: Female decisionmaking	2369	0	0.334***	0.287***	0.294***	0.495***
		(0.0290)	(0.0452)	(0.0466)	(0.0458)	(0.0753)

Note: This table shows the impact of winning the lottery (T1) and of migration on female involvement in household decisions estimated using Equation (2). The first two columns show the sample size and control group means. Column (3) shows the ITT estimates with only Upazila indicators, Column (4) adds other controls (applicant height, age, religion, and parental education). Column (5) presents the estimate of the reduced form with inverse-probability-weights (IPW) estimated using the controls. Column (6) presents the 2-SLS estimates of the impact of migration. The rows indicate the outcome variables. ihs refers to the inverse-hyperbolic sine transformation of the variables. The bottom most outcome is a covariance-weighted index of all other outcomes with positive values representing greater involvement of female members. Standard errors, reported in parentheses, are clustered at the union level. Column (4) also presents the (False Discovery Rate) FDR adjusted q-values that adjust for multiple-hypotheses testing. *:p>0.1; **: p>0.05; ***: p>0.01

	(1)	(2)	(3)	(4)	(5)	(6)
	N	Control group	ITT	ITT (Controls)	ITT (IPW)	IV
Years of schooling	2485	2.947***	-0.125	-0.127	-0.166	-0.219
		(0.0804)	(0.116)	(0.121)	(0.119)	(0.205)
FDR q-value				[0.522]		
Attends school	2485	0.902***	0.000434	-0.00271	-0.00436	-0.00467
		(0.00908)	(0.0134)	(0.0147)	(0.0142)	(0.0250)
FDR q-value				[0.944]		
Has school uniform	2230	0.883***	0.00237	0.00691	0.00534	0.0119
		(0.0116)	(0.0155)	(0.0153)	(0.0151)	(0.0257)
FDR q-value				[0.944]		
Has school-bag	2230	0.841***	0.0278*	0.0411**	0.0377**	0.0705***
		(0.0128)	(0.0162)	(0.0162)	(0.0157)	(0.0273)
FDR q-value				[0.098]		
Has private tutor	2230	0.579***	0.0103	0.0146	0.0111	0.0251
		(0.0179)	(0.0237)	(0.0252)	(0.0246)	(0.0426)
FDR q-value				[0.944]		
Log(Total education expenditure)	2225	8.701***	0.0838*	0.109**	0.100**	0.188**
		(0.0350)	(0.0483)	(0.0511)	(0.0492)	(0.0867)
FDR q-value				[0.098]		
Works in farm	1155	0.0422***	-0.00210	-0.00407	-0.0000328	-0.00698
		(0.0115)	(0.0152)	(0.0142)	(0.0132)	(0.0235)
FDR q-value				[0.944]		
Works for wage	1155	0.0157***	-0.0150**	-0.0144**	-0.0154**	-0.0247**
		(0.00595)	(0.00605)	(0.00634)	(0.00656)	(0.0106)
FDR q-value				[0.098]		
Works in self-employment	1155	0.00741**	0.00725	0.0103	0.00925	0.0176
		(0.00318)	(0.00732)	(0.00856)	(0.00727)	(0.0142)
FDR q-value				[0.479]		
Index: Child (age 5-14) outcomes	2480	0	0.0453	0.0461	0.0382	0.0794
		(0.0325)	(0.0412)	(0.0423)	(0.0412)	(0.0717)

Note: This table shows the impact of winning the lottery (T1) and of migration on outcomes of children aged 5-14 estimated using Equation (2). The first two columns show the sample size and control group means. Column (3) shows the ITT estimates with only Upazila indicators, Column (4) adds other controls (applicant height, age, religion, and parental education). Column (5) presents the estimate of the reduced form with inverse-probability-weights (IPW) estimated using the controls. Column (6) presents the 2-SLS estimates of the impact of migration. The rows indicate the outcome variables. ihs refers to the inverse-hyperbolic sine transformation of the variables. The bottom most outcome is a covariance-weighted index of all other outcomes with positive values representing higher schooling and more expenditures. Standard errors, reported in parentheses, are clustered at the union level. Column (4) also presents the (False Discovery Rate) FDR adjusted q-values that adjust for multiple-hypotheses testing. *:p>0.1; **: p>0.05; ***: p>0.01

Appendix Table 15:
Impact of winning the lottery and of migration on outcomes of youth aged 15–24

	(1)	(2)	(3)	(4)	(5)	(6)
	N	Control group	ITT	ITT (Controls)	ITT (IPW)	IV
Years of schooling	1856	8.703***	-0.125	-0.00327	0.0211	-0.00589
		(0.101)	(0.153)	(0.159)	(0.156)	(0.280)
FDR q-value				[1.000]		
Attends school	1856	0.424***	0.00203	0.000555	0.000580	0.000999
		(0.0177)	(0.0276)	(0.0279)	(0.0272)	(0.0492)
FDR q-value				[1.000]		
Has private tutor	791	0.565***	0.0175	0.0217	0.0352	0.0353
		(0.0267)	(0.0376)	(0.0398)	(0.0374)	(0.0616)
FDR q-value				[1.000]		
Log (Total education expenditure)	781	9.542***	0.132**	0.131**	0.128**	0.212**
		(0.0404)	(0.0564)	(0.0588)	(0.0544)	(0.0919)
FDR q-value				[0.205]		
Worked last month	1854	0.385***	-0.0180	-0.0204	-0.0170	-0.0367
		(0.0178)	(0.0250)	(0.0261)	(0.0252)	(0.0459)
FDR q-value				[1.000]		
Works in farm	1855	0.229***	-0.0148	-0.0157	-0.0148	-0.0283
		(0.0160)	(0.0229)	(0.0237)	(0.0227)	(0.0420)
FDR q-value				[1.000]		
Works for wage	1855	0.0781***	-0.00134	-0.00305	-0.00107	-0.00551
		(0.00957)	(0.0136)	(0.0138)	(0.0138)	(0.0244)
FDR q-value				[1.000]		
Works in self-employment	1855	0.0779***	-0.00235	-0.00231	-0.00173	-0.00416
		(0.00954)	(0.0132)	(0.0138)	(0.0136)	(0.0243)
FDR q-value				[1.000]		
Index: Youth (age 15-24) outcomes	1845	0	0.0413	0.0640	0.0649	0.115
		(0.0374)	(0.0521)	(0.0537)	(0.0521)	(0.0941)

Note: This table shows the impact of winning the lottery (T1) and of migration on outcomes of youth aged 15-24 estimated using Equation (2). The first two columns show the sample size and control group means. Column (3) shows the ITT estimates with only Upazila indicators, Column (4) adds other controls (applicant height, age, religion, and parental education). Column (5) presents the estimate of the reduced form with inverse-probability-weights (IPW) estimated using the controls. Column (6) presents the 2-SLS estimates of the impact of migration. The rows indicate the outcome variables. ihs refers to the inverse-hyperbolic sine transformation of the variables. The bottom most outcome is a covariance-weighted index of all other outcomes with positive values representing higher schooling and more expenditures. Standard errors, reported in parentheses, are clustered at the union level. Column (4) also presents the (False Discovery Rate) FDR adjusted q-values that adjust for multiple-hypotheses testing. *:p>0.1; **: p>0.05; ***: p>0.01

Appendix Table 16:
Impact of winning the lottery and of migration on entrepreneurial activities

	(1)	(2)	(3)	(4)	(5)	(6)
	N	Control group	ITT	ITT (Controls)	ITT (IPW)	IV
Has crop income	2373	0.737***	-0.0245	-0.0122	-0.0125	-0.0211
		(0.0134)	(0.0174)	(0.0181)	(0.0177)	(0.0307)
FDR q-value				[0.327]		
Has fertilizer expense	1726	0.746***	-0.0284	-0.0354	-0.0337	-0.0595*
		(0.0163)	(0.0213)	(0.0220)	(0.0215)	(0.0358)
FDR q-value				[0.148]		
Has capital expenditure for crop	1726	0.738***	-0.0496**	-0.0554**	-0.0524**	-0.0931***
		(0.0167)	(0.0213)	(0.0221)	(0.0216)	(0.0357)
FDR q-value				[0.035]		
Hired workers for crop	1726	0.682***	-0.0581**	-0.0620**	-0.0585**	-0.104***
		(0.0176)	(0.0232)	(0.0241)	(0.0235)	(0.0393)
FDR q-value				[0.035]		
Has Livestock	2373	0.788***	-0.000481	-0.00511	-0.00256	-0.00881
		(0.0118)	(0.0166)	(0.0170)	(0.0164)	(0.0288)
FDR q-value				[0.467]		
ihs(livestock value)	1831	10.01***	-0.127	-0.141	-0.140	-0.236
		(0.0680)	(0.0916)	(0.0979)	(0.0956)	(0.161)
FDR q-value				[0.165]		
Has capital expenditure for livestock	1876	0.378***	-0.0130	-0.0204	-0.0232	-0.0340
		(0.0181)	(0.0202)	(0.0209)	(0.0206)	(0.0340)
FDR q-value				[0.310]		
Hired workers for livestock	1876	0.00531**	0.00453	0.00475	0.00444	0.00791
		(0.00220)	(0.00413)	(0.00522)	(0.00517)	(0.00854)
FDR q-value				[0.310]		
Has non-farm business	2373	0.436***	-0.0833***	-0.0691***	-0.0720***	-0.119***
		(0.0148)	(0.0189)	(0.0198)	(0.0193)	(0.0330)
FDR q-value				[0.004]		
ihs(business value)	841	11.38***	-0.00121	0.0417	0	0.0795
		(0.0846)	(0.141)	(0.145)	(.)	(0.265)
FDR q-value				[0.467]		
Has capital expenditure for business	930	0.792***	-0.0355	-0.0545*	0	-0.102*
		(0.0176)	(0.0277)	(0.0300)	(.)	(0.0540)
FDR q-value				[0.104]		
Hired workers for business	930	0.197***	-0.0505*	-0.0636**	0	-0.119**
		(0.0185)	(0.0264)	(0.0273)	(.)	(0.0497)
FDR q-value				[0.039]		
Index: Entrepreneurial	2373	0	-0.130***	-0.105***	-0.106***	-0.181***
		(0.0301)	(0.0384)	(0.0398)	(0.0390)	(0.0671)

Note: This table shows the impact of winning the lottery (T1) and of migration on household entrepreneurial activities estimated using Equation (2). The first two columns show the sample size and control group means. Column (3) shows the ITT estimates with only Upazila indicators, Column (4) adds other controls (applicant height, age, religion, and parental education). Column (5) presents the estimate of the reduced form with inverse-probability-weights (IPW) estimated using the controls. Column (6) presents the 2-SLS estimates of the impact of migration. The rows indicate the outcome variables. ihs refers to the inverse-hyperbolic sine transformation of the variables. The bottom most outcome is a covariance-weighted index of all other outcomes with positive values representing higher involvement in entrepreneurial activities, and greater use of capital and labor. Standard errors, reported in parentheses, are clustered at the union level. Column (4) also presents the (False Discovery Rate) FDR adjusted q-values that adjust for multiple-hypotheses testing. *:p>0.1; **: p>0.05; ***: p>0.01

Appendix Table 17:
Differences in pre-migration outcomes in G2G vs private channel migration

	(1)	(2)	(3)	(4)
	N	non-G2G	G2G effect	Effect (IV)
Family/relatives in destination	1098	0.300***	-0.266***	-0.268***
		(0.0274)	(0.0275)	(0.0357)
Friends in destination	1098	0.136***	-0.0907***	-0.107***
		(0.0203)	(0.0222)	(0.0278)
Migration cost, '000 Taka	1061	388.6***	-312.1***	-343.5***
		(26.05)	(23.95)	(31.07)
Non-fee cost, '000 Taka	859	113.6***	-75.33***	-73.84***
		(11.20)	(10.82)	(13.29)
Borrowed for migration	1098	0.844***	-0.108***	-0.161***
		(0.0219)	(0.0295)	(0.0332)
-- from moneylenders	1098	0.290***	-0.153***	-0.190***
		(0.0263)	(0.0297)	(0.0336)
-- from relatives/friends	1098	0.666***	-0.0752**	-0.134***
		(0.0279)	(0.0346)	(0.0395)
-- from formal institutions	1098	0.238***	-0.106***	-0.129***
		(0.0262)	(0.0292)	(0.0360)
Amount borrowed, '000 Taka	688	187.5***	-130.2***	-135.7***
		(6.808)	(7.259)	(8.787)
Interest rate	637	14.42***	-4.132**	-5.961***
		(1.424)	(1.870)	(2.189)
Had a contract	814	0.506***	0.177***	0.154***
		(0.0359)	(0.0416)	(0.0465)
Contract has overtime	422	0.543***	-0.0368	-0.0319
		(0.0534)	(0.0637)	(0.0649)
Contract has lodging	480	0.803***	0.119***	0.0964**
		(0.0387)	(0.0411)	(0.0462)
Contract has food provision	466	0.352***	-0.233***	-0.270***
		(0.0447)	(0.0473)	(0.0558)
Permit from BMET	867	0.810***	0.142***	0.161***
		(0.0282)	(0.0276)	(0.0326)
Any insurance	659	0.107***	0.105***	0.133***
		(0.0221)	(0.0362)	(0.0393)
Took skills training	1015	0.292***	0.531***	0.706***
		(0.0276)	(0.0334)	(0.0378)

Note: This table shows the difference between G2G and private channel migration on pre-migration characteristics estimated using Equation (3). The first two columns show the sample size and control group (private channel) means. Column (3) shows the effect of G2G migration. Column (4) shows the estimates where the G2G indicator is instrumented with lottery winning status (T1) to account for potential measurement errors in G2G indicator. Each specification controls for Upazila indicators, as well as, applicant height, age, religion, and parental education controls. The rows indicate the outcome variables. Standard errors, reported in parentheses, are clustered at the union level. *:p>0.1; **: p>0.05; ***: p>0.01

Appendix Table 18:
Differences in pre-migration outcomes in G2G vs private channel migration

	(1) N	(2) non-G2G	(3) G2G effect	(4) Effect(IV)
Duration of migration episode	1089	29.57***	15.18***	16.04***
		(1.060)	(1.377)	(1.533)
Wait time (weeks) for work	1072	1.747***	-1.417***	-1.421***
		(0.200)	(0.204)	(0.213)
Hours worked per week	1033	59.87***	-4.792***	-5.347***
		(0.814)	(0.963)	(1.151)
Worked overtime	954	0.355***	0.137***	0.167***
		(0.0310)	(0.0356)	(0.0404)
Overtime rate	451	1.310***	-0.0392	-0.0437
		(0.0300)	(0.0324)	(0.0358)
Allowed rest day	443	0.697***	0.00412	0.0922
		(0.0524)	(0.0613)	(0.0674)
Monthly income	812	30832.2***	-7501.5**	-2439.9
		(3530.7)	(3488.9)	(2611.7)
Monthly lodging costs	632	939.4***	-733.3***	-876.4***
		(128.1)	(134.0)	(169.7)
Monthly food costs	669	3840.1***	1251.5***	1243.6***
		(221.3)	(231.4)	(269.3)
Monthly expenses	597	1982.2***	-194.7	-253.6
		(137.3)	(158.6)	(172.8)
Net monthly income	549	27030.5***	-8009.5	749.7
		(4645.7)	(4988.3)	(3054.7)
Monthly savings	492	26173.2***	-9487.2	481.8
		(5238.4)	(5824.7)	(3120.6)
Extreme heat at work	886	0.436***	-0.0304	-0.0243
		(0.0308)	(0.0404)	(0.0472)
Exposed to extreme cold	917	0.0262**	-0.0114	0.00388
		(0.0107)	(0.0128)	(0.0139)
Experienced injury	1035	0.397***	0.211***	0.238***
		(0.0289)	(0.0377)	(0.0408)
Frequent workplace injury	702	0.218***	0.0654*	0.0809*
		(0.0323)	(0.0387)	(0.0439)
Workplace deaths	809	0.185***	0.0168	0.0209
		(0.0253)	(0.0333)	(0.0367)
Migrated again	1098	0.0394***	-0.00584	-0.00551
		(0.0109)	(0.0141)	(0.0159)

Note: This table shows the difference between G2G and private channel migration on pre-migration characteristics estimated using Equation (3). The first two columns show the sample size and control group (private channel) means. Column (3) shows the effect of G2G migration. Column (4) shows the estimates where the G2G indicator is instrumented with lottery winning status (T1) to account for potential measurement errors in G2G indicator. Each specification controls for Upazila indicators, as well as, applicant height, age, religion, and parental education controls. The rows indicate the outcome variables. Standard errors, reported in parentheses, are clustered at the union level. *:$p>0.1$; **: $p>0.05$; ***: $p>0.01$