



## Evaluation of a Targeted Private Sector Skill Training Program in Bangladesh

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In this paper, we examine the contributions of Vietnam's SMEs to employment and quality of employment. We also study the impact of technological upgrading on employment in enterprises in Vietnam including SMEs. Finally, we examine the role of education in probability in getting a job and a decent job in Vietnam. Our results confirm that SMEs are net job creators. In addition, the main channel of Vietnam SMEs' technological upgrading is found to be investing in equipment, and by doing so it expands the possibility of employment. The results also show that education plays an important role in helping labors to get a job and a decent job. Based on these empirical results we propose some recommendations for Vietnamese government to improve quantity and quality of jobs in the This study evaluates a private sector targeted skill development program implemented by a local NGO to help young members of extreme poor families to acquire skills which can help them to secure jobs in garment factories. Employing IV approach, we find that the training program was quite successful in terms of inducing migration and securing a formal wage employment at the urban destinations. We also found evidence that the training program improved the asset holding (both land and non-land as well as livestock) of the participating households. In addition, we find moderate evidence of program effect on improving social status and reducing dependency on loan-sharks during the time of seasonality by the participating households. However, we did not find any statistically significant evidence of the training impact on increasing household income, which may show limited effect of such low-level skill training program in the short-run.

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on Global Issues for Development

# Evaluation of a Targeted Private Sector Skill Training Program in Bangladesh<sup>1,2</sup>

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## Abstract

This study evaluates a private sector targeted skill development program implemented by a local NGO to help young members of extreme poor families to acquire skills which can help them to secure jobs in garment factories. Employing IV approach, we find that the training program was quite successful in terms of inducing migration and securing a formal wage employment at the urban destinations. We also found evidence that the training program improved the asset holding (both land and non-land as well as livestock) of the participating households. In addition, we find moderate evidence of program effect on improving social status and reducing dependency on loan-sharks during the time of seasonality by the participating households. However, we did not find any statistically significant evidence of the training impact on increasing household income, which may show limited effect of such low-level skill training program in the short-run.

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## 1. Introduction

Training programs are potential solutions to the problem of lack of skills for individuals who have been disadvantaged due to various economic and social constraints and could not attend or complete formal schooling. However, in most countries vocational training program on skill enhancements are quite unsuccessful and there exist little reliable evidence on the impact of training on improving the labor market standing of the poor in developing countries. The main reasons for failures are: ineffective training not linking with industry demand and no placement or onsite internship service. Even though vocational training provided by government is free, however, most adults find it difficult to attend the regular classes effectively as they are also the main income earners of their respective families.

For Instance, in Bangladesh, the Technical Vocational Education and Training (TVET), run by the government has been criticized by the experts as a mismatch as the training programs provided by the authority is not driven by the industry labor demand (Kashem *at el.* 2011). However, government do recognize the importance of effective skill training programs and in their official National Strategy for Accelerated Poverty Reduction II (NSAPR) 2011-15 strategic paper,<sup>3</sup> vocational training has been highlighted as one of the "Strategic Blocks" for accelerating poverty reduction (Strategic Block V, Page 52). However, the strategic paper did not mention about ways to achieve such a target.

In this effect, various private sector interventions has emerged, especially in the ready made garments sector that provides training to facilitate growing demand of labour. As we know, Bangladesh has been experiencing a remarkable growth in the ready-made garments (RMG) industries for the last three decades. It has become an integral and major part of Bangladesh's economy that contributes around 80 percent of export earnings (Bangladesh Export Processing Bureau, 2009). For instance, in 1983 there were some forty thousand people employed in RMG sector; since then with an average yearly growth rate of 17 percent, current employment in the RMG sector is over 3 million (Bangladesh Garment Manufacturers and Exporters Association, 2010), of whom 75 to 90 percent are women.

Bangladesh is predominantly a patriarchal society which is characterized by conservative gender norms; however the recent noteworthy growth in the RMG sector has created enormous economic opportunities

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<sup>3</sup> Ministry of Planning, <http://www.imf.org/external/pubs/ft/scr/2012/cr12293.pdf>



for women. RMG industry has therefore been playing a pivotal role in changing the economic role and status of women. Employment in RMG factories has provided a credible alternative to early marriage and pregnancy, contributing to reductions in fertility and health-related problems (like anaemia and malnourishment). It has also made returns from female education tangible and helped women to become more visible outside of their home and gain control over the finance in the household (Khosla 2009 and World Bank 2008). Academic literature has also paid special importance on the impact of women empowerment on intra-household decision making. For example, income earned by women is found to be spent differentially on health and education than income earned by men (Luke and Munshi 2005; Duflo 2003). Anderson and Eswaran (2009) further argued that income earned by woman, particularly outside the household, increases her autonomy. Mbiti (2008) shows that demand for female labour lead women to increase their marriage age and reduce dowries.

Although the women participation in the labour force is increasing, ironically their participation rate in Bangladesh is still one of the lowest in the world (26 percent) whereas the male participation rate is 87 percent. Another notable feature of the RMG sector is that majority (85 percent) of garment workers are migrants; however, their distribution by source region is rather skewed. For instances, Northern Bangladesh is one of the most poverty stricken region of Bangladesh where the poverty was 17 percent higher compared to the rest of the country in 2005 (GOB 2008) however, has the lowest participation rate in the in the garment industry (according to one estimation from BGMEA, approximately five percent of the workers are from the northern areas). This trend of low participation rate of worker from northern Bangladesh, especially women workers is particularly puzzling, given the fact that northern region is suffering from periodic floods and river erosion during the monsoon; cold spells during the winter and seasonal deprivation and famine-like conditions, a phenomenon locally known as *monga* after the plantation of the major rice crop “Aman”.

Smaller participation of labour from the northern Bangladesh could be due to the lack of information on job opportunities, the absence of social networks in the growth poles, and the lack of adequate training, preparation, and support in making the transition to garment factories in urban settings. Given the demand for additional skilled labour in the RMG sector is estimated to be between 350,000 and 450,000 <sup>4</sup> there is a need for an important intervention to induce more workers especially women

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<sup>4</sup> This estimation is based on Government and the trade associations, the Bangladesh Garment Manufacturers and Exporters Association (BGMEA) and the Bangladesh Knitwear Manufacturers and Exporters Associations (BKMEA).



workers from the northern Bangladesh to be employed at the RMG sectors in Bangladesh since the garment industry can potentially contribute to key goals of development policies.

The particular program that we evaluate in this study does this targeted intervention, which is a skill training program for RMG sector operated by Gana Unnayan Kendra (GUK) a local NGO working at the Gaibandha, a vulnerable district of northern Bangladesh. In this program, GUK developing skills of interested young women and men of extreme poor families on woven garments. Initially GUK provided one month long residential training on sewing machine operation for the selected candidates from their targeted beneficiary households.<sup>5</sup> After completing the course, the trained beneficiary undertook an internship at a nominated garments factory by BGMEA, typically located in Dhaka, for two months. The training, internship, and the support of GUK in partnership with Bangladesh Garment Manufacturers and Exporters Association (BGMEA), participants who completed the program was believed to have greater possibilities of securing jobs at RMG factories in Bangladesh.

However, there is no rigorous study to understand the impact of such market targeted skill training program and the policy lessons learned from these private sector interventions. With this study, we aim to void this gap by systematically study the impact of such interventions, both at the employment as well as at the welfare level. In addition, it is worth mentioning that, this training program targets the young, but also focuses on the poor and unskilled women from one of the most poverty stricken areas. While linking the growth poles and market demand with the poverty pockets to find a match between demand and supply in the industry specific labor market, GUK scheme offers us the opportunity to explore employment prospect of job training program from a variety of angles. Moreover, the intervention provides training for one particular industry whereas in other studies mentioned above, the training provided for multiple skills and for multiple industries, hence it was difficult to address why a particular program was not effective in terms of labor standing of the trainees. This research therefore expects to shed light to a relatively unexplored area and provide important insights on how best to deliver such programs, and more importantly, for formulating policies aiming at encouraging employment of young women in Bangladesh.

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<sup>5</sup> GUK's targeted beneficiary households are located in Ghagoa, Kamarjani, Mollarchar, Malibar, Boali and Gidari Unions of Sadar Upazila (sub-district) of Gaibandha District. GUK effectively targets and selects the bottom 10% of the extreme poor and collects qualitative information through peer review process within the village and also employs household based profiles as well as other monitoring systems of SHIREE to prepare a preliminary list of selected beneficiaries. Extreme poor households preliminarily identified would be briefed about the objectives and design/process of the project. Those who would agree to participate in the process would be selected for training.



The paper is organized as follows. Section two talks about the relevant literature of the study and section three has the background of the project and the details of the intervention. Section four has the sampling procedure used in this research and section 5 offers a description of the survey data. Section six reports the empirical results of the impact of training program. Section seven offers concluding remarks.

## 2. Literature Review

In the context of evaluating the effect of job training or skill enhancement program offered by government institutions on the employability of participants, a number of studies have been conducted but mostly in the case of United States and Europe.<sup>6</sup> The overall conclusion that has emerged from the U.S. literature is that the impacts of job training are generally not substantial. Since 1992 the Inter-American Development Bank (IADB) has financed a series of innovative training programs throughout Latin America, targeting less-educated youth and combining classroom training with a subsequent internship period of on-the-job work experience. In their up-to-date meta analysis review, Card *et al.* (2010) provides impact assessment of active labour market programmes covering job training programmes. Their analysis shows that, by and large, there is little evidence that job-training program is effective in the short-run, although there are some studies that find positive impacts.

Rigorous impact evaluations of job training programs using micro-data is emerging. One noteworthy study is the one done by Attanasio *et al.* (2011) on Colombia where they find evidence of improvement of earning and employment for women. They studied the program of providing vouchers to allow students to attend private secondary schools which was very cost effective. However, the evidence of such training program in the context of developing countries is rather limited. To our knowledge, the only a handful rigorous evaluation of training program in the context of developing country exist in the literature. For example, Card *et al.* (2011) study on job training program operated in the Dominican Republic that find modest effect of program on participant's labor market outcomes, however, lacks information on the non-participants. Blattman *et al.* (2013) evaluation of the government supported Youth Opportunities Program in Northern Uganda, where randomly selected unemployed participants were given a 383 dollar un-supervised grant support with vocational training program for self-employment, finds substantial improvement in asset and earning. The other strand of literature on training program focused on either the demand of such training programs or the take-up and completion

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<sup>6</sup> For example, In the U.S. case, evidence from randomized evaluations of JTPA (see General Accounting Office 1996; Bloom *et al.* 1997; Heckman *et al.* 1998; Heckman, Ichimura, and Todd 1998), Job Corps (Schochet, McConnell, and Burghardt 2003), and a series of other programs for welfare recipients (see Friedlander, Greenberg, and Robins 1997) are available.





rates. For example, Macchiavello *et al.* (2015) looked into the demand of training programs by the factories to improve productivity in the RMG sector in Bangladesh. Cho *et al.* (2013) evaluation of vocational training program in Malawi), on the otherhand, focused on take-up and completion rate and found considerable gender differences in participation and completion of vocational and entrepreneurial training for Malawian youth and the take-up is more skewed towards men. Dammert and Galdo (2013) in their study on Peru showed a positive relationship between training quality and completion rate for youth participants. However, to the best of our knowledge, there exists no study on evaluation of private job training program for targeted industry in developing country.

In addition to evaluating the impact of training program on employment and earnings, this paper also attempts to evaluate the heterogeneous impacts. Attanasio *et al.* (2011) in their study on Colombia and Hicks *et al.* (2011) on Kenya found evidences that, *compared to their male counterparts the returns to training were larger for females*. Hicks *et al.* (2011) shed further light into the heterogeneous impacts of such training programs, by inferring that, as a result of such training, males generated higher profits from self-employment compared to their female counterparts, who generated higher profits from alternative paid-employment. This finding is especially important in the backdrop of a poor country like Bangladesh where many households are not able to make a long term human capital investment in the form of traditional schooling, and as a result may pressurize young adults to discontinue schooling and to contribute towards household earning. In this context, the rapidly growing RMG sector and the potential availability of jobs in this sector, especially for females, makes the program innovation of vocational job training a more essential study on empirical grounds with significant policy implications.

### **3. Background and details of the program**

This training program was officially titled as “Reducing extreme poor by skills development on garments” (hereafter GUK-garments project) funded by DFID under the funding scheme called SHIREE<sup>7</sup> (Stimulating Household Improvements Resulting in Economic Empowerment). The project started in December 2010 and ended in November 2013. The project was implemented in Gaibandha district, one of the most disaster prone areas of Bangladesh. People of the area are most vulnerable with regular flooding and riverbank erosion. Most people completely depend on agriculture based economic activities, which dependent on natural calamities. Extreme poor people of this districts lack of employment opportunity during April, July, and September - November each year, when they have to face seasonal famine like situation known as *monga* in local language. The goal of the project was specifically addressing this problem by creating sustainable job opportunity in the garments sector.

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<sup>7</sup> <http://www.shiree.org/if/innovation-fund-round-3/guk/#.V6kA1TUuAZw>



The program implementation was executed by Gana Unnayan Kendra (GUK), who has been working in Gaibandha district of Bangladesh since 1985. The training program was implemented in Ghagoa, Kamarjani, Mollarchar, Malibar, Boali and Gidari unions of Sadar Upazila (sub-district) of Gaibandha District. To target and select the bottom 10% of the extreme poor, qualitative information has been collected through Participatory Rural Appraisal (PRA) method and random household visit by the funding agency using the selection criterion<sup>8</sup>. After the initial screening preliminarily identified individuals were briefed about the objectives and design/process of the training program. After the briefing session those who agreed to participate in the training program were selected as participants. Initially GUK offered training to 1752 individuals out of which 1160 took and completed the training program.

The training started in December 2010 and ended in November 2013. The full training intervention consists of one month-long skill training with daily stipend for forgone income (equivalent of local daily wage) followed by two-month paid internship at a garments factory located in the thriving industrial belt surrounding Dhaka. The duration of the residential training was for 22 working days. The training allowance in the form of stipend was 150 BDT per day (about 2 USD)<sup>9</sup>. The residential training program contains lessons on sewing and over-lock machines operation and basics of ready-made garments manufacturing. On a typical day of training, session starts with one hour of theory lesson and the rest of time is dedicated for practical sessions. At the end of the training day, one hour is spent on reviewing the lessons.

To accommodate training of the participants, GUK established a training institute with residential facilities to provide accommodation and food during the training period. Instructors hired for this program were experienced trainers of garments industry. After successful completion of the residential training program, each participant was awarded with a training certificate issued by the GUK. To get an award certificate, each participant had to go through an evaluation exam and a practical session with a grading system based on performance in the exam.

GUK signed the memorandum of understanding (MoU) with 4 garments factories in Dhaka for internship placement for the participants. In the subsequent years of training different factories showed their interest to provide placement for GUK program participants as interns. GUK also facilitated the

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<sup>8</sup> Beneficiary selection criteria was the following:

Essential criteria: no ownership of cultivable land, consumes less than 3 meals a day during the period of seasonality, does not borrow from micro-finance institutes, resides in disaster prone areas and the value of income generating productive asset is less than 5,000BDT (about 64 USD).

Supplementary criteria: Bad housing condition, female headed household with no additional adult male earner, household including disabled members, households live on income contribution from child labour (up to 17 years), does not have any homestead land, recipient of safety nets programs provided by the government.

<sup>9</sup> A total of  $150 \times 22 = 3300$  BDT given for a month as stipend (about 42 USD)





internship by arranging rental accommodation for the participants in Dhaka. For every batch of participants, two GUK staffs and one trainee accompanied them to Dhaka to expedite the initial setup and adaptability in a new urban environment. The cost associated with this relocation – mostly for the transportation and initial set-up – was borne by the participants using the stipend allowance. Our grantee authority paid the salary for the participants during the internship period, hence factories did not have to bear additional costs for the interns. We have very limited knowledge about these factories where the internship was conducted as this was not a focus of our research (whether these factories were growing or are different from other factories). The internship salary paid to the participants was a market wage equivalent to the entrant to this industry and decided by the government of Bangladesh.

The program was a standalone program and was not being combined with other program operations of the implementing NGO. The intervention remained the same throughout the lifespan of the program. Our implementing partner followed the same selection and eligibility protocol as designed by the grantee authority (SHIREE and DFID) throughout and grantee authority confirmed us that they made regular visits, eligibility verification checks, and yearly audits to make sure that the selection is unbiased. The training program is mostly focused on RMG know-hows (like understanding the name of each part of an electronic sewing machine, becoming knowledgeable about sewing and garments basics, etc). This program has been developed in conjunction with leading export oriented garments factories of Bangladesh. The training program was targeted for an entry position of a sewing operator in RMG factories in Bangladesh which requires the skill of operating electronic sewing machines and having a superior skill of flawless stitching following a design pattern. Throughout the intervention, the training intervention had the same two instructors, one female and one male. The internship program started just after the training program with a gap of one week. This one week gap was given to participants to meet their families and prepare for the internship in Dhaka. It also helped the implementing authority to make adequate arrangements for accommodation for the interns.

#### **4. Sampling**

The program target population is the poor population of northern Bangladesh, especially in Gaibandha, where the poverty rate is 10 percentage higher than the national poverty rate of 31.5. Given the population size of Gaibandha is 2,379,255 (Census 2001), the aggregate numbers of targeted households in this region is about 1 million. Another noticeable fact of Gaibandha is the lower internal migration rate of 2.11 percent whereas the overall internal migration rate of Bangladesh is about 10 percent (Yamagata 2011). The households that are selected (or offered) to the program could be considered as



extreme poor as the program authority systematically targeted bottom 10% of the poor (from the population of 0.1 million).

Our implementing partner first confirmed a list of eligible households from their catchment areas and then the list got doubly verified by the grantee authority. After that our implementing partner offered training program in phases and eligible participants could decide to opt-in (our out)<sup>10</sup>. Participants were provided one month residential training in 19 consecutive batches throughout the 3 years of the project. In 2011, there were 5 batches and a total of 259 participants received training. In the subsequent year (2012) a total of 8 batches were trained that consist of 509 participants. In the final year (2013), additional 6 batches were trained consisting 392 participants which made a total of 1160 participants of the program.<sup>11</sup>

[Table 1 and 2 about here]

For this study, we collected initial 1752 eligible participants list of the program those have been offered the training program. These 1752 participants were selected by the funding authority based on the program selection criterion. We first executed a tracking round for these 1752 households to see whether we could hold a detailed survey to conduct our study. The aim of the tracking round survey was to identify the households who were originally been selected four years ago (in 2011). Once identified and verified by our implementing partner, we additionally collected information about the current location, contact address and mobile phone number of the households and participants. During this phase, we could track 1487 participants out of our initial 1752 household of the initial list (attrition rate of 14.26%). This attrition rate is reasonable given the vulnerable nature of the area and high degree of mobility. A recent survey in India (IHDS survey of India [http://ihds.umd.edu/IHDS\\_files/ihds2usersguide01.pdf](http://ihds.umd.edu/IHDS_files/ihds2usersguide01.pdf)) the attrition rate is 17% which is also conducted after 5 years after the initial round.<sup>12</sup>

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<sup>10</sup> A participant received a few chances to change their training timing if not suitable during the initial batch allocation.

<sup>11</sup> 6 individuals out of 1160 trainee did not completed the entire training (did not go to Dhaka for internship) program due to family issues or illness which is only a small portion of the total sample and are not statistically systematically different from the main sample.

<sup>12</sup> We admit that we cannot completely rule-out the selection issue based on survey attrition. Although we surveyed 1487 sample out of 1752 initially selected for the program (overall 15% attrition), group-wise attrition rate shows that those who take-up the training program (treatment) the attrition rate is low, only 7% (surveyed 1086 out of 1160 who chose to take-up the program) whereas those who did not take the training program (control group) the attrition rate is substantially high as we could cover only 68% of the control sample (surveyed 401 sample out of 592 of the control group). Given the retrospective nature of the survey five years after the intervention as well vulnerability and disaster related shocks made many of the control households to completely relocate from their origin, which was the core reason for such a high attrition rate of the control sample. Econometrically addressing this issue in our setting was also very difficult, as we did not have any baseline information of our entire sample— other than their names and address.



[Figure 1 about here]

Once we tracked all the households in Gaibandha, we conducted our detailed survey in rural areas if the household as well as the participants are still residing in Gaibandha. In case the participants have migrated to an urban location, we conducted two surveys, one for the rural origin household and the other is for the participants at their current urban location. To conduct survey of the migrants we did the survey in different parts of Bangladesh, including major cities like Dhaka and Chittagong.<sup>13</sup> Most of the migrants were found in the Dhaka city as their placement city was Dhaka at the time of internship under the training program. In rural area, we surveyed 1487 household and in urban areas, we did additional 403 surveys.

## 5. Data Description

The detailed summary statistics of our tracked sample is given in Table 5. In this Table we have provided treatment and control specific means as well as the p-value of the mean differences of the variables used in our regressions. It appears that our treated sample is different from the control on a few dimension, treated individuals are better educated, most likely to be the head of the households, older and have more members in the households. Since there are differences between treatment and control households, we adequately controlled for these variables in all regressions.

[Table 5 about here]

Our urban survey reveals that those who completed the programs were almost four times more likely to be a migrant than non-participants were (Figure 2) as among all the participants 79.65 percent migrated to the urban areas whereas only 20.35 percent of non-participants migrated. Interestingly, conditional on migration, program participants were more likely to be in the formal employment contract<sup>14</sup> than the non-participants (figure 2). 83.54 percent of migrants who also participated in the training program are employed in formal sector. For the migrants who did not get any training, the percentage in formal sector employment is lower (61.73 percent).

[Figure 2 and 3 about here]

Those who migrated and participated in the training, 55.28 percent are salaried worker and 19.88 percent are wage labor. But those who migrated without any type of training, employment as salaried worker and wage labor is 35.8 and 19.75 percent respectively. However, among migrants, there exist

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<sup>13</sup> For a few migrants (a total of 35) who were residing in distant urban centers, we conducted survey over telephone.

<sup>14</sup> By formal contract, we meant a written contract. However, these jobs don't provide any additional benefits like social security, insurance or pension.



considerable percentages who are still in non-earning occupations irrespective of training status: participants 17.7 percent and non-participant 25.93 percent. The percentage of migrants who went for self-employment is quite large (16.05 percent) compared with non-participants.

For non-migrants, the largest sector of occupation is non-earning occupation with the percentages of 47 percent for non-participant and 37.29 percent for participant. Even if the participants did not migrate, they were highly employed in salaried work (25.16 percent) and wage labor (22.56 percent). For the non-participant who did not migrate, self-employment or trading are other dominant sectors.

[Figure 4 and 5 about here]

It appears that migrants are relatively younger as most of the migrants (around 59 percent) come from the age group of 20 to 24 irrespective of participation in training. In terms of education, participants were mostly literate with having either primary (36.46 percent) or secondary (37.91 percent) level of education. Similar trend is also seen for the non-participants. For both the groups, people with primary and secondary level of education are most likely to migrate.

[Figure 6 and 7 about here]

Interestingly, 64.86 percent of the migrants from the non-participant group are male where the percentage is 57.76 for the participant group. The percentage of the female migrants is higher for participant group (42.24 percent).

[Figure 8 about here]

The average monthly wage of all the migrants is Tk. 6881.612. For participants who migrated to the urban areas, the average monthly wage is Tk. 6893.65 whereas the average salary is Tk. 6833.758 for the non-participant migrants, showing little difference of program effect once migrated. Notably, the average per capita consumption is higher for the migrant households irrespective of participant and non-participant. For the participant migrants the average monthly consumption expenditure is Tk. 3086.66 where the monthly consumption expenditure of the non-participant migrant is Tk. 2609.29.

[Table 3 and 4 about here]

In our urban survey, we asked detailed questions about living standards at the urban place and health status of the migrants: The aim of these subjective questions was to find out the changes in the condition of living standards of the migrants. Figure 9 depicts the subjective living condition status of migrants, where we asked them the following question “*Compared with before GUK training intervention, how is*



*your current living condition?*”. Overwhelming majority reported they are enjoying better living standards now compared to before of the GUK training program. A total of 88 percent participants are in better living standard where approx. 5 percent reported that their situation has got worse than before and 7 percent reported to have the same living standard of living as before.

[Figure 9 about here]

Then we asked migrants about the extent of such changes to occur in their life. Almost 100 percent of the program participants reported to secured 3 meals a day which was one of the main objectives of the program. The housing condition of the participants (86%) has reported to improve than before. In addition, about 66 percent has reported to have access to improved sanitation, 56 % has the access to safe drinking water and some 39 (42%) percent reported to have better access to energy (lighting condition). When we asked migrants perception about future living standards, a overwhelming majority believe that their life style will improve day by day.

[Figure 10 and 11 about here]

We also asked migrants about their health condition by asking the following question “*Overall how would you rate your health during the past 4 weeks?*” The health outcome is quite satisfactory for the migrants as 85 percent of them they reported to have a decent health status. In a related question, we asked whether migrants face any physical health, related problems that limit their physical activities (such as walking or climbing stairs) and 45 percent reported not to have any problem during the last 4 weeks.

## **6. Impact of training program on employment and welfare**

### **6.1 Econometrics and Identification Strategy**

The fundamental challenge of estimating the causal impact of training program on employment - - under non-random training placement -- is the possibility of unobserved individual characteristics that might influence the take-up of the training program as well as the migration decision, survival in a migration destination, and the duration and the likelihood of working in the formal sector. For example, it might be possible that individuals with unobserved high ability or entrepreneurial talents might opt to take the training program to enhance the skills and opportunity to move out of the rural area, and such unobserved skills and ability will also influence their employment and earnings. Without controlling for this, estimation of training on employment would be biased and inconsistent.



If we had panel data with the baseline information, we could have used methods to control for time-invariant unobserved individual heterogeneity. However, due to the lack of data (neither the funding authority nor the implementing partner did detailed baseline survey on the entire initial eligible participants, they only partially surveyed those who took the training) we could not employ a panel-date based estimations. Another ideal method that could be used to disentangle such unobserved influences on migration, employment and job status would be by using some natural experimental framework or by employing Randomized Control Trials (RCTs) methods by randomly offering training program to individuals to measure the causal impact of training on migration and employment status. Lacking the availability of such methods, we need to opt for an instrumental variable approach (IV) where we can instrument take-up decision of training with a set of variables which do not have a direct influence on job placement or current job status.

One potential instrument variable that has direct link with the program take-up is the distance from the training center to the current location of the household. The program was implemented using only one training center that was established by the GUK in Nasratpur of Gidari union of Gaibandha Sadar Upazila (sub-district). Since for many households this training center is quite far from their origin households, a considerable fraction of eligible households who initially expressed interest in participating in the skills training program did not take-up the program due to the distance, as found in other studies (for reference see Asim Ijaz Khwaja's work on Punjab <http://cerp.org.pk/peop/>). It can be argued that distant of the training center created an un-ignorable physical barrier that systematically made some participants disadvantaged to uptake the training program which resulted in a systematically less participation by distant households. This distance of training center is exogenous for the households and could potentially be a suitable instrument to determine training uptake.

GUK established this facility close to their office due to land availability and ease of operation. On the otherhand, the grant authority had a very strict criterion for participant selection, to target 10% bottom of the poor. Our data shows that initial program targeted eligible participants from 11 unions and 173 villages of Gaibandha. Hence our assumption that the location of eligible households is exogenous to the location of the training centre is a valid assumption given the setting. Moreover, self-selection into program is also not possible as the eligibility is doubly verified (first by the NGO and second by the SHIREE authority) at the beginning of the program. Also given the reality of the rural Bangladesh, the distance data could be considered constant overtime as internal movement of households in Bangladesh is very rare and if there is a need for movement, households typically relocates to a completely different district (say for example to Dhaka) in which case participants will be outside of the catchment areas.





Our identifying assumption is that distance of training center from household location do not affect the current job placement and migration status of the individuals, apart from their influence through participation in the training program. Instrumental variables estimation relies on this exogeneity assumption, and so it is important to consider and counteract potential threats to its validity.

One potential threat is that the distance could also capture conservativeness, as a result, those who live in distant location from the training center could also be more conservative and isolated and less exposed to the concept of migration. To tackle these potential pitfalls, we controlled for union level fixed effects to control for spatial differences and location preferences, and report our results based on clustered standard errors at the union level.

As our main outcome of interest is whether training program induced more migration and employment at the urban location, we studied the impact of training on individual's job related outcomes. The reduced form IV approach consists of estimating a two-stage model of the following form, where  $I_j$  is the outcome variable of interest (for example, individual  $j$ 's current employment status),  $T_{jk}$  is individual  $j$ 's training status, and whose origin house was located in  $k$ , and  $Z_k$  is the set of instrumental variables (which is the distance and its square of training center from location  $k$ ). Hence the reduced-form first stage equation for training participation  $T_{jk}$ , following Amemiya (1978), would be:

$$T_{jk}^* = \beta_0 + \beta_1 Z_k + \beta_2 X_j + \gamma_k^m + \epsilon_{jk}^m, \quad (1)$$

$$T_{jk} = \begin{cases} T_{jk}^*, & \text{if } T_{jk}^* > T_0 \\ 0, & \text{if } T_{jk}^* \leq T_0 \end{cases}$$

and the equation for migration (employment) of individual  $j$  in urban location  $u$  would be  $I_{ju}$  is

$$I_{ju}^* = \alpha_0 + \alpha_1 T_{jk} + \beta_2 X_j + \gamma_u^i + \epsilon_{ju}^i, \quad (2)$$

$$I_{ju} = \begin{cases} 1, & \text{if } I_{ju}^* < I_0 \\ 0, & \text{if } I_{ju}^* \geq I_0 \end{cases}$$

Here  $T_{jk}^*$  is the latent variable for training uptake, and  $T_{jk}$  is the observed decision to participate in the training program by individual  $j$  by comparing the costs and benefits using a net benefit function or latent index expressed in equation (1). Similarly,  $I_{ju}^*$  is the latent job placement and  $I_{ju}$  is the dummy of job placement in the formal and informal sectors for the same individual  $j$  living in location  $u$  which can be seen arising by comparing the job qualifications and job related network information required for the job placement expressed in equation (2). In this setup the first dependent variable,  $T_{jk}$ , appears in the second equation as an endogenous variable. Here,  $X_{jk}$  includes the following set of controls: personal and household characteristics, family composition information and dependency information and religion. Personal characteristics include age, age<sup>2</sup>, sex, education and marital information, whereas



household characteristics include head of the household's personal information.  $\gamma_k^M$  and  $\gamma_k^I$  are unmeasured determinants of  $T_{ik}$  (e.g., participants' own community network) and  $I_{ik}$  which is fixed at the urban level.  $M_0$  and  $I_0$  are unknown thresholds. Finally,  $\epsilon_{ik}^M$  and  $\epsilon_{ik}^I$  are non-systematic errors which follow  $E(\epsilon_{ik}^M | X_{ik}, Z_k, \gamma_k^M) = 0$  and  $E(\epsilon_{ik}^I | X_{ik}, \gamma_k^I) = 0$ .

We assume that the training program will have impact through two channels. First, the training program will have direct impact on individuals by having employment and migration. Secondly participants who secured a job in a urban location will send regular remittance to their origin households which will have impact on tackling seasonality, having more assets and better income potentials. The detailed "action-narrative" to demonstrated causality arrow is given Figure 12.

[Figure 12 about here]

### 6.2.1 Impact on Employment

Table 6 reports the impact of training on employment related outcome variables which is our main set of outcome of interest. In Column (1) of Table 6, we see training program has statistically significant impact on the migration rate. Participating in the program increases the migration rate by about 39 percentage point which is highly statistically significant. In Column (2) we used employment at the formal sector as our outcome variable and our regression shows that participation in the training program substantially increase the employment at the formal sector. In Column (3), we see that training program has been successful in increasing the wage employment rate, about 53.1 percentage more than the comparison group on non-participants. These results provide us substantial evidence that GUK provided garments training program was successful in-terms of inducing migration as well as securing wage employment in the urban formal sectors. However, in terms of securing a job at the RMG sector GUK training program was not found to be statistically significant. This could have due to job switching as participants migrate, they could use their network to move out of the RMG sector to other sectors. Our regressions reveal that male are more likely to migrate, get formal and wage employment and less likely to be unemployed.

[Table 6 about here]

### 6.2.2 Impact on tackling seasonality



One of the major objective of the GUK training program was to help individuals to tackle seasonality, especially seasonal famine like condition of the northern Bangladesh known as *monga*. The typical practice of the ultra-poor households of northern Bangladesh is to borrow from loan-sharks (informal money lenders) with a exorbitant amount of interest rate. Our regressions in Table 7 show that almost all the negative coping strategies got reduced for the participant households. Noticeably, the regression outcome of Column (3) shows that training participants significantly reduced their dependence on the loan-sharks for borrowing to tackle *monga*. It appears that households that participated in the training program could use their savings to smooth consumption during the time of seasonality.

[Table 7 about here]

### 6.2.3 Impact on assets and live-stocks

In Table 8, we reported the impact of training on participant's household asset, mostly categorized as land holdings (in decimals), non-land asset (in Taka) and total household asset (in Taka). As one can notice, participants' households significantly increased their land holdings as well as asset holding (a combination of both land and non-land) which is a noteworthy improvement/impact of the training on participants' origin household, a contribution of remittance. Since all of these households were categorized as extreme poor during the initial selection and were landless, this improvement of asset holding is quite noticeable. Interestingly the magnitude of this impact is quite sizable. Similarly, in Table 9, we have the different livestock category as outcome variables and we can notice that participants' households has also improved their livestock related assets which is highly statistically significant for poultry. We also found moderate improvement in cow-holding as well. This impact demonstrates remittance channel through which origin households purchase assets (both land and non-land assets like lifestocks and household non-durables) for better income generating activities.

[Table 8 and 9 about here]

### 6.2.4 Impact on Income

Now focusing on the training impact on income, we combined the overall household income and then categorized on various sources. Interestingly, participants origin households did not enjoyed higher income sources from non-participant households except for live-stock related income. Although most of the income category sign is positive, except for live-stock income, most of the income category remain statistically insignificant. It could mean that the remittance flow received initially was invested in rural income generating activities (like farming or rural small enterprise) but these investments did not



translate into a better income source, except for livestock. It could also be possible that training participants who migrated could not be able to send substantial remittance on a regular basis, as the cost of the living at the urban place is quite expensive. As a result, remittent households could not substantially improve their income for agriculture, wage or enterprise in the short-run.

[Table 10 about here]

## 6. Conclusion:

Despite achieving significant progress in terms of several human development indicators, Bangladesh still suffers from persistent unemployment problem, which acts as a prime constraint towards its elevation to the status of a middle-income country. On the other hand, with high growth of RMG sector along with high demand for skilled labor, strategies aiming at linking this demand with the supply of unemployed youth are expected to have significant consequences towards employment generation and poverty reduction. Given the high rate of youth unemployment in Bangladesh, particularly that of female, strategies aiming at providing training for them with a view to secure employment in non-farm activities is of paramount importance.

In the context of Bangladesh systematically evaluating a training intervention scheme is new and no rigorous impact evaluation study of vocational training has been conducted (to the best of our knowledge) in Bangladesh. GUK's innovative Garment's Training and Placement Service has been developed to tackle the skill shortage at the garments sector while connecting the poverty pockets of Bangladesh. This special design private skill training program has been claimed to be effective by the implementing authorities. However, no systematic studies have yet been conducted to know the real impact of such innovative project and its achievements in terms employment and welfare.

Employing IV approach, we systematically evaluated the GUK garments training program. We find that the training program was quite successful in terms of inducing migration and securing a formal wage employment at the urban destinations. We also found evidence that the program improved the asset holding (both land and non-land as well as livestock) of the participating households. Moreover, we find moderate evidence of program effect on improving social status and reducing dependency on loan-sharks during the time of seasonality by the participating households. However, we did not find any statistically significant evidence of the training impact on increasing household income for different earning categories, which may show limited effect of such low-level skill training program in the short-run.



The training programme we have evaluated is combined program of training plus components designed to address major constraints faced by the potential participants such as opportunity cost of joining a full-time training program (daily allowance equal to wage rate of the local area), financing migration (saved daily allowance helped to finance the initial cost of migration such as transportation, accommodation and others), job related network (internship arrangement provided with some garment producers helped to get introduced with the industry center) and overall reduction in migration uncertainty (organizational facility for initial migration reduced migration related uncertainty and stress). It could be reasonably possible that some of the components of the program (stipend or internship) is more important for the participants for migration and securing a job, however, under the present study setting, it is really difficult to unbundle all these components. This work is left for a future research.



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Figure 1: Flow-chart of survey

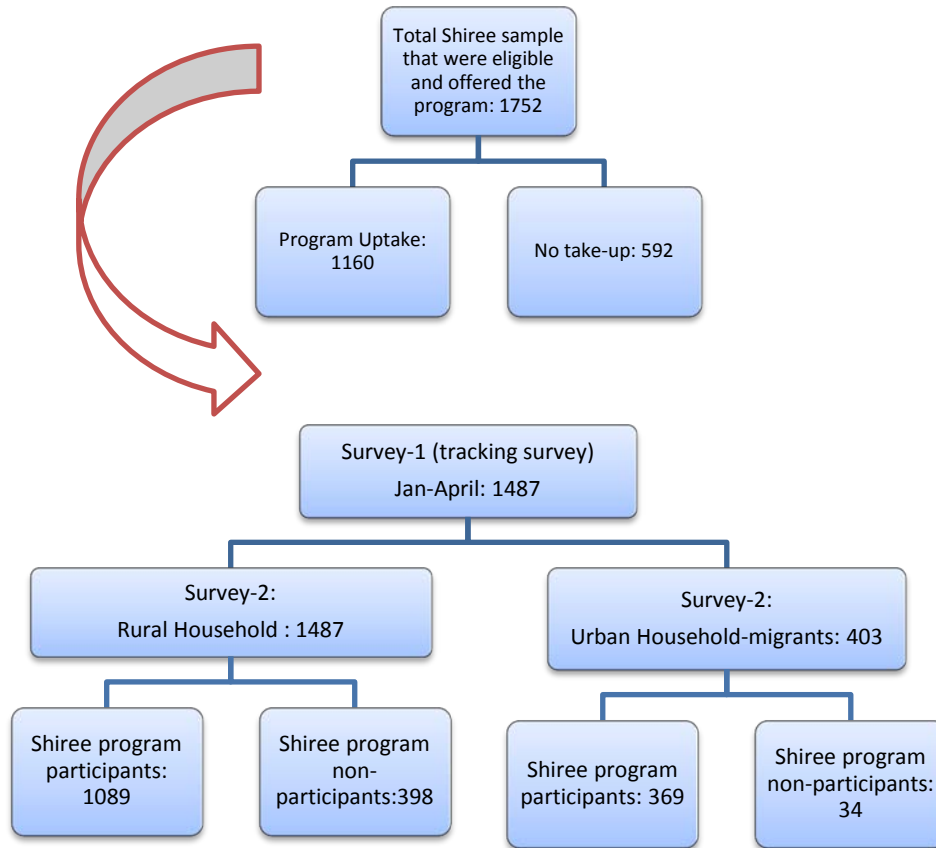
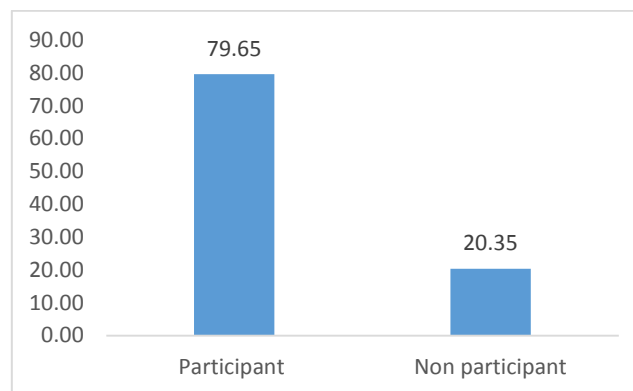


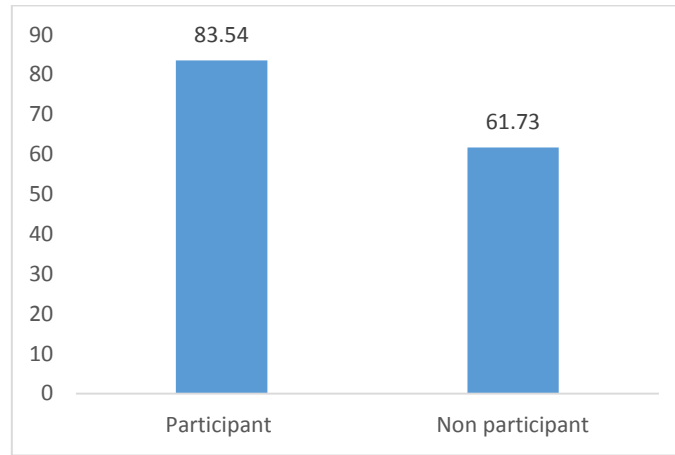
Figure 2: Percentage of migrant in total participant groups



Source: Survey findings

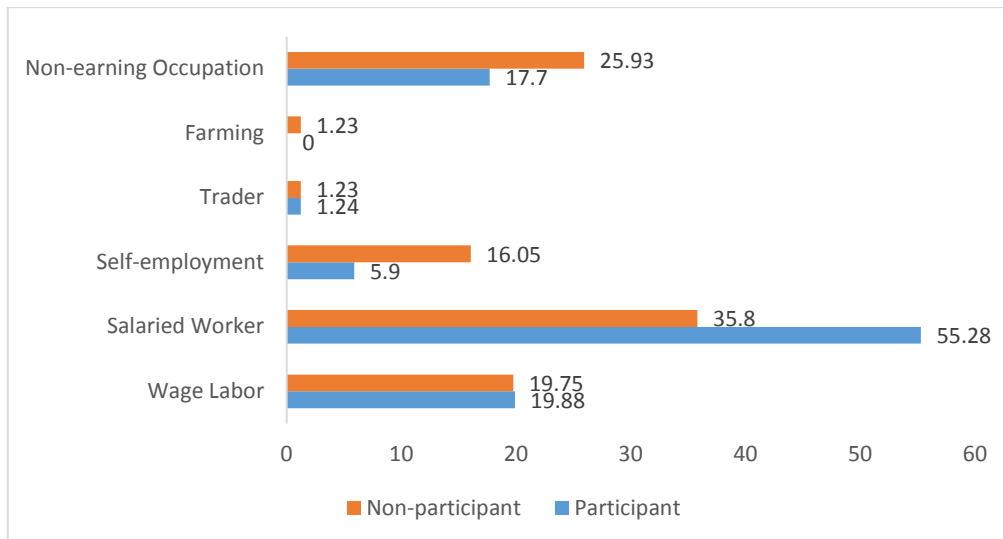


**Figure 3: Percentage of migrant in formal employment**



*Source: Survey findings*

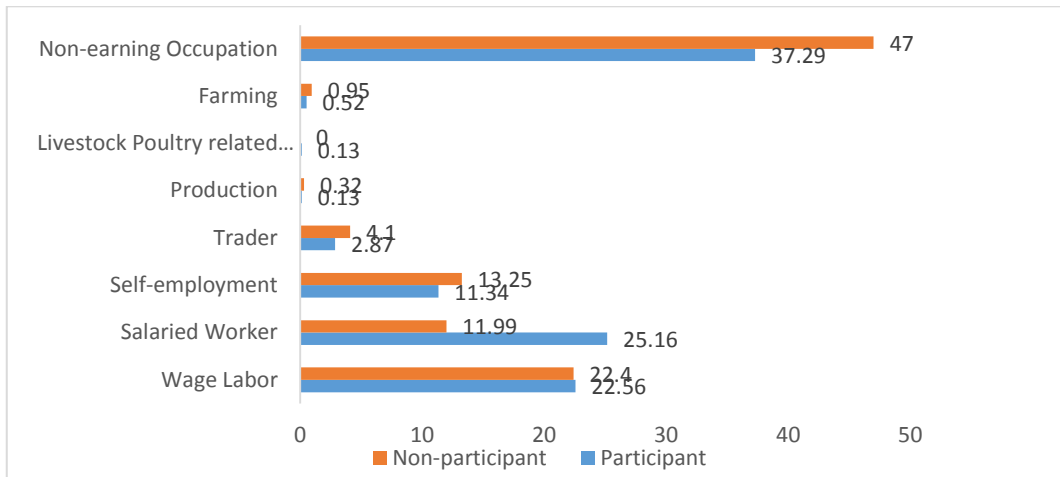
**Figure 4: Occupation category of the migrants**



*Source: Survey findings*

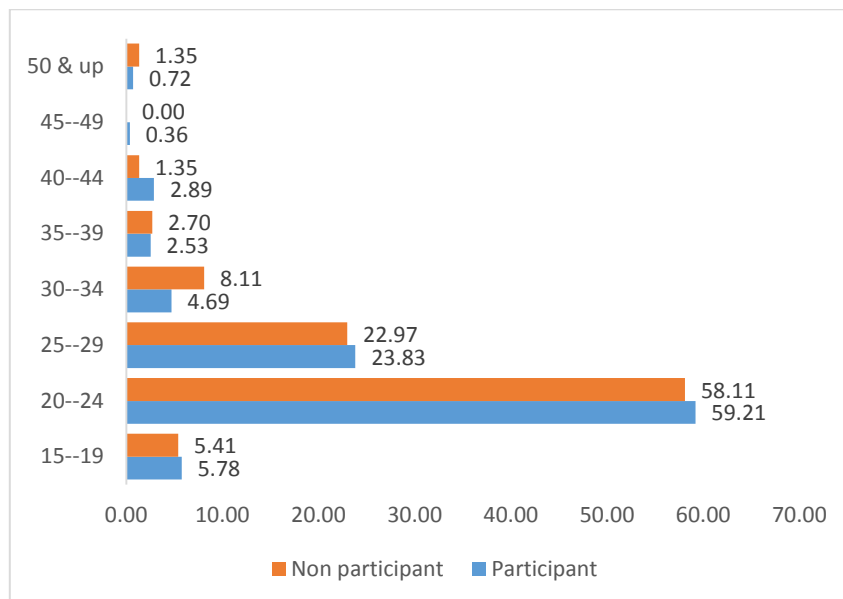


**Figure 5: Occupation category of the non-migrant**



Source: Survey findings

**Figure 6: Distribution of migrants among different age category**

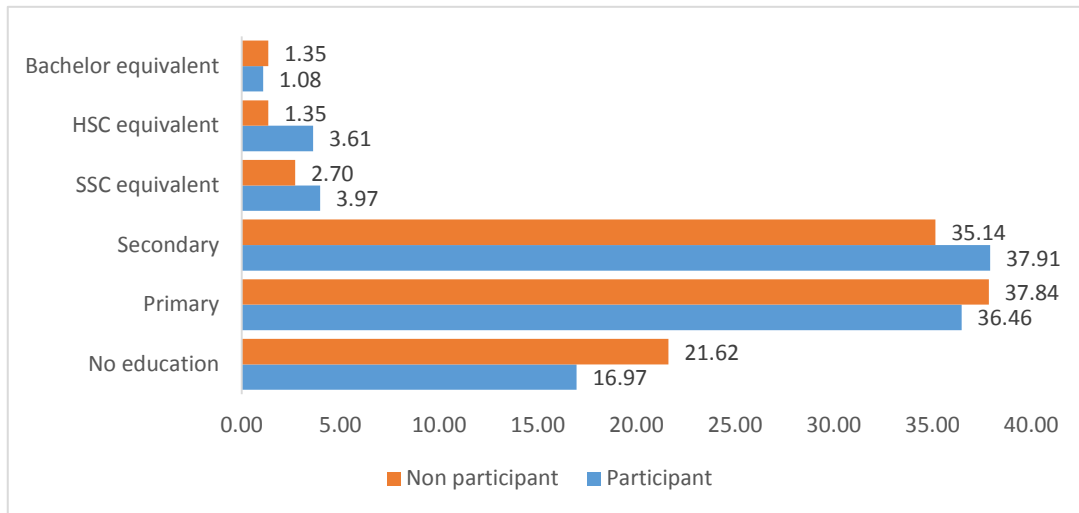


Source: Survey findings



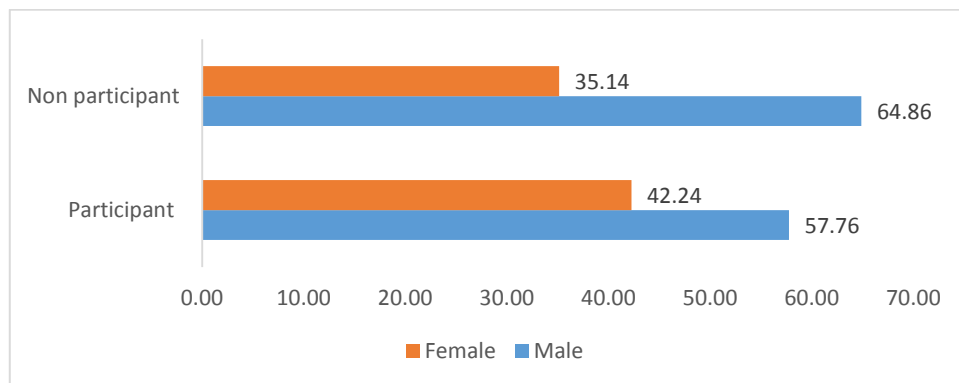


**Figure 7: Distribution of migrants among different education category**



Source: Survey findings

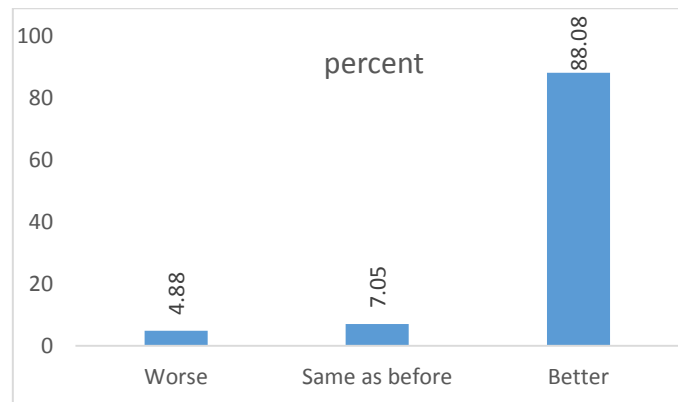
**Figure 8: Distribution of migrants among sexes**



Source: Survey findings

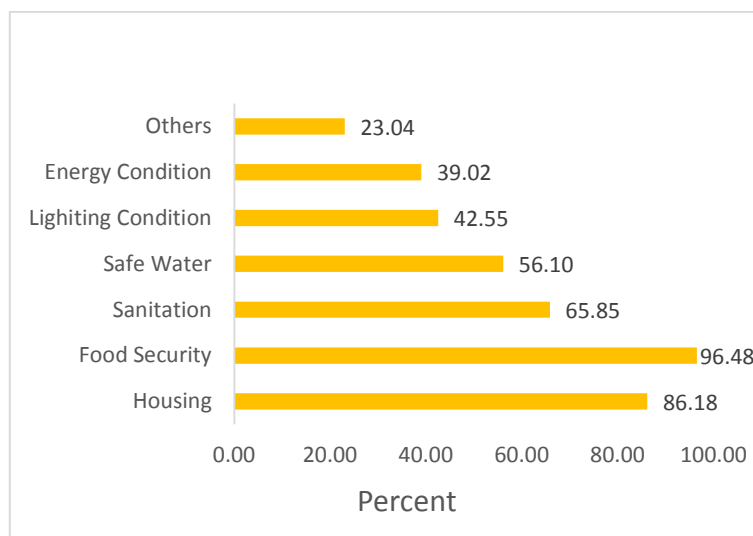


**Figure 9: Reported Standard of living by migrants.**



Source: Survey findings

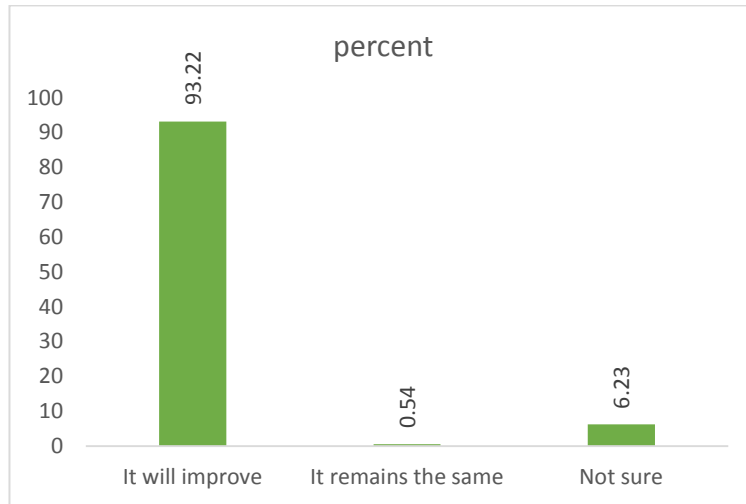
**Figure 10: Sectors of improvement**



Source: Survey findings

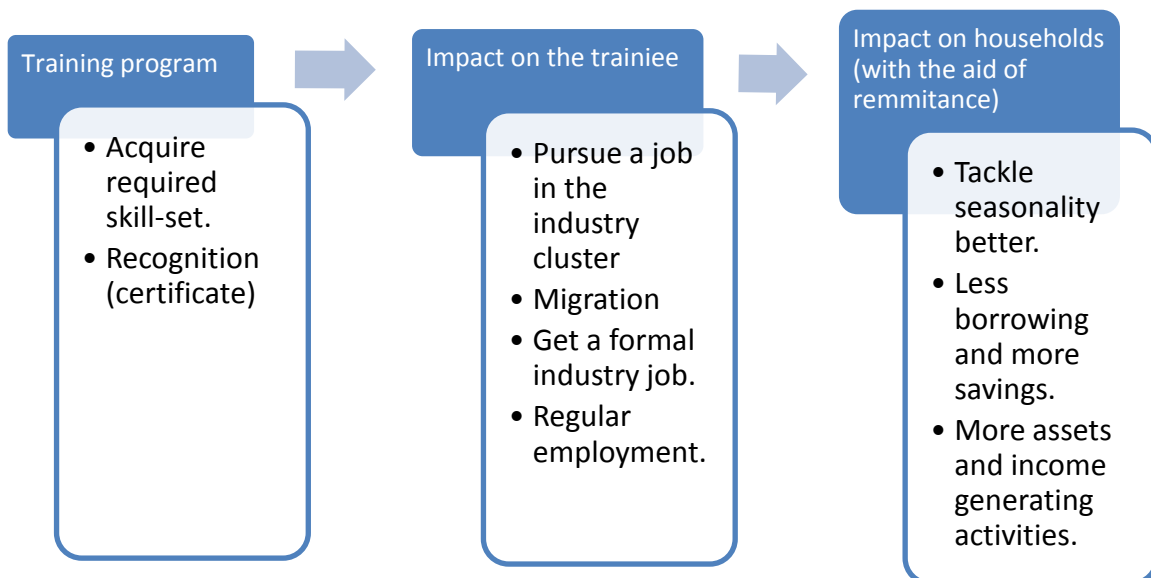


**Figure 11: Perception of Future living standard**



Source: Survey findings

**Figure 12: Action Narrative**





**Table1: Timing of the training program**

Batch No	No of participants	Year
1	38	<b>2011</b>
2	39	
3	35	
4	80	
5	67	
6	48	<b>2012</b>
7	50	
8	66	
9	71	
10	85	
11	47	
12	87	
13	55	
14	89	<b>2013</b>
15	61	
16	90	
17	81	
18	50	
19	21	
Total	1160	



**Table 2: Year-wise Timing of the training program**

Training Offered in 2011

Training Offer Months	Batch No	No of participants
May,2011	1	38
June,2011	2	39
July,2011	3	35
August,2011	4	80
November,2011	5	67
Total Training Uptake in 2011		259
No take-up in 2011		152
Total Program offered in 2011		411

Training Offered in 2012

Training Offer Months	Batch No	No of participants
January,2012	6	48
April,2012	7	50
May,2012	8	66
July,2012	9	71
August,2012	10	85
September,2012	11	47
October,2012	12	87
December,2012	13	55
Total Training Uptake in 2012		509
No take-up in 2012		295
Total Program offered in 2012		804

Training Offered in 2013

Training Offer Months	Batch No	No of participants
January,2013	14	89
February,2013	15	61
March,2013	16	90
April,2013	17	81
May,2013	18	50
July,2013	19	21
Total Training Uptake 2013		392
No take-up in 2013		145
Total Program offered in 2013		537



**Table 3: Average monthly wage of the migrants**

Variable	Obs	Mean	Std. Dev.	Min	Max
Total	403	6881.612	2638.535	0	21500
Participant	322	6893.65	2612.561	0	21500
Non-participant	81	6833.758	2755.584	0	15357.14

Source: Survey findings

**Table 4: Average per capita consumption expenditure (monthly in TAKA) of the household of the migrants and the non-migrants**

	Migrant	Non-migrant
Total	2990.715	1545.121
Participant	3086.662	1545.012
Non-participant	2609.295	1545.383

Source: Survey findings



Table 5: Summary Statistics and Balance Test

	(1)Training = 0	(2)Training = 1	(1) - (2) Mean (SE)	p- value	Significance
Male(d)	0.506 (0.03)	0.528 (0.02)	-0.021 (0.03)	0.464	
Age	23.834 (0.28)	23.546 (0.16)	0.288 (0.32)	0.367	
Age Squared	599.349 (17.24)	582.809 (10.09)	16.54 (19.66)	0.4	
Muslim(d)	0.893 (0.02)	0.925 (0.01)	-0.033 (0.02)	0.043	**
Married(d)	0.519 (0.03)	0.469 (0.02)	0.05 (0.03)	0.087	*
Education: Primary(d)	0.13 (0.02)	0.131 (0.01)	-0.001 (0.02)	0.956	
Education: Secondary(d)	0.09 (0.01)	0.127 (0.01)	-0.037 (0.02)	0.047	**
Education: Tertiary(d)	0.369 (0.02)	0.201 (0.01)	0.168 (0.03)	0	***
Participant is head of the HH(d)	0.197 (0.02)	0.153 (0.01)	0.044 (0.02)	0.042	**
HH head is male(d)	0.88 (0.02)	0.89 (0.01)	-0.009 (0.02)	0.619	
HH head Age	41.808 (0.63)	43.976 (0.40)	-2.168 (0.76)	0.004	***
HH head Age Squared	1906.9 (54.55)	2103.337 (35.14)	-196.437 (66.65)	0.003	***
HH Head Education: primary(d)	0.05 (0.01)	0.044 (0.01)	0.006 (0.01)	0.642	
HH Head Education: secondary	0.057 (0.01)	0.079 (0.01)	-0.022 (0.02)	0.152	
HH Head Education: Tertiary(d)	0.007 (0.00)	0.006 (0.00)	0.002 (0.01)	0.666	
HH Head married(d)	0.89 (0.02)	0.907 (0.01)	-0.017 (0.02)	0.335	
No. of infants in the HH	0.399 (0.03)	0.352 (0.02)	0.047 (0.03)	0.14	
No. of females in the HH	2.037 (0.05)	2.122 (0.03)	-0.085 (0.06)	0.174	
No. of members in the HH	2.98 (0.06)	3.157 (0.04)	-0.177 (0.07)	0.008	***
No. of adults in the HH	3.536 (0.09)	3.449 (0.05)	0.087 (0.10)	0.378	
Observation	401	1086	1487		

Note: "HH" stands for household. (d) stands for dummy variable. Values reported in the parenthesis are the standard errors.





Table 6: Impact of GUK training on employment

Dependent variables	(1)	(2)	(3)	(4)	(5)
	Migrant	Formal Employment	Wage Employment	RMG Employment	Unemployed
Participated in the training	0.387*** (0.137)	0.553*** (0.203)	0.531*** (0.203)	0.154 (0.108)	-0.177 (0.203)
Male(d)	0.084*** (0.022)	0.132*** (0.020)	0.094*** (0.027)	0.002 (0.021)	-0.423*** (0.024)
Age	0.050*** (0.011)	0.050*** (0.017)	0.060*** (0.017)	0.034*** (0.008)	-0.060*** (0.011)
Age Squared	- (0.000)	-0.001*** (0.000)	-0.001*** (0.000)	-0.000*** (0.000)	0.001*** (0.000)
Muslim(d)	0.036 (0.051)	0.057 (0.073)	0.059 (0.074)	-0.003 (0.031)	-0.024 (0.029)
Married(d)	0.138*** (0.033)	-0.210*** (0.031)	-0.226*** (0.033)	-0.111*** (0.020)	0.216*** (0.030)
Education: Primary(d)	-0.035 (0.022)	0.005 (0.022)	0.010 (0.024)	-0.028 (0.022)	-0.017 (0.020)
Education: Secondary(d)	0.090*** (0.021)	0.078** (0.040)	0.084* (0.046)	0.050* (0.027)	0.078*** (0.029)
Education: Tertiary(d)	0.070*** (0.024)	-0.057 (0.049)	-0.041 (0.044)	-0.046** (0.020)	0.118*** (0.041)
Participant is head of the HH(d)	-0.064 (0.047)	-0.060* (0.034)	-0.031 (0.035)	-0.049 (0.040)	-0.281*** (0.043)
HH head is male(d)	0.074** (0.038)	0.082 (0.056)	0.034 (0.047)	0.067 (0.044)	0.001 (0.044)
HH head Age	0.007 (0.007)	0.010* (0.005)	0.008 (0.005)	0.003 (0.004)	-0.009* (0.006)
HH head Age Squared	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)
HH Head Education: primary(d)	0.046 (0.047)	-0.004 (0.040)	-0.005 (0.045)	0.008 (0.046)	0.062 (0.042)
HH Head Education: secondary	-0.001 (0.047)	-0.008 (0.055)	-0.015 (0.045)	-0.003 (0.049)	0.034 (0.054)
HH Head Education: Tertiary(d)	-0.033 (0.088)	-0.115 (0.110)	-0.111 (0.117)	-0.135*** (0.029)	0.183** (0.077)
HH Head married(d)	-0.001 (0.048)	-0.007 (0.069)	0.006 (0.070)	-0.024 (0.050)	-0.042 (0.054)
No. of infants in the HH	0.019 (0.025)	0.070** (0.029)	0.073*** (0.028)	-0.002 (0.018)	-0.003 (0.015)
No. of females in the HH	0.077*** (0.008)	0.091*** (0.019)	0.084*** (0.022)	0.046*** (0.011)	-0.083*** (0.011)
No. of adults in the HH	0.005 (0.015)	0.025 (0.017)	0.034* (0.018)	0.001 (0.011)	-0.029*** (0.010)
No. of members in the HH	0.093*** (0.007)	-0.120*** (0.013)	-0.117*** (0.014)	-0.045*** (0.006)	0.075*** (0.011)
Dummy for Union	Yes	Yes	Yes	Yes	Yes
Observations	1,459	1,459	1,459	1,459	1,459
R-squared	0.042	0.139	0.140	0.105	0.441

Notes: standard errors reported in parentheses are clustered at the Union level.  
Significance code: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$



Table 7: Impact of GUK training on "Monga"

Dependent variables	(1)	(2)	(3)	(4)	(5)	(6)
	Tackle Monga: Advanced sales of labor	Tackle Monga: Borrowing from Friends	Tackle Monga: Borrowing from Loan- sharks	Tackle Monga: Seasonal Migration	Tackle Monga: Pawning	Tackle Monga: Savings
Participated in the training	-0.006 (0.186)	-0.213 (0.197)	-0.531** (0.268)	-0.024 (0.045)	-0.063* (0.034)	0.224* (0.121)
Male(d)	-0.005 (0.027)	0.001 (0.037)	0.015 (0.022)	0.001 (0.002)	0.003 (0.005)	-0.039* (0.021)
Age	0.012 (0.010)	0.031** (0.013)	0.008 (0.014)	0.005* (0.003)	0.002 (0.001)	-0.008 (0.010)
Age Squared	-0.000 (0.000)	-0.000** (0.000)	-0.000 (0.000)	-0.000* (0.000)	-0.000 (0.000)	0.000 (0.000)
Muslim(d)	0.005 (0.089)	-0.013 (0.058)	0.061* (0.035)	0.003 (0.008)	0.005 (0.005)	-0.005 (0.016)
Married(d)	-0.048 (0.031)	-0.055 (0.040)	-0.003 (0.015)	-0.001 (0.005)	-0.004 (0.006)	0.017 (0.014)
Education: Primary(d)	-0.014 (0.047)	-0.100*** (0.028)	-0.026 (0.026)	0.003 (0.007)	0.000 (0.007)	-0.004 (0.014)
Education: Secondary(d)	-0.029 (0.056)	-0.117*** (0.021)	-0.032 (0.023)	-0.010* (0.006)	0.005 (0.004)	-0.011 (0.021)
Education: Tertiary(d)	-0.008 (0.042)	-0.064 (0.065)	-0.086* (0.050)	-0.008 (0.011)	-0.016 (0.011)	0.033* (0.018)
Participant is head of the HH(d)	0.044 (0.042)	-0.034 (0.049)	-0.026 (0.043)	0.021 (0.017)	-0.005 (0.003)	0.022 (0.022)
No. of infants in the HH	0.032 (0.033)	-0.066*** (0.024)	-0.037 (0.023)	-0.005** (0.002)	0.003 (0.004)	0.007 (0.019)
No. of females in the HH	0.014 (0.017)	-0.014 (0.031)	0.007 (0.011)	-0.003 (0.003)	0.001 (0.003)	0.003 (0.008)
No. of adults in the HH	0.010 (0.018)	0.017 (0.028)	0.019 (0.015)	-0.001 (0.001)	0.001 (0.001)	-0.006 (0.011)
No. of members in the HH	0.006 (0.017)	0.024* (0.014)	-0.008 (0.009)	0.000 (0.002)	-0.002 (0.002)	-0.002 (0.009)
Dummy for Union	yes	yes	yes	yes	yes	yes
Observations	1,459	1,459	1,459	1,459	1,459	1,459

Notes: standard errors reported in parentheses are clustered at the Union level. All regression additionally controlled for Head of household characteristics (age, age square, sex, education and marital status)  
Significance code: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$



Table 8: Impact of GUK training on Household Assets

Dependent variables	(1)	(2)	(3)
	HH total land holding (decimal)	HH total non-land asset (taka)	HH asset holding (taka)
Participated in the training	14.198** (6.646)	115,745.100** (46,733.061)	274,389.621** (114,841.791)
Male(d)	0.202 (1.032)	-1,187.259 (5,851.456)	-672.849 (12,672.734)
Age	0.273 (0.415)	247.316 (2,821.677)	403.921 (6,502.015)
Age Squared	-0.004 (0.006)	-10.110 (44.404)	-22.907 (101.540)
Muslim(d)	0.983 (0.965)	7,499.668 (6,625.403)	15,527.015 (15,257.723)
Married(d)	-0.227 (1.017)	8,683.523 (8,001.569)	18,021.678 (18,423.052)
Education: Primary(d)	0.894 (0.691)	7,167.464 (7,259.296)	17,890.186 (16,503.624)
Education: Secondary(d)	1.584 (1.947)	-3,588.270 (5,805.297)	-10,282.027 (13,564.821)
Education: Tertiary(d)	2.899** (1.458)	27,024.576** (12,829.766)	66,700.563** (30,845.132)
Participant is head of the HH(d)	-1.419 (2.238)	583.229 (9,901.690)	2,379.934 (22,794.521)
No. of infants in the HH	0.693 (0.596)	5,435.481 (6,603.498)	12,167.947 (14,778.178)
No. of females in the HH	-0.690 (0.521)	-1,518.975 (3,110.127)	-4,755.822 (7,451.643)
No. of adults in the HH	-0.553 (0.668)	-2,982.507 (2,292.558)	-7,890.770 (5,674.661)
No. of members in the HH	0.966 (0.611)	2,593.202 (2,266.414)	6,599.763 (4,783.314)
Dummy for Union	yes	yes	yes
Observations	1,459	1,459	1,459

Notes: standard errors reported in parentheses are clustered at the Union level. All regression additionally controlled for Head of household characteristics (age, age square, sex, education and marital status)

Significance code: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$



Table 9: Impact of GUK training on Non - Crop Farming

Dependent variables	(1)	(2)	(3)
	No. of Cows	No. of Goats	No. of Chickens
Participated in the training	1.832* (0.954)	0.811 (0.502)	4.914*** (1.044)
Male(d)	0.185** (0.083)	-0.055 (0.088)	0.058 (0.203)
Age	-0.034 (0.049)	-0.001 (0.019)	-0.059 (0.134)
Age Squared	0.000 (0.001)	0.000 (0.000)	0.000 (0.002)
Muslim(d)	-0.031 (0.149)	0.169*** (0.063)	0.359 (0.371)
Married(d)	0.079 (0.088)	-0.122** (0.052)	-0.001 (0.282)
Education: Primary(d)	0.090 (0.120)	0.116 (0.119)	0.244 (0.392)
Education: Secondary(d)	0.177** (0.085)	0.178** (0.072)	0.450* (0.267)
Education: Tertiary(d)	0.332* (0.171)	0.216** (0.109)	1.022*** (0.287)
Participant is head of the HH(d)	-0.008 (0.115)	0.043 (0.122)	0.248 (0.302)
No. of infants in the HH	-0.018 (0.100)	-0.079 (0.059)	-0.124 (0.239)
No. of females in the HH	-0.072 (0.053)	-0.006 (0.048)	-0.151 (0.144)
No. of adults in the HH	-0.000 (0.060)	0.072 (0.045)	0.045 (0.106)
No. of members in the HH	0.126*** (0.025)	0.070* (0.042)	0.357*** (0.057)
Dummy for Union	yes	yes	yes
Observations	1,459	1,459	1,459

Notes: standard errors reported in parentheses are clustered at the Union level. All regression additionally controlled for Head of household characteristics (age, age square, sex, education and marital status)

Significance code: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$



Table 10: Impact of GUK training on Income

Dependent variables	(1)	(2)	(3)	(4)	(5)
	Agricultural income	Wage income	Enterprise income	live-stock income	Remittance income
Participated in the training	2.925 (1.926)	-0.174 (3.644)	0.676 (3.329)	2.569** (1.280)	0.096 (1.440)
Male(d)	0.187 (0.235)	0.304 (0.267)	0.406 (0.324)	0.051 (0.233)	0.025 (0.170)
Age	0.063 (0.109)	0.105 (0.111)	-0.083 (0.125)	0.119 (0.084)	-0.123 (0.091)
Age Squared	-0.001 (0.002)	-0.001 (0.002)	0.001 (0.002)	-0.002 (0.001)	0.002 (0.002)
Muslim(d)	-0.287 (0.341)	1.958*** (0.588)	-1.673** (0.793)	0.316 (0.255)	0.303* (0.157)
Married(d)	-0.108 (0.258)	-0.109 (0.234)	0.082 (0.371)	-0.216 (0.234)	-0.332 (0.234)
Education: Primary(d)	-0.112 (0.239)	0.103 (0.287)	0.338 (0.377)	0.052 (0.454)	-0.056 (0.287)
Education: Secondary(d)	-0.236 (0.214)	-0.005 (0.102)	0.145 (0.267)	0.058 (0.359)	0.457 (0.336)
Education: Tertiary(d)	0.476 (0.368)	-0.509 (0.722)	0.484 (0.607)	0.310 (0.398)	-0.325 (0.323)
Participant is head of the HH(d)	-0.101 (0.515)	-0.431 (0.389)	0.029 (0.425)	-0.222 (0.376)	-0.137 (0.334)
No. of infants in the HH	-0.071 (0.253)	0.171 (0.123)	-0.324 (0.290)	-0.143 (0.223)	-0.102 (0.132)
No. of females in the HH	-0.171 (0.135)	0.262*** (0.091)	-0.076 (0.151)	0.018 (0.111)	0.331*** (0.107)
No. of adults in the HH	0.289 (0.251)	1.159*** (0.133)	-0.470*** (0.116)	-0.001 (0.084)	-0.562*** (0.091)
No. of members in the HH	0.318*** (0.075)	0.787*** (0.081)	0.764*** (0.059)	0.289*** (0.100)	-0.023 (0.059)
Constant	-2.424 (1.891)	7.804*** (2.286)	-0.875 (1.769)	-2.271 (1.639)	-0.498 (2.309)
Dummy for Union	yes	yes	yes	yes	yes
Observations	1,427	1,459	1,457	1,459	1,449

Notes: standard errors reported in parentheses are clustered at the Union level. All regression additionally controlled for Head of household characteristics (age, age square, sex, education and marital status)

Significance code: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$



Appendix

Table 1A: First Stage Regression of 2SLS

Dependent Variable	Coefficient	Std. Err.	t	P>t
Participated in the training				
Male(d)	0.0220602	0.0297784	0.74	0.459
Age	0.0075528	0.0108447	0.7	0.486
Age Squared	-0.0000667	0.000171	-0.39	0.696
Muslim(d)	0.0638658	0.0452407	1.41	0.158
Married(d)	-0.00746	0.0293425	-0.25	0.799
Education: Primary(d)	-0.0404377	0.0354074	-1.14	0.254
Education: Secondary(d)	-0.0039519	0.034499	-0.11	0.909
Education: Tertiary(d)	-0.1848262	0.0310357	-5.96	0
Participant is head of the HH(d)	-0.022545	0.0491581	-0.46	0.647
HH head Male(d)	-0.027716	0.0556079	-0.5	0.618
HH head Age	-0.005803	0.0061413	-0.94	0.345
HH head Age Squared	0.0000799	0.0000616	1.3	0.195
HH Head Education: primary(d)	-0.039827	0.0569708	-0.7	0.485
HH Head Education: secondary	0.0610084	0.0416152	1.47	0.143
HH Head Education: Tertiary(d)	-0.0474711	0.1728938	-0.27	0.784
HH Head married(d)	0.0559844	0.057488	0.97	0.33
No. of infants in the HH	-0.0110384	0.0236687	-0.47	0.641
No. of females in the HH	0.0326385	0.0146073	2.23	0.026
No. of adults in the HH	0.0219914	0.0145637	1.51	0.131
No. of members in the HH	-0.0288274	0.0097644	-2.95	0.003
Distance to the training center	-0.0000435	0.0000108	-4.05	0

Note: Union dummies are omitted for brevity.