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Training the Disadvantaged Youth and Labour Market Outcomes

Evidence from a Randomised Controlled Trial in Bangladesh

Narayan Das

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ABSTRACT

This paper estimates the effects of a youth training programme in Bangladesh on labour market outcomes. The programme provides on-the-job and classroom training to the disadvantaged and unemployed youth. On-the-job training is provided through apprenticeship under a local master crafts person. Classroom training curriculum includes theoretical training on specific trades as well as soft-skills training. The programme is implemented by BRAC, the largest NGO in the world. BRAC's Research and Evaluation Division (BRAC-RED) conducted a Randomised Controlled Trial on the 2016 cohort of the programme. A baseline survey was conducted in June 2016 covering 3,186 youths. In June-July 2017 a follow-up survey was conducted, successfully reaching 2,946 youths. Using the data generated by BRAC-RED, I show that on-the-job training increases labour market participation of the programme participants by 22.6 percentage points (59%), total time devoted to earning activities by 59%, and earnings by 44%. It increases both self- and wage employment. The effect on employment is found to be larger for females. Additional effects of classroom training over on-the-job training on overall employment and earnings are small in magnitude. Results, however, indicate that if classroom training is added to on-the-job training, the effects shift from self- to wage employment. Results also show that employment in firms where the apprenticeship took place is a channel for the effect on wage employment. The benefit-cost ratio for on-the-job training is estimated to be 6.34, demonstrating high returns on the investment made under this initiative. I also show that, at the scale at which the programme was implemented, employment effects for beneficiaries were not achieved through displacement of non-beneficiaries.

Keywords: On-the-job training, Classroom training, Soft skills training, Labour market, Wage employment.

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SECTION ONE

INTRODUCTION

Lack of skills is considered as one of the main determinants of unemployment and poverty. Consequently, the programmes that reduce the cost of education have been key policies for developing countries (Attanasio *et al.* 2011). Despite these policies, school dropout rates in developing countries are very high. In South and West Asia, for example, 27% of adolescents of lower secondary age were out of school in 2007 (UNESCO 2010).[1] The majority of these young school dropouts end up unemployed or in low-quality jobs that offer limited socioeconomic opportunities.[2] Training can be a potential solution to address the problem of rising youth unemployment in developing countries.

A large amount of literature examines the impacts of training programmes (consisting in apprenticeship or classroom vocational training or a combination of both) in developing countries.[3] McKenzie (2017) reviews the results from 12 programme evaluations in eight developing countries.[4] Two of these studies focus on the apprenticeship under a master crafts person and the other 10 on classroom training with/without an internship. He finds that only three studies show a statistically significant impact on employment and two studies on earnings.[5] While the review shows modest effects of training programmes in developing countries, two recent papers that were not covered by McKenzie

[1] Globally, the rate is 18.3%.

[2] In Bangladesh, the context of this study, 10% of youth aged 15-19 years are unemployed (BBS 2017).

[3] Some of these programmes provide internship instead of apprenticeship.

[4] Studies reviewed by McKenzie (2017) include Hirshleifer *et al.* (2016), Alzúa *et al.* (2016), Attanasio *et al.* (2011, 2015), Card *et al.* (2011), Ibarrarán *et al.* (2014), Ibarrarán *et al.* (2015), Maitra and Mani (2016), Honorati (2015), Cho *et al.* (2013), and Diaz and Rosas (2016).

[5] With regard to impact heterogeneity, among the studies reviewed, Attanasio *et al.* (2011, 2015) find significant impacts on employment for women but not for men, but they do not formally test for difference in impact by gender. McKenzie (2017) also show that studies that formally test for equality by gender can either not reject that impacts are similar for men and women, or find significantly higher impacts for men.

(2017) show quite large effects of apprenticeship or classroom training (Alfonsi *et al.* 2017; Hardy and McCasland 2015). Specifically, Alfonsi *et al.* (2017) find that apprenticeship training increases employment by seven percentage points and classroom vocational training by 11 percentage points.[6] Hardy and McCasland (2015) find that each apprentice placement in the small firms in Ghana increases firm size by 0.5 workers after six months.

Acevedo *et al.* (2017) examine whether the higher expectation of training participants is a reason for the mixed results of training programmes. They find that, after training, employment expectation of male participants increases while they learn little from the programme. They eventually end up unemployed, as their expectations are not met by the labour market. For females, on the other hand, they find that training leads to an increase in both their skills and expectations and expectations are met by the labour market. In effect, females experience positive impacts on employment, at least in the short-run. Another reason for training to achieve low results is that labour markets in developing countries, particularly in urban areas, work better; firms are able to fill vacancies quickly, and workers turn down many job opportunities and quit jobs frequently in pursuit of better opportunities (McKenzie 2017). However, studying apprenticeship placement in small firms in Ghana (with placement randomised at the firm level), Hardy and McCasland (2015) find that it significantly increases firms' profit and employment. Their findings are thus unlikely to support the observation by McKenzie (2017) that firms in developing countries are able to fill vacancies quickly.

In general, existing evidence on the effectiveness of training programmes in developing countries is mixed, with large effects documented by Hardy and McCasland (2015) and Alfonsi *et al.* (2017), and modest or no effects documented by the studies reviewed in McKenzie (2017). Furthermore, although training programmes typically combine different skills training (classroom vocational training, soft skills, and apprenticeship), evidence on the additional effect of one component over another is scarce.[7]

In this paper, I study a training programme that provides on-the-job (apprenticeship) and classroom training to the disadvantaged and unemployed/underemployed youth in Bangladesh, a lower-middle-income country with high rate of secondary school dropout and youth unemployment. The programme I study was implemented by BRAC, the largest NGO in the world. On-the-job training is provided through apprenticeship under a local Master Crafts Person (MCP). Classroom training curriculum includes theoretical training on specific trades, and soft skills training such as financial literacy, market assessment,

[6] These are average effects for three post-intervention survey waves conducted 1, 2 and 3 years after training completion. Short run effect (after one year) is similar. They, however, show that the effect of apprenticeship training on treatment individuals is likely to be achieved through displacement of non-participants.

[7] To the best of my knowledge, one study (Acevedo *et al.* 2017) estimates the additional effect of classroom vocational training.

and basic communicative English. The programme also provides post-training support. Once training is completed, programme officers link participants with potential employers for wage employment. Moreover, for those who are keen on self-employment, they offer information, guidance, and technical assistance. Evaluating this programme, I investigate the following research questions: (1) what is the effect of on-the-job training on labour market outcomes (employment and earnings)? and (2) how does this effect vary if classroom training is compounded with on-the-job training (ie, what is the additional effect of classroom training)?

The data used in this study were generated by BRAC's Research and Evaluation Division (henceforth, BRAC-RED). For evaluating the programme, BRAC-RED implemented a randomised controlled trial with the cohort of 2016. At the first stage, it purposefully selected sixty branch offices from the list of offices where the 2016 cohort was targeted.[8] In randomly selected half of these branch offices, only on-the-job training was implemented while in the other half, both on-the-job and classroom training were implemented. From each of the 60 sample branch offices, about 56 eligible youths were randomly chosen, and randomly selected half of them were assigned to the treatment group and the rest to control (ie, no training). BRAC-RED conducted a baseline survey in June 2016 covering 3,186 youths and their families. After the baseline survey, BRAC started training in July 2016, which ended in December 2016. Sixty-one per cent of the youth assigned to the treatment group participated in the programme. Six months after completion of the training phase, BRAC-RED conducted a follow-up survey, successfully reaching 2,946 youths.

I estimate the short-run impacts of the intervention using data on 2,946 youths. Results show that on-the-job training (ie, apprenticeship training) has positive effects on employment and earnings. The magnitudes of the effects are large. Specifically, it increases labour market participation of programme participants by 22.6 percentage points (59%), hours of work by 59%, and earnings by 44% (TOT effects). An additional effect of classroom training is found to be modest. Specifically, the additional effects are statistically insignificant for all outcomes except for hours of work in self-employment and earnings from this employment. Point estimates of the additional effects of the classroom training, however, indicate that if classroom training is added to on-the-job training, the effects shift from self- to wage employment. By examining the heterogeneity of the effects of training with respect to gender, I find that the effect on employment is larger for females, and the difference is statistically significant. With regard to earnings, females also experience larger impacts, but the difference is not statistically significant. Further results show that females experience positive impacts on both wage and self-employment while males only experience positive effects on wage employment. Results also show that the programme is more effective for unmarried females compared to their married counterparts. It is found that

[8] The training programme is implemented through local BRAC office, known as branch office. A branch office typically covers a geographical area of 5-7 km radius.

employment in firms where the apprenticeship took place (ie, in the MCPs' firms) is a key channel for wage employment effect.

Findings also show that the intervention increases welfare substantially. Treatment individuals are more likely to own a cell phone and have more dresses (shirts/pants) and shoes compared to control individuals. They are also likely to report a higher level of psychological well-being. A cost-benefit analysis of on-the-job training component of the programme shows that it is highly cost-effective. Assuming that the life of benefit is 44 years, and that benefits do not change overtime, benefit-cost ratio for on-the-job training is estimated to be 6.34. Using variation across branch offices in the intensity of treatment, I show that, at the scale at which the programme was implemented, employment effects for beneficiaries were not achieved through displacement of non-beneficiaries.

This paper makes a number of contributions to the literature on training programmes. Firstly, it is the first study to estimate the additional impact of classroom training (theoretical and soft skills training) over on-the-job training. To the best of my knowledge, one study (Acevedo *et al.* 2017) estimates the additional effect of classroom training, but it focuses on the vocational (ie, theoretical/hard skills) component of classroom training. Since classroom training accounts for a significant portion of resources under training programmes, the findings of this study regarding this have important implications for policy.

Second, this study contributes to the literature on gender differences in the effects of training programmes (Cho *et al.* 2016; Attanasio *et al.* 2011). As already mentioned, existing evidence on the difference in training impacts by gender is mixed. Hence, this study advances our knowledge by expanding the existing set of results on training and gender.

As already mentioned, the training programme I study in this paper using an experimental design is implemented by BRAC in Bangladesh. Earlier, Bhattacherjee and Kamruzzaman (2016) and Rahman *et al.* (2017) evaluated the pilot of this programme.[9] These studies, however, suffer from methodological shortcomings as they use a non-experimental design where near eligible individuals were compared with programme participants. Further, they do not separate out the effects of different training components of the programme.

The remainder of the paper is organised as follows. After the introduction, section 2 describes the context and the training programme while section 3 formulates testable hypotheses. In section 4, I discuss the evaluation design and the data used in this study while section 5 provides descriptive statistics including the balancing test of randomisation. Section 6 presents the results. Finally, section 7 concludes the paper.

[9] Rahman *et al.* (2017) show that the programme increases employment by about 46 percentage points and income by BDT 1,028.

SECTION TWO

THE CONTEXT AND BRAC'S TRAINING PROGRAMME

2.1 THE CONTEXT

Bangladesh is a lower middle-income country with a population of about 160 million.[10] As of 2010, 31.5% of its population live in poverty (BBS 2012). The Constitution of Bangladesh has guaranteed the rights to primary education for all, and the amount of public investment in education is substantial. About 12.27% of total public expenditures (ie, 2.5% of GDP) is allocated for the education sector, of which almost half is for primary and mass education.[11] Further, several NGOs invest a substantial amount of resources in education for children from poor families.[12] Despite all these initiatives, school dropout rate remains high. According to BANBEIS (2015), school dropout rates at the primary and secondary level are 21% and 43.18%, respectively.

Many school dropout youth or adolescents in Bangladesh end up unemployed. A recent study using data from 35 slums from urban areas shows that 32% of the youth aged 15-19 years are neither enrolled in school nor job market (Chowdhury *et al.* 2017).[13] National level data, on the other hand, show that 9.9% of the youth aged 15-19 years were unemployed in 2015-16 (BBS 2017). The rate is higher among females (11.5%) compared to males (9.3%). Poverty is reported to be a

[10] https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups. Recently, however, the UN has recognised Bangladesh as a developing country (https://bdnews24.com/bangladesh/2018/03/17/bangladesh-eligible-for-un-developing-country-status)

[11] http://www.mof.gov.bd/en/budget/16_17/speech/BS_Bangla_Final_1.6.16.pdf

[12] For example, BRAC provided education to poor children through 20,776 primary schools in 2005 (Nath 2006).

[13] School enrolment rate among the youth aged 15-19 years is found to be 24%.

proximate cause of school dropout in Bangladesh (Sabates *et al.* 2010). Hence, programmes that address youth unemployment are likely to contribute to poverty reduction.

Informal sectors constitute the majority of the job opportunities (around 80%) in Bangladesh (ADB and BBS 2012). Low productivity and abundance of unskilled labour are some of the general characteristics of the informal sector in Bangladesh. Titumir and Hossain (2003) show that the low level of skills is likely to be responsible for low productivity in most sectors of Bangladesh including the informal ones. In the absence of proper training facilities, the majority of the informal sector workers learn specific trades through apprenticeship. However, most apprenticeship arrangements in informal markets are unpaid where the apprentice needs to work fulltime with little or no employment benefit (Maligalig *et al.* 2009).

In Bangladesh, the legal age of marriage is 18 and 21 years for females and males, respectively. However, statistics show that more than half of girls are married off before reaching 18 years (UNICEF 2016). School dropout and unemployment are reported to be the proximate causes of child marriage (Kamal *et al.* 2015). It is thus possible that development programmes that increase the employment of female youth are likely also to reduce child marriage.

2.2 BRAC's TRAINING PROGRAMME

BRAC started a training programme titled 'Skill Training for Advancing Resources (henceforth, STAR)' in 2012. The objective of the programme is to produce a well-trained and empowered manpower among youth and thus enhance employment. The programme targets individuals aged 14-18 years from poor households, who are out of school for at least a year.[14] For disable participants, however, the age range is from 15-21 years.[15] Maximum grade passed by the target group is 8. In addition, per capita, monthly income of their families must be less than BDT 3,000 (ie, USD 1.12 per person per day at nominal exchange rate or USD 3.42 per person per day at 2015 PPP exchange rate).[16] The programme is operated through BRAC field office, known as a branch office. BRAC staffs make door-to-door visits in communities/villages surrounding the branch office to identify eligible individuals. They use a small questionnaire

[14] The pilot cohort targeted individuals aged 13-17 years but since 2014, the programme has been targeting individuals aged 14-18 years. It needs to be mentioned here that as per child labour law in Bangladesh individuals aged 14 years are eligible to work (https://childlabourlawbd.blogspot.com/2017/).

[15] Typically, the programme targets 10% youth with disabilities.

[16] The Bangladesh Bureau of Statistics (BBS) publishes the official poverty estimates for Bangladesh using the Cost of Basic Needs (CBN) methodology. Those that earn BDT 2,587 or less per capita per month (calculated based on information from BBS 2012) are considered as poor, indicating that BRAC targets youth from poor or near poor households.

containing questions on the eligibility criteria. Initially, the programme was developed by BRAC together with ILO and UNICEF in order to support the Bureau of Non-Formal Education (BNFE)'s 2nd phase of the Basic Education for Hard to Reach Urban Working Children (BEHTRUWC) project. The model later continued serving the poor and disadvantaged school dropouts from both rural and urban areas.

Programme participants are provided with both classroom and on-the-job training. The duration of on-the-job training is six months with five days a week. The classroom training, by contrast, is provided for six months with three and a half hours a week. The programme cycle is completed in six months. Classroom training curriculum includes theoretical training on specific trades, and soft-skills training (financial literacy, market assessment and basic communicative English). The theoretical training is provided by trainers from local government and non-government training institutions. A trainee is provided training on a single trade. Typically, the programme provides training on tailoring, fridge/AC repairing, embroidering, electronic device repairing, wooden furniture making, beauty parlour training, and graphics designing. Selection of trade for a participant depends on his/her interest. Once training is completed, BRAC links the participants with potential employers for wage employment. Moreover, for those keen on self-employment, BRAC offers information, guidance and technical assistance.

On-the-job training is provided through apprenticeship under a local Master Crafts Person (MCP). Main characteristics of the MCPs selected by BRAC are as follows: (i) the owner of small firm in the local market;[17] (ii) experienced as a skilled craftsperson in the particular trade at least for five years; (iii) availability of sufficient space in his/her workplace to accommodate apprentice; (iv) previous successful experience in managing apprentices; (v) education level at least grade five; (vi) workplaces is located within the eight km radius of BRAC field office; and (vii) availability of toilet facilities at the workplace. The MCPs are provided orientation on- (i) objectives of the STAR programme; (ii) their responsibility to apprentice; and (iii) decent working environment.

As already mentioned, on-the-job training is provided through placing trainees with local MCPs; hence, the total number of participants targeted from each branch office is contingent upon the number of MCPs available. It also depends on administrative issues like staffing as each field staff has to manage about 50-70 participants. The programme is subsidised. As travel allowance, each trainee is provided with BDT 800 (USD 10) per month. On the other hand, the MCPs are provided with an allowance of BDT 1,000 (USD 12.5) per month for each apprentice placement. For 2016 cohort, total costs per participant were BDT 29,000. I discuss the costs of the programme in detail in section 6.6.

[17] The workers of small firms in the local markets can also serve as MCPs but priority is given to those that are owners of firms.

The pilot phase of the programme was implemented in 2012-2013, covering 1,000 youths from the divisional cities.[18] The programme targeted an equal number of male and female participants during the pilot. In 2016, it targeted 7,500 youths (60% females) from both urban (including both district and divisional cities) and rural areas. Around 10% of the participants were youth with disabilities (mild to moderate disability).

[18] There are seven administrative divisions in Bangladesh.

SECTION THREE

TESTABLE HYPOTHESES

There are several channels through which training may affect employability and earnings. According to Krueger and Lindahl (2001) investment in human capital can be the key to macroeconomic growth. Human capital, in the form of observable skills associated with investments in education and training, can raise productivity, wage and employability (Card 1999). Since apprenticeship training imparts practical skills, it may increase trainees' human capital and productivity. Similarly, classroom training that provides theoretical training on specific trade may impart technical skills, thereby increasing earnings and employment.

Training under MCPs' mentorship allows the participants to reveal their "type" (effort, skills and talents) to potential employers, thereby increasing employment. MCPs may have vacant positions in their firms because study shows that there are substantial labour market frictions in developing countries (Hardy and McCasland 2015). Therefore, it is expected that apprenticeship training would increase employment by filling vacant positions (if any) in MCPs' firms.

Theoretically, workers that are well connected are likely to fare better than those that are poorly connected (Montgomery 1991). Working directly with MCPs, the participants are able to connect not only to one potential employer but also to the network of employers through recommendations (Owolabi and Pal 2011). Hence, they are likely to have a strong network with employees and employers, which may eventually help them to enter job markets. Network coupled with technical and practical skills may also increase employment through migration because the literature shows that skilled workers are more likely to migrate (Chiquiar and Hanson 2005).[19] Similarly, those with strong community networks are more likely to migrate (Munshi 2003).

[19] Chiquiar and Hanson (2005) show that among men, those with intermediate levels of skill migrate most, and among women, on the other hand, those with the highest levels of skill migrate most.

Training may also impart general skills on how to start and operate a business, which could spur entrepreneurship (Cho *et al.* 2016). Hence, training could also increase self-employment.

To summarise:

- Apprenticeship training may increase employment and earnings.
- An additional effect of classroom training may be positive
- Employment in MCPs' firms and migration can be possible channels for employment effects.

SECTION FOUR

EVALUATION DESIGN AND DATA

This study is based on the data generated by BRAC-RED,[20] a multi-disciplinary independent research unit within the framework of BRAC. BRAC-RED plays an integral role in designing BRAC's development interventions, monitoring progress, documenting achievements, and undertaking impact assessment studies. For the impact evaluation of the STAR programme, it conducted a baseline survey in June 2016. The sample individuals were followed-up in June-July 2017, generating panel data on 2,946 youths.

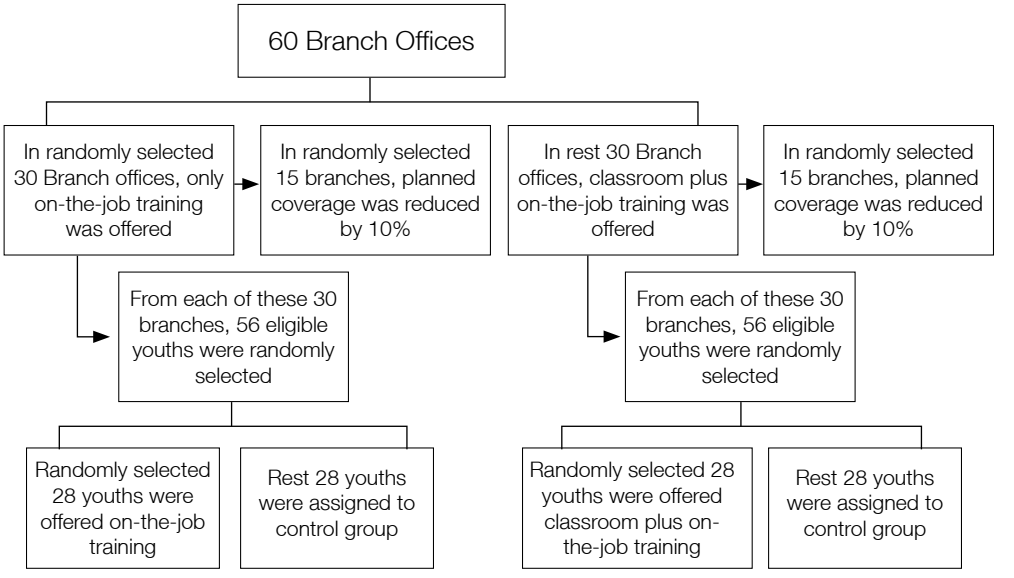
4.1 EVALUATION DESIGN

To evaluate the STAR programme, BRAC-RED adopted a Randomised Controlled Trial (RCT) design for the cohort of 2016. For implementing the 2016 cohort of the programme, BRAC selected 120 branch offices. For each branch office, a tentative target of beneficiaries was set based on MCPs availability in that particular area, and administrative issues, as discussed earlier. In some of these branch offices, the programme was also implemented before 2016. BRAC-RED restricted study sample to 60 branch offices where the programme was not implemented before 2016 or if any, the intensity of coverage in an earlier year(s) was relatively low. These 60 branch offices are located in 34 districts (there are 64 districts in Bangladesh). Randomisation of the intervention then proceeded as follows (Figure 4.1 shows each step of the randomisation):

1. Randomly selected half of the 60 branch offices were assigned to on-the-job training only (treatment arm 1) and the other half to the combined classroom and on-the-job training (treatment arm 2).

[20] Details about BRAC-RED can be found at- http://research.brac.net/new/about/whoweare.

Figure 4.1 Steps of randomisation of BRAC Training Programme



2. In randomly selected half of the 30 branch offices assigned to treatment arm 1, programme's planned target was reduced by 10%. The same sampling strategy was followed for the branch offices assigned to treatment arm 2. The random variation (10%) in programme target was made to examine the displacement effect of the intervention.[21]

3. For each of the 30 branch offices assigned to treatment arm 1, about 56 eligible youths were randomly chosen from the list of youth selected by the programme, and randomly selected half of them were assigned to treatment (on-the-job training only) and the rest to control.[22] In other words, although 30 branch offices were assigned to treatment arm 1 (on-the-job training), within each of these branch offices, 50% of the sample eligible youth were assigned to this treatment and the rest to control group (ie, no support).

[21] This small variation, however, may not give enough statistical power to detect the displacement effect of the intervention, if any. After this 10% random variation, the number of target per branch office on average was 76 with a minimum (maximum) of 56 participants (131 participants).

[22] Originally, BRAC-RED planned to select 56 youths per branch office (ie, 3,360 youths from 60 branch offices). Some youth, however, declined to participate in the survey or were absent during household visit. It could not replace all the non-responses by other eligible youth from respective branch offices, because there were not additional selected youth in some branch offices. Hence, in some branches, based on the availability, more than 56 youths were surveyed, while in others 56 or fewer youths were surveyed. Appropriate sampling weight was assigned for data analysis. Neither the programme staff (ie, those who implemented the intervention at the field level) nor the selected youth were informed about who is in the treatment or control group until completion of the baseline survey.

Similarly, for each of the 30 branch offices assigned to treatment arm 2, about 56 eligible youths were randomly chosen, and randomly selected half of them were assigned to treatment (combined on-the-job and classroom training) and the rest to control group.

The sample was not stratified by gender. However, as the programme targeted 60% female participants, it was expected that close to half the sample youth would be males.

4.2 DATA

A baseline survey was conducted in June 2016. The survey attempted to visit 3,360 youths, but it could successfully interview 3,186. The baseline survey collected information on the demographic characteristics of the sample eligible youth and their household members. It also collected information on the employment status and earnings of the sample youth as well as other household members aged six years or above for the last one-year of the survey. In addition, it collected information on savings, credit, drug abuse, reverse digit test score, personality test, empowerment and confidence level (household decision-making) of the youth. At the household level, information on asset holdings (productive and durable assets), and food and non-food expenditures was collected.

BRAC-RED conducted a follow-up survey in June-July 2017, about six months after completion of the training. The follow-up survey attempted to visit all the youth covered by the baseline survey.

The follow-up survey asked all the questions contained in the baseline survey. In addition, it collected information on the migration history of the sample eligible youth and other adult members of their households. Employment module for the eligible youth collected detailed information on employment and earnings. It collected detailed information on employment, time devoted to each activity, and earnings for the last one month of the survey. The survey also collected information on employment status in each month from January-June 2017. These data allow me to analyse the effect of the intervention on employment dynamics.

If any sample youth was not available at home during a household visit for the follow-up survey, survey enumerators were instructed to interview them through phone calls. Among the 3,186 eligible youths covered by the baseline survey, 2,946 were successfully interviewed by the follow-up survey. Of these 2,946 youths, 2,100 were interviewed in person and the rest (846 youths) through phone calls. Those that were interviewed through phone calls were asked a limited set of questions (labour market participation, earnings, migration, savings and credit) to shorten the duration of the phone call.

Information reported in appendix Table A1 shows that, of the 2,946 eligible youth covered by the follow-up survey, 1,745 (59%) are females, which is consistent with the fact that in 2016 the programme targeted 60% female participants. The overall attrition rate in the follow-up survey was 7.5% (7.04% for treatment and 8.01% for control group). The attrition rate in my sample seems to be lower compared to most of the existing studies on training programmes.[23] In Table A2, I test whether attrition rates are different between the treatment and control groups. I also test whether baseline characteristics are correlated with attrition. Results show that attrition rates do not differ between the treatment and control groups (column 1). Similarly, none of the baseline characteristics reported in Table A2 is correlated with attrition (column 2). Results also show that there is no differential attrition by these baseline characteristics between treatment and control individuals (column 3).

Table A3 reports programme participation rate of the treatment group. Overall, 61% of those assigned to the treatment participated in the programme. The participation rate in on-the-job training was higher than that of combined classroom and on-the-job training. Gender disaggregated analysis shows that males were less likely to participate in the training, particularly in the combined classroom and on-the-job training. These statistics are likely to indicate that males are less interested in classroom training. Further analysis (not shown in Table) shows that among those that participated in the programme, 87% completed the training course (85% for males and 89% for females). These findings contrast with findings by Cho *et al.* (2016) who show that females are more irregular in attending training programme. Among those that did not complete the training, 65% attended for at least one month. For estimating the effect of the intervention, I consider these individuals as participants as they might still be affected by the intervention.

4.3 MCP SURVEY

In addition to the surveys on youth and their families, BRAC-RED conducted a baseline survey on MCPs. The purpose of this survey was to assess whether placement of trainees with MCPs affects the firm level outcomes: employment, profits, revenue, sales and business size. In other words, the purpose of the MCP survey was to investigate whether the firms to which apprentices were placed are labour constrained. The survey covered two groups of MCPs: MCPs to whom apprentices were placed by BRAC (henceforth, participant MCPs), and MCPs to whom no apprentice was placed by BRAC (henceforth, non-participant MCPs). The non-participant MCPs are those that were operating similar enterprises in the same market as the participant MCPs but their firms were not placed

[23] McKenzie (2017) reviewing 12 evaluations on training programmes in developing countries shows that attrition rate is 18% or higher for all except one study.

any trainee by BRAC. The MCP baseline survey was conducted in the same branch offices where the youth baseline survey took place. From each of the 60 sample branch offices, five participant MCPs and another five non-participant MCPs were randomly selected for the baseline survey. The survey, however, successfully visited 586 MCPs of whom 295 were participant MCPs, and the rest 291 were non-participants. The survey collected detailed information on sales, profits, capital stock, and investments. It also collected information on the number of employees, working environment and safety measures of the firms. In addition, it collected information on the demographic characteristics and work experience of the MCPs. I use these data to characterise the MCPs.

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SECTION FIVE

DESCRIPTIVE STATISTICS AND BALANCING TEST

This study is based on data on 2,946 youths. Table 5.1 presents the gender disaggregated baseline characteristics of the youth and their households. At baseline, the average age of male youth was 16.2 years against 16.9 for females. Information also shows that 29% and 19% of male and female youth respectively were employed at baseline. Further analysis (not shown in Table), however, shows that 89% of the employed males devoted less than an hour per day to earning activities. For females, the proportion is 99%. At the national level, unemployment rate among comparable age group (15-19 years) is 9.9% (BBS 2017). These statistics indicate that the programme was successful in targeting the unemployed or under-employed youth. Twenty-one per cent of the sample female youth were married at baseline. For males, by contrast, the rate is only 2%. Further analysis (not shown in Table) shows that about 84% of the married females were married off before reaching 18 years, indicating considerable child marriage among the sample females.[24] The households of the sample male youth on average owned 18 decimals of land, 0.51 cows, and 0.42 goats; for females, corresponding figures are 15, 0.40, and 0.40, respectively.[25] Landholding is a strong correlate of poverty in Bangladesh, particularly for rural households (World Bank 2013). These statistics thus indicate that the targeted youth were from asset poor households. The heads of the sample youth' households have little education (on average 2.11 and 2.25 years for males and females, respectively). Statistics also show that 90% of the sample youth were out of school at baseline. By and large, statistics reported in Table 5.1 indicate that the programme successfully targeted the disadvantaged youth population.

[24] Among the sample females aged 18 years or above, child marriage rate is 37%.

[25] In Bangladesh, households owning less than 50 decimals of lands (0.20 hectares) are considered to be functionally landless (Scott and Islam 2008).

Table 5.1 Baseline characteristics of sample youth

Characteristics	(1)	(2)
	Males	Females
Owed land (decimals)	17.90	14.54
No. of cows owned	0.51	0.40
No. of goats owned	0.42	0.40
Household head's education (years)	2.11	2.25
Household head's gender (male=1; female=0)	0.88	0.87
Household head's age (years)	47.23	47.24
Youth is married (yes=1, no=0)	0.02	0.21
Youth is enrolled in school (yes=1, no=0)	0.10	0.10
Youth's education (years)	4.99	5.72
Youth's age (years)	16.18	16.94
Youth is employed (yes=1, no=0)	0.29	0.19
Youth's hours of work per day (unconditional)	0.21	0.04
Youth's earnings (BDT/month)	128.70	13.65
N	1,201	1,745

Note: asset ownership reported in rows 1 through 3 is at the household level.

Table 5.2 reports the results from balancing test of the randomisation. The analysis does not distinguish between males and females because the randomisation was not stratified by gender. The table presents the results of a regression of the dependent variable listed in the first column on an indicator variable for on-the-job training (1 if assigned to on-the-job training and zero if otherwise), an indicator variable for both types of training (1 if assigned to combined on-the-job and classroom training and zero if otherwise) and branch fixed effects. Results reported in column 2 of Table 5.2 show that, among the 12 variables reported, two (education and gender) show statistically significant differences between the treatment and control samples for areas where on-the-job training was offered. Similarly, for branch offices where combined on-the-job and classroom training was offered, two variables (education and age) show statistically significant differences between the treatment and control groups (column 4). Overall, the results in Table 5.2 are likely to indicate some minor imbalances in the treatment and control samples, but it could be that these differences are due to chance. Nonetheless, I control for these baseline imbalances for estimating the effect of the intervention.

Table 5.2 Balancing test of randomisation

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Baseline characteristics	Assigned to on-the-job training (yes=1, no=0)	p-value	Assigned to combined on-the-job and classroom training (yes=1, no=0)	p-value	Constant	N	Branch fixed effects	R-sq
Owned land (decimal)	-2.109 (2.508)	0.40	0.793 (1.583)	0.616	15.14*** (3.929)	2946	Yes	0.096
No. of cows owned	0.0196 (0.0531)	0.713	-0.0447 (0.0626)	0.475	0.586*** (0.170)	2946	Yes	0.057
Household head's education (years)	0.0123 (0.176)	0.944	0.165 (0.176)	0.34	1.037** (0.426)	2946	Yes	0.059
Household head's age (years)	-0.376 (0.573)	0.511	-0.271 (0.648)	0.67	50.14*** (1.381)	2946	Yes	0.044
Youth has savings (yes=1, no=0)	0.0124 (0.0121)	0.304	0.0127 (0.013)	0.328	0.0245 (0.0312)	2946	Yes	0.031
Youth is married (yes=1, no=0)	0.00169 (0.0166)	0.919	0.00656 (0.0207)	0.751	0.278*** (0.0813)	2946	Yes	0.063
Youth's education (years)	-0.309** (0.142)	0.029	-0.358** (0.149)	0.016	4.628*** (0.359)	2946	Yes	0.108
Youth's age (years)	-0.155 (0.134)	0.246	-0.260** (0.131)	0.048	16.79*** (0.337)	2946	Yes	0.078
Youth's gender (male=1, female=0)	0.0551** (0.0262)	0.035	-0.0175 (0.0285)	0.539	0.322*** (0.0842)	2946	Yes	0.05
Youth is employed ((yes=1, no=0)	-0.0193 (0.02)	0.334	-0.0325 (0.0212)	0.126	0.0798* (0.0447)	2946	Yes	0.262
Youth's hours of work (per day)	-0.0355 (0.0218)	0.104	-0.0195 (0.0219)	0.374	0.0358 (0.026)	2946	Yes	0.09
Youth's earnings (BDT, per month)	12.09 (24.09)	0.619	-20.06 (13.53)	0.162	19.16* (9.87)	2946	Yes	0.043

* p<0.10, ** p<0.05, *** p<0.01

Table 5.3 reports trends in employment and earnings during baseline and follow-up. Note that not all those that were assigned to the intervention participated in the programme. Hence, I have reported the information separately for treatment, participant and control groups. The statistics show that employment rate among control females remained almost the same in the baseline and follow-up whereas the programme participant females saw 32 percentage points increase in employment. Similarly, the programme participant females experienced a larger increase in earnings. Among control group males, employment rate increased dramatically during baseline and follow-up, showing a 37 percentage points increase. For participant males, on the other hand, it increased by 50 percentage points.

Table 5.3 Trends in employment and earnings of surveyed youth

	Control		Treatment		Participants	
	Baseline	Follow-up	Baseline	Follow-up	Baseline	Follow-up
Panel A: Males						
Employment (%)	29.8	66.3	30.0	71.0	25.7	75.4
Earnings (BDT/month)	130	3296	128	3389	91	3610
Panel B: Females						
Employment (%)	22.3	22.7	18.8	40.7	18.8	50.6
Earnings (BDT/month)	16	730	11	1141	9	1331

Table 5.4 reports statistics on some socioeconomic characteristics of the surveyed MCPs. As can be seen, the MCPs operated small firms, with average firm employing about 2.1 workers. Mean amount of capital of the firms is BDT 243,032 (USD 3,037). The level of education of the MCPs is 8 years on average.

Table 5.4 Characteristics of MCPs

Variable	Mean
Total business capital (BDT)	243,032
Firm's space (square feet)	218.2
Education (years)	7.9
Age (years)	34.1
No. of rooms used by the firm	1.2
Employees (male)	0.4
Employees (female)	1.7
Total employees	2.1
No. of observations	586

SECTION SIX

RESULTS AND DISCUSSION

6.1 MAIN RESULTS

In this section, I estimate the effects of the intervention on labour market outcomes. The key outcome variables of interest for this study are employment, hours of work and earnings. The analysis distinguishes between self- and wage employment. First, I estimate intention-to-treat (ITT) effects by comparing the outcomes for individuals randomly assigned to the treatment and control groups disregarding their compliance with the treatment status. I use the sample of individuals who responded to both baselines and follow-up surveys. Using follow-up survey data, I simply run OLS regression of outcome on treatment indicators. Branch fixed effects are included as the randomisation was stratified at the branch level. I also include baseline characteristics to control for minor imbalances in the randomisation. The inclusion of these controls is likely to gain precision in the estimates (Duflo *et al.* 2008). Specifically, I estimate the following equation:

$$y_{ib} = \alpha_1 + \alpha_2 JTraining_{ib} + \alpha_3 BTraining_{ib} + X_{ib}\omega + \eta_b + \vartheta_{ib} \quad \text{.....(1)}$$

Where y_{ib} is the outcome variable of interest for individual *i* from branch office *b*; $JTraining_{ib}$ is an indicator variable taking the value of 1 if individual *i* is assigned to on-the-job training and 0 if otherwise; $BTraining_{ib}$ is an indicator variable taking the value of 1 if individual *i* is assigned to both types of training (on-the-job plus classroom training) and 0 if otherwise; X_{ib} is a set of youth's baseline characteristics (marital status, age, gender, education, employment status, time devoted to earning activity and earnings); η_b are branch office fixed effects; and ϑ_{ib} is an error term. α_2 and α_3 are the ITT effects of on-the-job, and combined classroom and on-the-job training, respectively. $(\alpha_3 - \alpha_2)$ is the additional effect of classroom training.

I also estimate TOT effects using an instrumental variable (IV) approach. The second stage equation for IV is as follows:

$$y_{ib} = \beta_1 + \beta_2 PJTraining_{ib} + \beta_3 PBTraining_{ib} + X_{ib}\pi + \tau_b + v_{ib} \text{ .....(2)}$$

Where $PJTraining_{ib}$ takes the value of 1 if individual *i* has participated in on-the-job training and 0 if otherwise; $PBTraining_{ib}$ takes the value of 1 if individual *i* has participated in both classroom and on-the-job training and 0 if otherwise; τ_b are branch office fixed effects and v_{ib} is an error term. Other variables are as defined earlier.

$PJTraining_{ib}$ and $PBTraining_{ib}$ in equation (2) are endogenous because not all those assigned to treatment participated. Hence, they are instrumented on $JTraining_{ib}$ and $BTraining_{ib}$. The first stage equations are as follows:

$$PJTraining_{ib} = \theta_1 + \theta_2 JTraining_{ib} + \theta_3 BTraining_{ib} + X_{ib}\rho + \varsigma_b + \varpi_{ib} \text{ ....(3)}$$

$$PBTraining_{ib} = \gamma_1 + \gamma_2 JTraining_{ib} + \gamma_3 BTraining_{ib} + X_{ib}\sigma + \iota_b + \mu_{ib} \text{ .....(4)}$$

where ϖ_{ib} and μ_{ib} are error terms, and ς_b and ι_b are branch office fixed effects.

Table 6.1 reports the regression results of estimating equations (1)-(2). Panel A presents ITT effects while panel B reports TOT (treatment on the treated) effects. The first stage results are presented in appendix Table A4. Columns 1-6 of Table 6.1 report the effects on employability, columns 7-12 on hours of work (per day) and columns 13-18 on earnings. Earnings information was collected for the last month of the survey. I report monthly earnings in Bangladeshi currency (BDT).[26] The odd-numbered columns of Table 6.1 report regression results without controlling for baseline characteristics while the even-numbered columns report those with controlling for baseline characteristics. The first and second rows of panel A report the estimates of α_2 and α_3, respectively while the third row presents the estimate of $(\alpha_3 - \alpha_2)$. The first and second rows of panel B, on the other hand, report the estimates of β_2 and β_3, respectively while the third row presents the estimate of $(\beta_3 - \beta_2)$.

Results show that treatment effects are generally robust after controlling for baseline characteristics except for some minor changes in the point estimates of the effects. For instance, it is seen that with baseline controls the additional effect (ITT effect) of classroom training on time devoted to self-employment is 0.22 hours decrease (not significant) while without controls the corresponding effect is 0.26 hours decrease (significant at the 10% level) (columns 7 and 8 of panel A of Table 6.1). Nevertheless, in what follows the discussion mainly focuses on the results without baseline controls.

[26] Exchange of rate of USD in terms of BDT is roughly 80.

Table 6.1 Effects of on-the-job vs combined classroom and on-the-job training

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Self-employed (yes=1, no=0)		Wage employed (yes=1, no=0)		Employed (yes=1, no=0)		Hours of work (per day) in self-employment		Hours of work (per day) in wage employment	
Panel A: ITT Effects										
Effect of on-the-job training	0.0525*** (0.0200)	0.0563*** (0.0198)	0.0951*** (0.0242)	0.0746*** (0.0223)	0.140*** (0.0260)	0.124*** (0.0237)	0.242** (0.109)	0.235** (0.108)	0.636*** (0.185)	0.470*** (0.171)
Effect of combined classroom and on-the job training	0.0233 (0.0186)	0.0312* (0.0182)	0.112*** (0.0276)	0.116*** (0.0256)	0.131*** (0.0288)	0.143*** (0.0269)	-0.0179 (0.0838)	0.0180 (0.0829)	0.636*** (0.220)	0.650*** (0.204)
Additional effect of classroom training	-0.0292 (0.0272)	-0.0251 (0.0268)	0.0173 (0.0367)	0.0414 (0.0338)	-0.009 (0.0388)	0.018 (0.0357)	-0.2590* (0.1378)	-0.2167 (0.1353)	0.0006 (0.2873)	0.1804 (0.2663)
R-squared	0.097	0.120	0.063	0.210	0.089	0.229	0.050	0.073	0.058	0.193
Panel B: TOT Effects										
Effect of on-the-job training	0.0846*** (0.0319)	0.0906*** (0.0315)	0.153*** (0.0383)	0.120*** (0.0352)	0.226*** (0.0410)	0.200*** (0.0372)	0.389** (0.175)	0.378** (0.173)	1.024*** (0.293)	0.755*** (0.271)
Effect of combined classroom and on-the job training	0.0381 (0.0301)	0.0513* (0.0295)	0.183*** (0.0437)	0.190*** (0.0403)	0.214*** (0.0461)	0.234*** (0.0427)	-0.0293 (0.135)	0.0304 (0.134)	1.038*** (0.349)	1.066*** (0.323)
Additional effect of classroom training	-0.0465 (0.0438)	-0.0393 (0.0429)	0.0301 (0.0581)	0.0701 (0.0532)	-0.0118 (0.0616)	0.0336 (0.0565)	-0.4183* (0.2208)	-0.3472 (0.216)	0.0142 (0.456)	0.3105 (0.4213)
R-squared	0.097	0.120	0.078	0.229	0.105	0.251	0.049	0.074	0.073	0.210
Observations	2946	2946	2946	2946	2946	2946	2946	2946	2946	2946
Branch fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Baseline characteristics	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Control group mean at follow up	0.13	0.13	0.26	0.26	0.38	0.38	0.5	0.5	1.87	1.87

Standard errors in parentheses. Baseline characteristics include marital status, age, gender, education, employment status, time devoted toearning activity, and earnings.

* p<0.10, ** p<0.05, *** p<0.01

[Table 6.1 contd...]

[...Table 6.1 contd]

	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
	Total hours of work (per day)		Earnings from self-employment (BDT/month)		Earnings from wage employment (BDT/month)		Total earnings (BDT/month)	
Panel A: ITT Effects								
Effect of on-the-job training	0.878*** (0.197)	0.704*** (0.177)	126.4 (102.4)	118.0 (102.4)	360.7** (151.2)	260.3* (139.4)	487.1*** (169.8)	378.3** (153.7)
Effect of combined classroom and on-the job training	0.619*** (0.221)	0.668*** (0.203)	-124.8 (86.07)	-82.93 (82.18)	212.3 (203.2)	264.9 (186.7)	87.54 (212.7)	182.0 (190.7)
Additional effect of classroom training	-0.2589 (0.2964)	-0.0362 (0.269)	-251.2* (133.7)	-200.98 (128.99)	-148.35 (253.24)	4.6242 (232.93)	-399.59 (272.17)	-196.35 (244.18)
R-squared	0.061	0.222	0.038	0.076	0.045	0.175	0.052	0.220
Panel B: TOT Effects								
Effect of on-the-job training	1.413*** (0.311)	1.133*** (0.279)	203.6 (163.1)	190.0 (162.8)	580.8** (240.3)	418.7* (221.1)	784.4*** (269.6)	608.7** (243.5)
Effect of combined classroom and on-the job training	1.009*** (0.353)	1.097*** (0.323)	-203.6 (138.9)	-135.2 (133.0)	346.3 (326.9)	434.6 (300.2)	142.8 (342.9)	299.4 (307.2)
Additional effect of classroom training	-0.4041 (0.4706)	-0.0366 (0.4256)	-407.1* (214.19)	-325.23 (206.14)	-234.47 (405.74)	15.954 (372.47)	-641.6 (436.23)	-309.28 (390.38)
R-squared	0.077	0.242	0.038	0.076	0.047	0.180	0.054	0.225
Observations	2946	2946	2946	2946	2946	2946	2946	2946
Branch fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Baseline characteristics	No	Yes	No	Yes	No	Yes	No	Yes
Control group mean at follow up	2.37	2.37	416	416	1369	1369	1786	1786

Standard errors in parentheses. Baseline characteristics include marital status, age, gender, education, employment status, time devoted to earning activity, and earnings.

* p<0.10, ** p<0.05, *** p<0.01

ITT estimates show that on-the-job training increases employment by 14 percentage points (column 5 of Table 6.1). The effect of this training on wage employment (9.5 percentage points increase) is larger than that of self-employment (5.3 percentage points increase) (columns 1 and 3 of panel A). Results reported in columns 7 and 9 show that on-the-job training also increases hours of work in both self- and wage employment. However, the magnitude of the effect on hours of work in wage employment is larger than that of self-employment. Results reported in column 17 of panel A of Table 6.1 show that the ITT effect of on-the-job training on total earnings (BDT/month) is positive and statistically significant. Similarly, the effect on earnings from wage employment is positive (statistically significant at the 5% level) (column 15). However, the effect on earnings from self-employment is not statistically significant though point estimate is positive (column 13 of panel A).

Results reported in the second row of panel A (Table 6.1) show that the ITT effect of combined classroom and on-the-job training is positive for both wage and self-employment but the effect for the latter outcome is not statistically significant (columns 1 and 3). Similarly, the result of the hours of work in wage employment is positive and statistically significant (column 9 of panel A). The impact of the combined classroom and on-the-job training on total earnings is also positive, but it is statistically insignificant (column 17 of A). In the 3rd row of panel A, I show the additional effect of classroom training. As can be seen, the additional effect of classroom training is statistically significant (at the 10% level) only for time devoted to self-employment and earnings from this employment (columns 7 and 13 of panel A). These effects are negative. Additional effects of classroom training on wage employment and time devoted to this employment are positive, but they are statistically insignificant. Taken together, results are likely to indicate that the additional effect of classroom training on employment is little, but there is some weak evidence that when classroom training is compounded with on-the-job training, the effects shift from self- to wage employment. This may be due to the fact that training that combines theoretical learning and apprenticeship is more likely to improve participants' technical skills compared to training provided through apprenticeship only. The former thus increases the chance of wage employment. Therefore, among individuals who have the option to choose wage employment, some may engage in wage work leaving self-employment because of the risks associated with self-employment.[27]

Looking at the results presented in panel B of Table 6.1, it can be seen that the TOT effects are larger than the ITT effects for all the outcomes reported. This is expected because not all those assigned to the treatment participated. Comparing the TOT effects of on-the-job and both types of training, it is found that the difference in impacts between the two types of treatments is statistically

[27] Studies show that self-employment is risker than wage employment (Knight 1921 as cited in Parker 1997), and that the least risk averse chooses self-employment over paid employment (Kihlstrom and Laffont 1979).

insignificant for all the outcomes expect for time devoted to self-employment and earnings from this employment. Nonetheless, the TOT estimates for on-the-job training show that it increases employability by 22.6 percentage points (59% increase relative to control group mean), hours of work per day by 1.41 (59% increase relative to control mean) and total earnings by BDT 784 (44% increase relative to control group mean), indicating large positive effects of on-the-job training (columns 5, 11 and 17 of Table 6.1).

Table 6.1 presents results suggesting large effects of the training programme on employment and earnings. A natural question is whether the programme increases employment and earnings of those that were employed at baseline or of those that were unemployed or of both groups. To examine this, in Table 6.2, I report the impacts of the programme on employability, hours of work and earnings at the intensive and extensive margins. The intensive margin is characterised by individuals that were employed (or under-employed) at baseline. The extensive margin, by contrast, is characterised by individuals that were unemployed at baseline. For estimating ITT effects, I use a slightly different version of equation (1); instead of two treatment indicator variables, I use one treatment indicator that takes the value of 1 if individual i is assigned to treatment (any type of treatments) and 0 if otherwise. So, the coefficient on this treatment indicator measures the average effect of the two types of treatments (on-the-job, and combined on-the-job and classroom training). TOT effects are also estimated using similar specifications as (2)-(4). I estimate the regression separately for the two groups of individuals. Panel A of Table 6.2 presents estimated effects for intensive margin while panel B shows extensive margin effects. Findings show that the programme increases employment and hours of work mainly for individuals that were unemployed at baseline (ie, at the extensive margin). Moreover, it significantly increases earnings at the extensive margin. At the intensive margin, the effect (ITT effect) on employment is positive and statistically significant at the 10% level if baseline characteristics are not controlled. The effects on hours of work and earnings at the intensive margins, by contrast, are all statistically insignificant. These results indicate that the training programme is likely to be more effective for unemployed individuals compared to their employed counterparts.

Table 6.2 Effects of training at the extensive and intensive margins

	(1)	(2)	(3)	(4)	(5)	(6)
	Employed (yes=1, no=0)		Hours of work (per day)		Total earnings (BDT/month)	
Panel A: Intensive margin						
ITT effect of training	0.0692* (0.0392)	0.0568 (0.0361)	0.313 (0.307)	0.160 (0.275)	14.20 (328.2)	-54.68 (290.3)
R-sq	0.187	0.346	0.152	0.322	0.193	0.349
TOT effect of training (IV results)	0.128* (0.0689)	0.105* (0.0629)	0.579 (0.542)	0.296 (0.481)	26.24 (581.2)	-100.8 (511.4)
R-sq	0.193	0.354	0.158	0.325	0.193	0.348
Control group mean at follow-up	0.53	0.53	3.24	3.24	2795.75	2795.75
N	718	718	718	718	718	718
Panel B: Extensive margin						
ITT effect of training	0.155*** (0.0225)	0.150*** (0.0210)	0.872*** (0.171)	0.812*** (0.158)	389.2*** (143.0)	360.0*** (131.1)
R-sq	0.092	0.200	0.077	0.211	0.062	0.189
TOT effect of training (IV results)	0.245*** (0.0345)	0.237*** (0.0321)	1.374*** (0.261)	1.280*** (0.240)	613.4*** (221.2)	567.6*** (202.2)
R-sq	0.117	0.228	0.102	0.237	0.072	0.199
Control group mean at follow-up	0.34	0.34	2.09	2.09	1459.96	1459.96
N	2228	2228	2228	2228	2228	2228
Branch fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Baseline characteristics	No	Yes	No	Yes	No	Yes

Standard errors in parentheses. Baseline characteristics include marital status, age, gender, education, employment status, time devoted to earning activity, and earnings.

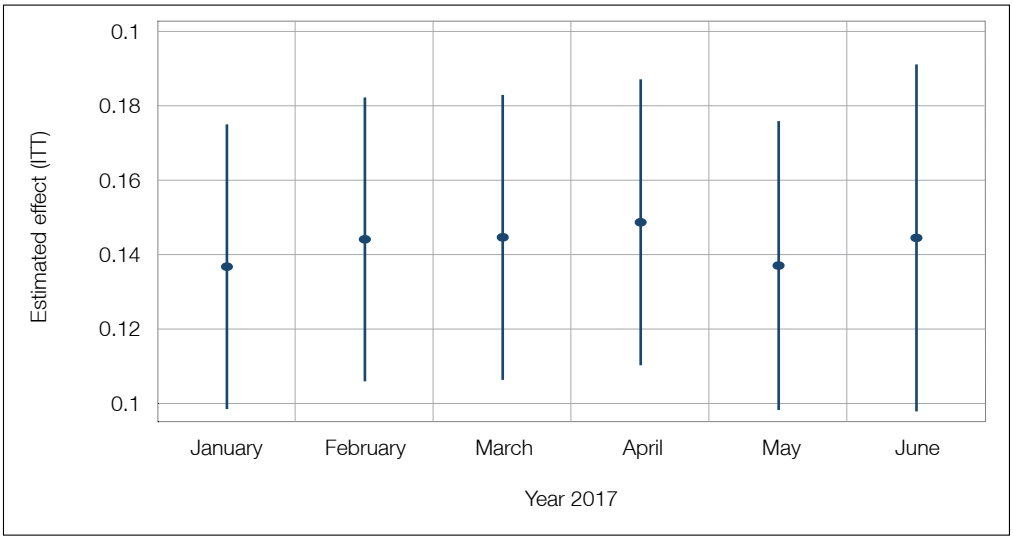
* p<0.10, ** p<0.05, *** p<0.01

Impact estimates reported in Tables 6.1 and 6.2 are for the last month of the follow-up survey. Employment information is also available for each of the last six months (January-June, 2017) of the follow-up survey.[28] I analyse these data to examine whether the effect of the programme on employment persists over time. Specifically, I estimate treatment effect for each of these months by regressing the outcome variable (indicator variable for employability) on treatment indicator (it takes the value of 1 if individual *i* is assigned to treatment (any type of treatments))

[28] Since the survey was started in June, 2017, data for this month are not available for some individuals. Number of observations for this month is 1,800.

and branch fixed effects. Figure 6.1 graphs the point estimates (ITT estimates). As can be seen, the point estimates hover around 0.14, showing that the effect of the programme on employment does not decline over time. These results also indicate that the programme generates impacts immediately after completion of the training (note that the training was completed in December 2016).

Figure 6.1 Dynamics of employment effects (ITT effects)



Note: Each dot represents point estimate for respective month. Vertical line shows 95% confidence interval.

Several papers on apprenticeship training document positive effects on employment and earnings (eg, Honorati 2015; Alfonsi *et al.* 2017).[29] Therefore, the findings of my study echo the positive results from these studies. However, the magnitude of the effect on employment I document in this study seems to be larger than those documented by Honorati (2015) and Alfonsi *et al.* (2017). The training programme studied by Honorati (2015) increases employment by about 5.5 percentage points (ITT effect, simple un-weighted average across genders), while the programme studied by Alfonsi *et al.* (2017) increases employment by seven percentage points (ITT effect, averaged over three-year period but the short-run effect is similar). By contrast, I find that apprenticeship training increases employment by 14 percentage points (ITT effect).

[29] Similarly, Hardy and McCasland (2015) document large effect of apprenticeship training but they examine the effects at the firm level. Twenty one per cent of the participants in the programme studied by Honorati (2015) received apprenticeship training under master crafts persons along with technical training. They rest were provided technical training and internship.

6.2 HETEROGENEITY OF EFFECTS WITH RESPECT TO GENDER

As mentioned earlier, existing evidence regarding gender differences in training effects is mixed. I thus examine gender differences in the effects of the STAR programme. I do not, however, separate out the effects of on-the-job, and combined on-the-job and classroom training because disaggregated analysis by gender as well as treatment types might not have enough power to detect statistically significant effects. I estimate ITT effects using the following equation:

$$y_{ib} = \delta_1 + \delta_2 Training_{ib} + \delta_3 Training_{ib} * Gender_{ib} + X_{ib}\phi + \rho_b + \varepsilon_{ib} \quad .....(5)$$

where $Training_{ib}$ takes the value of 1 if individual *i* is assigned to treatment (any type of treatments); $Gender_{ib}$ is an indicator variable taking the value of 1 if individual *i* is male and 0 if female; ρ_b are branch fixed effects; X_{ib} is a set of youth's baseline characteristics including, among others, $Gender_{ib}$; and ε_{ib} is an error term. δ_2 identifies the ITT effect of the training for females, $\delta_2 + \delta_3$ the ITT effect for males, and δ_3 the additional ITT effect for males. Following similar specifications as (2) through (4), I also estimate heterogeneity of the effects in terms of TOT.

Panel A of Table 6.3 reports ITT effects and panel B TOT effects. The first row of panel A presents the estimated ITT effects for females and second row for males while the third row reports the additional effects for males. On the other hand, the first row of panel B presents the estimated TOT effects for females and second row for males while the third row reports the additional TOT effects for males. The odd-numbered columns present results without baseline controls while the even-numbered columns show those with baseline controls. As can be seen, results are generally robust after controlling for baseline characteristics. It is found that the impact of the intervention on overall employment, hours of work and earnings are larger for females compared to their male counterparts although the differences between the two groups of individuals for the latter two outcomes are not statistically significant (columns 5, 6, 11, 12, 17 and 18). Specifically, TOT results without baseline controls show that the intervention increases females' employability by 27.7 percentage points compared to 9.7 percentage points for males and the difference is statistically significant at the 1% level (column 5). Results also show that the intervention increases both wage and self-employment for females. For males, by contrast, it has a statistically significant effect on wage employment only. Further results from impact analysis for specific occupations under self-employment show that the intervention increases females' time for tailoring and small businesses (columns 13-16 of panel B of Table A5 in appendix). Results for specific occupations under wage employment, by contrast, show that the intervention increases females' time for working as beautician and tailor (columns 3-6 of panel A of Table A5). Estimates reported in panel-A also show that treatment males devoted more time to mobile

phone servicing and wooden furniture making related works compared to their control counterparts. Significantly, it is found that females decrease time devoted to work for readymade garment (RMG), a major source of employment for female workers in Bangladesh (panel A). This sector employs about 4 million people, 80 per cent of whom are females (BSR 2014). My findings thus indicate that skilled workers are less likely to work for the RMG sector.

Table 6.3 Gender-disaggregated effects of training

	(1)	(2)	(3)	(4)	(5)	(6)
	Self-employed (yes = 1, no = 0)		Wage employed (yes = 1, no = 0)		Employed (yes = 1, no = 0)	
Panel A: ITT Effects						
Effect for females	0.0665*** (0.0175)	0.0734*** (0.0172)	0.113*** (0.0203)	0.111*** (0.0203)	0.177*** (0.0236)	0.182*** (0.0234)
Effect for males	-0.0067 (0.0218)	-0.00121 (0.0216)	.0746** (0.0299)	.0737** (0.0295)	.0580** (0.0282)	.0622** (0.0278)
Additional effect for males	-0.0733*** (0.0280)	-0.0746*** (0.0276)	-0.0381 (0.0361)	-0.0368 (0.0358)	-0.119*** (0.0368)	-0.119*** (0.0363)
R-squared	0.099	0.122	0.199	0.210	0.214	0.232
Panel B: TOT Effects						
Effect for females	0.104*** (0.0273)	0.115*** (0.0268)	0.177*** (0.0308)	0.174*** (0.0308)	0.277*** (0.0360)	0.285*** (0.0356)
Effect for males	-0.0124 (0.037)	-0.0029 (0.0367)	0.1267** (0.0505)	0.125** (0.0499)	0.0973** (0.0476)	0.1049** (0.0471)
Additional effect for males	-0.117** (0.0463)	-0.118*** (0.0456)	-0.0502 (0.0593)	-0.0484 (0.0586)	-0.180*** (0.0601)	-0.181*** (0.0591)
R-squared	0.102	0.125	0.216	0.228	0.236	0.257
Observations	2946	2946	2946	2946	2946	2946
Branch fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Baseline characteristics	No	Yes	No	Yes	No	Yes
Control group mean at follow-up (females)	0.11	0.11	0.11	0.11	0.22	0.22
Control group mean at follow-up (males)	0.17	0.17	0.5	0.5	0.65	0.65

Standard errors in parentheses. Baseline characteristics include marital status, age, gender, education, employment status, time devoted to earning activity, and earnings. Regression equation for results reported in odd-numbered columns includes an indicator variable for gender.

* p<0.10, ** p<0.05, *** p<0.01

[Table 6.3 contd...]

[...Table 6.3 contd]

	(7)	(8)	(9)	(10)	(11)	(12)
	Hours of work (per day) in self-employment		Hours of work (per day) in wage employment		Total hours of work (per day)	
Panel A: ITT Effects						
Effect for females	0.250*** (0.0626)	0.276*** (0.0637)	0.596*** (0.148)	0.564*** (0.148)	0.846*** (0.152)	0.840*** (0.152)
Effect for males	-0.1195 (0.1434)	-0.1036 (0.1423)	.5755** (0.2531)	.5594** (0.2502)	.4559* (0.2522)	.455* (0.250)
Additional effect for males	-0.370** (0.157)	-0.380** (0.156)	-0.0202 (0.294)	-0.00459 (0.291)	-0.390 (0.295)	-0.384 (0.293)
R-squared	0.060	0.075	0.182	0.192	0.212	0.223
Panel B: TOT Effects						
Effect for females	0.393*** (0.0976)	0.433*** (0.0990)	0.935*** (0.227)	0.888*** (0.226)	1.328*** (0.232)	1.321*** (0.231)
Effect for males	-0.2084 (0.2435)	-0.181 (0.242)	0.9806** (0.4261)	0.955** (0.4216)	0.7722* (0.4254)	0.774* (0.421)
Additional effect for males	-0.602** (0.264)	-0.615** (0.262)	0.0461 (0.484)	0.0677 (0.479)	-0.556 (0.486)	-0.547 (0.481)
R-squared	0.062	0.077	0.198	0.209	0.229	0.242
Observations	2946	2946	2946	2946	2946	2946
Branch fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Baseline characteristics	No	Yes	No	Yes	No	Yes
Control group mean at follow-up (females)	0.28	0.28	0.81	0.81	1.09	1.09
Control group mean at follow-up (males)	0.83	0.83	3.54	3.54	4.38	4.38

Standard errors in parentheses. Baseline characteristics include marital status, age, gender, education, employment status, time devoted to earning activity, and earnings. Regression equation for results reported in odd-numbered columns includes an indicator variable for gender.

* p<0.10, ** p<0.05, *** p<0.01

[Table 6.3 contd...]

[...Table 6.3 contd]

	(13)	(14)	(15)	(16)	(17)	(18)
	Earnings from self-employment (BDT/month)		Earnings from wage employment (BDT/month)		Total earnings (BDT/month)	
Panel A: ITT Effects						
Effect for females	175.3*** (53.23)	204.6*** (55.99)	218.6** (102.4)	238.6** (103.2)	393.9*** (108.8)	443.2*** (110.5)
Effect for males	-289.08** (146.6)	-268.04* (144.3)	289.41 (263.9)	298.62 (260.55)	0.3339 (275.8)	30.58 (270.28)
Additional effect for males	-464.4*** (156.7)	-472.7*** (155.7)	70.78 (288.0)	60.06 (287.3)	-393.6 (301.0)	-412.6 (298.3)
R-squared	0.057	0.079	0.160	0.175	0.194	0.221
Panel B: TOT Effects						
Effect for females	275.9*** (83.04)	321.0*** (87.22)	342.9** (158.0)	375.7** (158.9)	618.8*** (168.0)	696.7*** (170.1)
Effect for males	-498.5** (249.8)	-463.54* (246.46)	494.16 (447.68)	510.8 (442.09)	-4.39 (468.7)	47.31 (459.5)
Additional effect for males	-774.4*** (265.0)	-784.5*** (262.6)	151.3 (483.3)	135.2 (480.9)	-623.2 (505.8)	-649.4 (499.8)
R-squared	0.052	0.074	0.164	0.180	0.197	0.225
Observations	2946	2946	2946	2946	2946	2946
Branch fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Baseline characteristics	No	Yes	No	Yes	No	Yes
Control group mean at follow-up (females)	156.42	156.42	577.76	577.76	734.19	734.19
Control group mean at follow-up (males)	822.22	822.22	2606.84	2606.84	3429.06	3429.1

Standard errors in parentheses. Baseline characteristics include marital status, age, gender, education, employment status, time devoted to earning activity, and earnings. Regression equation for results reported in odd-numbered columns includes an indicator variable for gender.

* p<0.10, ** p<0.05, *** p<0.01

Why is the programme less effective for males? Existing evidence shows that this may be because males learn little from training (Acevedo *et al.* 2017). Also, it may be because the baseline employment rate among males (29%) was lager compared to females (19%). As shown earlier, the programme generates larger impacts for the unemployed youth compared to the employed. Analysing the data on control group's employment status at the baseline and follow-up, I find

that employment rate among males increased from 30% to 66%. For females, by contrast, the proportion remained almost the same (22.3% at baseline and 22.7% at follow-up). These statistics indicate that females in Bangladesh are likely to be constrained to enter the labour market. Evidence shows that Bangladeshi women's participation in market employment is constrained due to the traditional gender roles that need them to bear the main responsibility of household work on a daily and generation basis (Kabeer 2003). My findings thus indicate that training perhaps helps women overcome this constraint, thereby generating large effects for them.

Since the programme significantly increases employment and earnings among female youth, most of whom were unemployed and unmarried at baseline, it has important implications on their economic and social empowerment. It also has an implication on child marriage because empirical evidence shows that child marriage among females in Bangladesh is higher for unemployed or unskilled workers (Kamal *et al.* 2015). However, results presented so far in this paper do not provide evidence on whether the intervention increases employment among unmarried females in the sample. To examine this, I estimate the heterogeneity of females' employment effects with respect to marital status. Training might have larger effects on employment for unmarried females, particularly on wage employment, compared to their married counterparts, because evidence shows that married females have to spend more time on housework (World Bank 2011). This is also evident from employment data on control females in my study sample. The data show that, at follow-up, married females in the control sample devoted 1.6 hours per day to household chores compared to 0.79 hours among unmarried females.

Appendix Table A6 reports the results of impact heterogeneity with respect to marital status. They are estimated using female sample only. For ITT estimates, I regress each outcome variable on treatment indicator, marital status (indicator variable taking the value of 1 if married and zero if unmarried) and interaction of treatment indicator with marital status. Branch fixed effects are also controlled. Moreover, additional results controlling for baseline characteristics are reported for robustness check. TOT effects are also estimated using quite similar specifications as (2) through (4). Panel A shows ITT effects while panel B reports TOT effects. Findings show that both married and unmarried females experience positive effects on self-employment and hours of work in this employment but the effects for married females are statistically insignificant. It is also found that the effect on wage employment is very small and statistically insignificant for married females but unmarried females experience a positive and statistically significant effect on this employment. Similarly, the programme increases the earnings of unmarried females. Overall, results reported in Table A6 indicate that the effect of training programme may be smaller for married females compared to their unmarried counterparts. Yet, training has important implication for married individuals because they see some positive effect (though statistically insignificant, may be because of low statistical power) on self-employment even though they have to devote a substantial amount of time to household chores.

6.3 CHANNELS FOR EMPLOYMENT EFFECTS

What are the mechanisms leading to the results? As mentioned earlier, employment in the MCPs' firms (ie, the firms where the apprenticeships took place) can be a channel for the effects. Data show (not reported in any table) that among those assigned to treatment (either on-the-job training or both types of training), 11.5% were employed in the MCPs' firms. For the control group, the corresponding proportion is 2.8%. This suggests that employment via MCPs is a channel for effect on wage employment. In Table 6.4, I test this proposition using a regression framework. I estimate the effect of the intervention on the following three outcomes: wage employment anywhere, wage employment in MCPs' firms, and wage employment anywhere except in MCPs' firms. If employment in MCPs' firms is a mechanism for wage employment effects, then one would expect that the effect on wage employment anywhere would be larger than the effect on wage employment anywhere except in MCPs' firms. Results show that the intervention increases wage employment anywhere by about 10.4 percentage points (ITT effects) (column 1 of Table 6.4). By contrast, it increases employment in MCPs' firms by 8.4 percentage points (column 3 of Table 6.4), suggesting that the effect on overall wage employment (ie, wage employment anywhere) is predominantly derived by employment in MCPs' firms. As a result, the effect on wage employment anywhere except in MCPs' firms is very small and statistically insignificant (column 5 of Table 6.4). These results are likely to suggest that a reason why the BRAC programme has large effects on wage employment is due to the choice of enterprises with MCPs and their interest in using apprentices as a channel to hiring.

Table 6.4 Effects of training on employment in MCPs' firms (ITT effects)

	(1)	(2)	(3)	(4)	(5)	(6)
	Wage employment (anywhere)		Wage employment (in MCPs' firm)		Wage employment (anywhere except in MCPs' firm)	
Effect of training	0.104*** (0.0184)	0.0958*** (0.0171)	0.0840*** (0.0102)	0.0821*** (0.0102)	0.0199 (0.0173)	0.0137 (0.0160)
Branch fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Baseline characteristics	No	Yes	No	Yes	No	Yes
Observations	2946	2946	2946	2946	2946	2946
R-squared	0.062	0.210	0.090	0.099	0.045	0.186
Control group mean at follow-up	0.262	0.262	0.0286	0.0286	0.233	0.233

Standard errors in parentheses. Baseline characteristics include marital status, age, gender, education, employment status, time devoted to earning activity, and earnings.

* p<0.10, ** p<0.05, *** p<0.01

As mentioned earlier, migration can be another channel for the effects on employment. In Table 6.5, I examine whether the programme affects migration (internal or international migration).[30] Migration is typically practised by males in Bangladesh (Bryan *et al.* 2014); hence, I estimate gender-disaggregated effects. Columns 1 and 2 of Table 6.5 report the estimated effects on migration using specification (5). Results show that point estimates are positive for males and negative for females. However, they are not statistically significant. The reason for the little effect on migration may be due to the fact that most of the sample individuals were less than 18 years old at baseline (ie, less than 19 years at follow-up). It is perhaps less likely that these individuals would be away from their families. To test this, in columns 3 and 4 of Table 6.5, I show the impact on migration for relatively older individuals in the sample (ie, those that were 18 years or above at baseline). Results confirm that the programme has a positive and statistically significant effect on migration for males from this age group. However, there is no statistically significant effect for females. Data show (not reported in Table) that 87% of migrants in the sample were employed (mostly wage employed) at follow-up compared to 45% among non-migrants, indicating that migration is likely to be a channel for employment effect for male individuals aged more than 17 years. However, these individuals represent only 8.8% of the full sample. Taken together, results suggest that migration does not seem to be an important channel for the overall employment effect documented in this study.

Table 6.5 Effects of training on migration (ITT effects)

	Migrated (yes=1, no=0)			
	(1)	(2)	(3)	(4)
	Full sample youth		Youth aged 17 years or more	
Effect for females	-0.00292 (0.00719)	-0.00312 (0.00718)	0.00990 (0.0138)	0.0112 (0.0149)
Effect for males	0.00307 (0.012)	0.0027 (0.012)	0.0552* (0.0302)	0.0579* (0.0309)
Additional effect for males	0.00600 (0.0140)	0.00587 (0.0139)	0.0453 (0.0323)	0.0468 (0.0331)
Branch fixed effects	Yes	Yes	Yes	Yes
Baseline characteristics	No	Yes	No	Yes
Observations	2946	2946	881	881
R-squared	0.042	0.046	0.120	0.122
Control group mean at follow-up (males	0.0447	0.0447	0.0372	0.0372
Control group mean at follow-up (females)	0.020	0.020	0.0235	0.0235

Standard errors in parentheses. Baseline characteristics include marital status, age, gender, education, employment status, time devoted to earning activity, and earnings. Regression equation for results reported in odd-numbered columns includes an indicator variable for gender.

* p<0.10, ** p<0.05, *** p<0.01

[30] Data show that 80% of migration in my sample was internal.

6.4 EFFECTS ON WELFARE AND ASSET ACCUMULATION

Since the programme significantly increases the employment and earnings of disadvantaged youth, it is likely that it would have positive effects on their welfare. In this section, I examine the effects of the intervention on welfare and asset accumulation. The follow-up survey asked several questions related to well-being. With regard to psychological well-being, it asked the sample youth six questions related to happiness, stress, anger and overall difficulties. The answers to these questions were recorded as yes or no. Using these indicators, I construct a psychological well-being index. First, I code a "yes" as 1 and a "no" as 0. Then each variable is standardised using the control group's mean and standard deviation. Afterwards, I take an average of these standardised variables. The average is again standardised using the control group's mean and standard deviation. The survey also collected information on the number of shoes and dresses and cell phone ownership of the sample youth. I further analyse these outcomes as welfare indicators. The survey collected information on physical asset holding at the household level. Among physical assets, ownership of a sewing machine is particularly notable since the programme increases self-employment in tailoring. So, the programme may impact ownership of this asset. I thus analyse the effect of the intervention on sewing machines. Finally, I also analyse the effect on youth's savings.

Estimated effects on welfare and asset holdings are presented in Table 6.6. They are estimated by regressing each outcome on treatment indicator (it takes the value of 1 if individual i is assigned to any type of treatments), and branch office fixed effects. Moreover, additional results controlling for baseline characteristics are reported to see robustness of the results. TOT effects are also estimated using instrumental variable approach. Panel A reports ITT effects and panel B TOT effects. Results show that the intervention increases psychological well-being of programme participants by 0.155 standard deviations and the effect is statistically significant at the 5% level (column 1 of Panel B of Table 6.6). The programme also increases the number of shirts/dresses and pairs of shoes owned. These effects are statistically significant if baseline characteristics are controlled. TOT results without baseline control show that treatment individuals are 7 percentage points more likely to own personal cell phones compared to their control counterparts, and this effect is statistically significant at the 5% level (column 7 of Table 6.5). Further, the intervention increases the ownership of sewing machines, which are important for self-employment. The effect on savings is positive but not statistically significant.

Table 6.6 Effects on well-being and asset accumulation

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Psychological well-being index		No. of shirts/ dresses#		Pairs of shoes#		Own cell phone (Yes=1, No=0)		Own sewing machine (Yes=1, No=0)		Savings (BDT)	
Panel A: ITT effects												
Effect of training	0.0972** (0.0459)	0.105** (0.0453)	0.122 (0.0867)	0.159* (0.0857)	0.0446 (0.0325)	0.0636** (0.0318)	0.0449* (0.0232)	0.0546*** (0.0209)	0.0244* (0.0133)	0.0323** (0.0131)	598.6 (758.4)	696.7 (781.9)
R-sq	0.124	0.147	0.213	0.240	0.120	0.164	0.065	0.225	0.047	0.077	0.017	0.019
Panel B: TOT Effects												
Effect of training	0.155** (0.0720)	0.167** (0.0710)	0.197 (0.137)	0.253* (0.135)	0.0706 (0.0510)	0.101** (0.0500)	0.0717** (0.0364)	0.0871*** (0.0326)	0.0395* (0.0213)	0.0526** (0.0209)	970.3 (1216.1)	1132.1 (1255.3)
	0.126	0.150	0.209	0.237	0.118	0.161	0.069	0.231	0.053	0.085	0.018	0.020
N	2100	2100	2077	2077	2074	2074	2100	2100	2946	2946	2946	2946
Branch fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Baseline characteristics	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Control group mean at follow-up	0	0	4.77	4.77	1.97	1.97	0.39	0.39	0.113	0.113	991.9	991.9

Standard errors in parentheses. Baseline characteristics include marital status, age, gender, education, employment status, time devoted to earning activity, and earnings.

#Top 1% observations dropped. Results reported in columns 1-8 are based on information collected from the youth interviewed in person at follow-up survey.

* p<0.10, ** p<0.05, *** p<0.01

6.5 EFFECT ON CONFIDENCE

In this section, I explore whether the programme has any effect on confidence. The follow-up survey asked the youth four questions on confidence related to starting a new business, business management, bargaining with buyers and sellers. The answers to these questions were recorded as yes or no. Using these indicators, I construct a confidence index. First, I code a "yes" as 1 and a "no" as 0. Then each variable is standardised using control group's mean and standard deviation. Afterwards, I take an average of these standardised variables. The average is again standardised using control group's mean and standard deviation.

Table 6.7 Effect of training on confidence

	(1)	(2)
	Confidence index	Confidence index
ITT effect of training	0.136***	0.146***
	(0.0417)	(0.0387)
R-sq	0.216	0.304
TOT effect of training	0.217***	0.233***
	(0.0652)	(0.0602)
R-sq	0.226	0.317
N	2100	2100
Control group mean at folllow-up	0	0
Branch fixed effects	Yes	Yes
Baseline characteristics	No	Yes

Standard errors in parentheses. Baseline characteristics include marital status, age, gender, education, employment status, time devoted to earning activity, and earnings.

* p<0.10, ** p<0.05, *** p<0.01

Estimated effects on confidence are presented in Table 6.7. They are estimated by regressing the outcome on treatment indicator (it takes the value of 1 if individual *i* is assigned to any type of treatments), and branch office fixed effects. Additional results controlling for baseline characteristics are also reported to see robustness of the results. Moreover, TOT effects are estimated using instrumental variable approach. Results show that the intervention significantly increases the confidence of youth.

6.6 COST-BENEFIT ANALYSIS

In this section, I provide a cost-benefit analysis. As already discussed, the additional effects of the classroom training are small and statistically insignificant for most of the outcomes of interest for this study whereas, the effects of on-the-job training are large in magnitude. These results are likely to indicate that on-the-job training can be scaled up cost-effectively. Hence, I conduct a cost-benefit analysis for on-the-job training only. For benefit calculation, I follow Attanasio *et al.* (2011). They consider two cases: (i) gains are permanent but do not grow over time, and (ii) a 10 per cent annual depreciation of gains. I also consider these two cases. Since the average age of the programme participants is

around 16 years, it is assumed that their working life is another 44 years. Results reported in Table 6.1 show that on-the-job training increases earnings of participants by BDT 784 per month (ie, BDT 9,408 per year). Using this estimate, and assuming that gains are permanent but do not grow over time, total gain for 44 years with 5% discount rate is BDT 166,171. Since the duration of the training is six months, it is likely that participants did not earn income during these months. At baseline, the sample youth on average earned BDT 62.2 per month (ie, BDT 373 for six months). This amount can be considered as the opportunity cost of attending the six month training programme. Therefore, the gain net of the opportunity costs of attending training is BDT 165,798. Average cost per participant of on-the-job training (2016 cohort) was BDT 26,116.[31] These costs include administrative costs and allowances to trainees and MCPs. Note that the allowance provided to participants has not been considered as benefits because the amount is for travel purposes. Comparing the gains with the costs, the benefit-cost ratio is estimated to be 6.34, indicating substantial gains from on-the-job training.

Under a conservative scenario where benefits depreciate at a rate of 10% each year, total gain with 5% discount rate over a life cycle of 44 years is BDT 62,649. After deducting the opportunity cost of attending training, the figure stands at BDT 62,276. A benefit-cost ratio under this scenario is estimated to be 2.38. Results thus indicate substantial gains from apprenticeship training. These gains are, however, under-estimated if the MCPs are somehow positively affected by the intervention (eg, if profits increase).

6.7 ROBUSTNESS CHECK

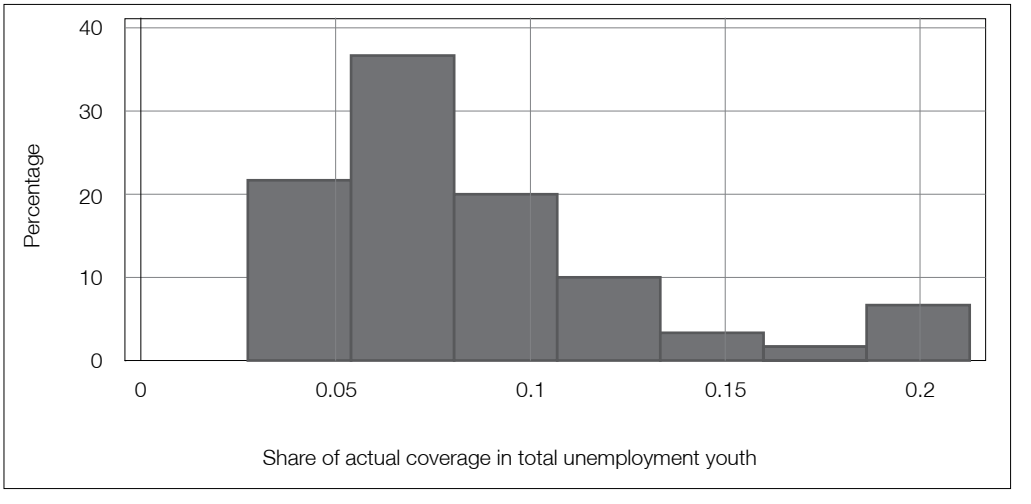
As mentioned earlier, the random assignment to treatment or control group was done at the individual level. A natural question is thus whether the control individuals are affected by the intervention because training programmes are likely to have displacement effects (ie, treatment individuals take the job by displacing control individuals) (Crépon *et al.* 2012; Johnson 1979). The displaced individuals, if any, may become unemployed or accept lower wage jobs and their earnings may fall (Friedlander *et al.* 1997).[32] However, for a poor country like Bangladesh, training programmes may not have large displacement effects because evidence shows that there are substantial labour market frictions in developing countries (Hardy and McCasland 2015).

[31] For full package of training, on the other hand, costs per participant were BDT 29,000. For 2014 cohort, average costs per participant (full package of training) were BDT 33,000 against BDT 29,000 for 2016 cohort. Note that the programme covered 1,000 and 7,500 youths in 2014 and 2016, respectively. These statistics indicate that marginal costs are likely to be lower than average costs.

[32] Several arguments, however, suggest that displacement if any may not seriously undermine training programme effectiveness. Cohen (1969) and Johnson (1979) argue that, if training programme participants are less likely to seek employment during training period than they otherwise would have been, then more jobs will be open to nonparticipants, at least temporarily.

In this section, I attempt to examine whether the control individuals in the sample are affected by the intervention. For this purpose, I exploit the variation in programme coverage across the sample branch offices. As mentioned in section 2.2, BRAC set out a planned target for each branch office. The target varied significantly across branch offices. Furthermore, BRAC-RED reduced the planned target by 10% in a randomly selected half of the sample branch offices, creating further variation in the target across the sample branch offices. Figure 6.2 shows the distribution of BRAC's final target as a proportion of total eligible youth (unemployed youth aged 14-18 years) in the respective areas. The number of unemployed youth is calculated using information on the total population covered by each branch office and youth (14-18 years old) unemployment rates across administrative divisions.[33] BRAC has a total of 2,000 branch offices across the country.[34] BRAC's development interventions cover a population of about 138 million in Bangladesh.[35] Hence, in the coverage area of a branch office, there are about 69,000 people, of whom around 6,555 (9.5%) are in the age group of 14-18 years.[36] The unemployment rate among youth aged 14-18 years varies from 7 to 11% across the administrative divisions (BBS 2017). Using this information, I calculate the total number of eligible youth for each of the study branch offices.

Figure 6.2 Distribution of branch offices by share of programme coverage (final coverage)



[33] There are seven administrative divisions in Bangladesh, and the sample of this study covered all the divisions.

[34] http://www.brac.net/microfinance-programme/item/855-overview

[35] http://www.brac.net/sites/default/files/ataglance/at-a-glance-December-2014.pdf

[36] According to HIES 2010 (BBS 2012), 9.5% of Bangladesh's population are in the age group of 15-19 years.

Figure 6.2 shows that programme coverage (ie, final target) as a proportion of total eligible youth varies significantly across the study branch offices. On an average, the programme covered 8.2% of total eligible youth from each branch office. Since the proportion is very small, it is perhaps less likely that the intervention would have a significant effect on the control group's employment. However, I exploit this variation to formally examine if the intervention has any effect on employment for the control group. The variation in programme coverage shown on Figure 6.2 may be endogenous to labour market outcomes. I investigate whether this variation is correlated with the baseline characteristics of the sample individuals. Table A7 (in appendix) reports the estimated coefficients of a regression of the variation in programme coverage on youth's age, employment, earnings, education, gender, and marital status at baseline. The regression also includes district fixed effects and an indicator variable for an urban area. Results indicate that some of the characteristics are correlated with the variation in programme coverage. I control for these characteristics to examine the effect of variation in programme coverage on control's employment. Specifically, I estimate the following equation using the full sample (ie, 2,946 youths):

$$y_{ibld} = b_1 + b_2 Training_{ibld} + b_3 Training_{ibld} * Percentcov_{bld} + b_4 Percentcov_{bld}$$
$$+ b_5 Urban_{ld} + X_{ibld}\Phi + \zeta_d + e_{ibld} \quad \text{.....(6)}$$

where y_{ibld} is the outcome variable of interest (employment) for individual *i* from branch office *b* in location *l* (urban or rural) from district *d*; $Training_{ibld}$ is an indicator variable taking the value of 1 if individual *i* is assigned to treatment (any type of treatments), and 0 if control; $Percentcov_{bld}$ is the programme's total coverage as percentage of the total number of eligible youth; $Urban_{ld}$ is an indicator variable taking the value of 1 if the location is urban and 0 if rural (programme coverage is typically higher in the branch office located in urban areas; hence, dummy variable for urban is included); X_{ibld} is a set of youth's baseline characteristics; ζ_d are districts fixed effects; and e_{ibld} is an error term. Standard errors are clustered at the branch office level. $b_2 + b_3$ measures the effect of the intervention at a given value of $Percentcov_{bld}$. b_4 is the key parameter of interest, which measures the effect of the intervention on employment for control.

Table 6.8 Effects of training on control group's employment

	(1)	(2)	(3)
	Employed (Yes=1, No=0)		
$Training_{bld}$	0.130*** (0.0216)	0.129*** (0.0215)	0.0749** (0.0353)
$Percentcov_{bld}$		-0.00121 (0.0043)	-0.00378 (0.0046)
$Training_{ibld}$ * $Percentcov_{bld}$			0.00584 (0.0039)
Urban dummy	Yes	Yes	Yes
District fixed effects	Yes	Yes	Yes
Baseline characteristics	Yes	Yes	Yes
Observations	2946	2946	2946
R-squared	0.207	0.207	0.208
Mean coverage (%)	8.2	8.2	8.2
Control group mean at follow-up	0.132	0.262	0.385

Standard errors in parentheses, clustered at the branch office level.
*p<0.10, **p<0.05, ***p<0.01

Table 6.8 reports the regression results of equation (6). Results reported in column 1 show that if $Percentcov_{bld}$ and $Training_{bld}$ * $Percentcov_{bld}$ are not controlled, the point estimate of the coefficient on $Training_{ibld}$ is 0.130 (significant at the 1% level). If $Percentcov_{bld}$ is controlled, the point estimate of the coefficient on $Training_{ibld}$ remains unchanged. The point estimate of the coefficient on $Percentcov_{bld}$ is small and statistically insignificant. Finally, if both $Percentcov_{bld}$ and $Training_{ibld}$ * $Percentcov_{bld}$ are controlled, the point estimate of the coefficient on $Training_{ibld}$ declines largely, mainly because the estimated coefficient on $Training_{ibld}$* $Percentcov_{bld}$ is positive (column 3). However, the estimate of b_4 (ie, coefficient on $Percentcov_{bld}$) which measures displacement effect (ie, decreasing control group's employment), is found to be statistically insignificant, suggesting that the programme has perhaps no effect on the employment of control individuals. Point estimates reported in column 3, however, indicate that at the mean level of coverage by the programme (ie, 8.2%), the effect on control group's employment is a 3 percentage points decrease (8.2*0.0037 = 0.0303) while the ITT effect of the programme on treatment individuals' employment is 12.2 percentage points increase (0.0749 + (0.0058*8.2) = 0.122). Taken together, results indicate that the intervention has no significant effect on the control; if any, the magnitude of the effect is small relative to effect on the treatment group. Hence, at the scale at which the programme was implemented, employment effects for beneficiaries were not achieved through displacement of non-beneficiaries.

SECTION SEVEN

CONCLUSION

Rising youth unemployment is a key concern for many poor countries. Skills training can be a potential solution to this problem, but existing evidence on the effectiveness of training programmes in developing countries is mixed. This paper extends the existing set of results by studying a training programme in Bangladesh, a lower middle-income country with a high rate of youth unemployment. The programme provides on-the-job and classroom training to disadvantaged and unemployed/under-employed youth from both rural and urban areas. On-the-job training is provided through apprenticeship under a local Master Crafts Person (MCP). Classroom training curriculum includes theoretical training on specific trades as well as soft-skills training. The data used in this study were generated by BRAC's Research and Evaluation Division (BRAC-RED). BRAC-RED conducted a randomised controlled trial across branches with treatments consisting of on-the-job training and combined on-the-job training with classroom training in trades and soft skills. A baseline survey was conducted in June 2016, and a follow-up survey in June-July, 2017, about six months after completion of the training. Using these data, I investigate the following research questions: (1) what is the effect of on-the-job training on labour market outcomes (employment and earnings)? and (2) how does this effect vary if classroom training is compounded with on-the-job training (ie, what is the additional effect of classroom training)? I also analyse effects on wage versus self-employment, migration decisions, well-being, and asset ownership. The particular role of employment in MCPs' firms is also studied. Heterogeneity of impacts is analysed across genders.

I estimate the short-run impacts of the intervention. Results show that on-the-job training, which was provided through apprenticeship, has positive effects on employment and earnings. Specifically, it increases the labour market participation of the programme participants by 22.6 percentage points, total time devoted to earning activities by 59%, and earnings by 44%. Additional effects of the classroom training on overall employment and earnings are statistically insignificant. Further results, however, indicate that if classroom training is added to on-the-job training, the effects shift from self- to wage employment.

By examining heterogeneity of the effects with respect to gender, I find that the effect on employment is larger for females. Furthermore, females experience positive impacts on both wage and self-employment while males only experience positive effects on wage employment. The programme has thus important implications for the economic and social empowerment of the disadvantaged females. Expectedly, the effects on employment and earnings are larger effects for those that were unemployed at baseline. The intervention increases welfare substantially. Treatment individuals are more likely to own personal cell phones, and to have dresses (shirts/pants) and shoes compared to their control counterparts. They are also likely to report a higher level of psychological well-being. Benefit-cost ratio for on-the-job training is estimated at 6.34, suggesting that it can be scaled up in a cost-effective manner.

Using variation across branches in the intensity of treatment, I show that, at the scale at which the programme was implemented, employment effects for beneficiaries were not achieved through displacement of non-beneficiaries. It is found that employment in firms where apprenticeship took place is the key channel for the effects on wage employment. I believe that a reason why the BRAC programme has large effects on wage employment is due to the choice of enterprises with MCPs and their interest in using apprentices as a channel for hiring. This has important implications for the external validity of the results presented in this paper and comparison with results obtained by others.

The main limitation of this study is that it estimates the short-run impacts of the intervention. The question is thus whether these effects would dissipate in the long-run. Analysing employment dynamics over a six-month period after the intervention, I find that the programme generates impacts immediately after completion of the training phase and that the effects do not decline within the six month period. However, further study needs to be conducted to examine whether the impacts sustain in the long run. These results need to be assessed in relation to the effective way in which BRAC recruited MCPs.

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APPENDIX TABLES

Table A1. Sample size and attrition

	Baseline		Follow-up		Attrition (%)	
	Treatment	Control	Treatment	Control	Treatment	Control
Males	651	644	607	594	6.76	7.76
Females	925	966	858	887	7.24	8.17
Total	1,576	1,610	1,465	1,481	7.04	8.01

Table A2. Correlates of attrition

	(1)	(2)	(3)
	Attrition (yes=1, no=0)		
Treatment (yes=1, no=0)	-0.00846 (0.0106)	-0.00944 (0.0106)	0.0270 (0.0828)
Age of youth (years)		-0.00290 (0.00260)	-0.00154 (0.00372)
Education of youth (years)		-0.000692 (0.00154)	-0.00130 (0.00235)
Education of household head (years)		-0.000295 (0.000874)	-0.000530 (0.000971)
Youth is employed (yes=1, no=0)		-0.00819 (0.0151)	-0.0165 (0.0196)
Hours of work of youth (per day)		0.00873 (0.0145)	-0.00332 (0.00873)
Gender of youth (male=1, female=0)		0.00140 (0.0114)	-0.00157 (0.0159)
Marital status of youth (married=1, unmarried=0)		0.0103 (0.0191)	0.0206 (0.0285)
Treatment*Age of youth			-0.00317 (0.00502)
Treatment*Education of youth			0.00122 (0.00288)

[Table A2 contd...]

[...Table A2 contd]

	(1)	(2)	(3)
	Attrition (yes=1, no=0)		
Treatment*Education of household head			0.00111 (0.00196)
Treatment*Youth is employed			0.0182 (0.0257)
Treatment*Hours of work of youth			0.0267 (0.0300)
Treatment*Gender of youth			0.00559 (0.0229)
Treatment*Marital status of youth			-0.0198 (0.0375)
Constant	0.0389 (0.0250)	0.0957* (0.0507)	0.0800 (0.0668)
Branch fixed effects	Yes	Yes	Yes
Observations	3186	3186	3186
R-squared	0.105	0.106	0.107

Standard errors in parentheses; *p<0.10, **p<0.05, ***p<0.01

Table A3. Programme participation rate (%)

	Males	Females	All
On-the-job training	63.1	64.8	64.1
Combined on-the-job and classroom training	52.2	61.9	58.1
All	58.3	63.4	61.3

Table A4. First stage results

	(1)	(2)	(3)	(4)
	Participated in on-the-job training (Yes=1, No=0)		Participated in combined on-the-job and classroom training (Yes=1, No=0)	
Assigned to on-the-job training	0.621*** (0.0183)	0.6210*** (.0183)	0.00033 (0.0015)	0 (3.57e-10)
Assigned to combined on-the-job and classroom training	-0.0015 (0.0013)	1.38e-1*** (3.00e-1)	0.6110*** (0.0193)	(0.6130*** (.0195)
Branch level fixed effects	Yes	Yes	Yes	Yes
Baseline characteristics	Yes	No	Yes	No

Standard errors in parentheses. Baseline characteristics include marital status, age, gender, education, employment status, time devoted to earning activity, and earnings.
* p<0.10, ** p<0.05, *** p<0.01

Table A5. Effects of training on time (hours/day) devoted to earning activities (disaggregated analysis, ITT effects)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Panel A: Wage employment									
	Mobile phone servicing		Tailoring		Working as beautician		Mason/wooden future making		Working for garment industry	
Effect for female	0.0190	0.0161	0.573***	0.562***	0.129**	0.132**	0.0221	0.00580	-0.176**	-0.183**
	(0.0177)	(0.0179)	(0.0899)	(0.0882)	(0.0631)	(0.0632)	(0.0230)	(0.0254)	(0.0833)	(0.0826)
Effect for male	0.2964***	0.294***	0.1808	0.1749	0.0056	0.0063	0.333**	0.3295**	-0.0952	-0.096
	(0.0884)	(0.0885)	(0.123)	(0.1239)	(0.0129)	(0.0132)	(0.155)	(0.1525)	(0.0875)	(0.0869)
Additional effect for male	0.277***	0.279***	-0.392**	-0.387**	-0.124**	-0.125**	0.311**	0.324**	0.0811	0.0863
	(0.0915)	(0.0919)	(0.154)	(0.153)	(0.0622)	(0.0621)	(0.156)	(0.155)	(0.121)	(0.120)
R-squared	0.048	0.049	0.067	0.069	0.047	0.050	0.141	0.154	0.069	0.080
Observations	2946	2946	2946	2946	2946	2946	2946	2946	2946	2946
Branch fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Baseline characteristics	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes

Standard errors in parentheses. Baseline characteristics include marital status, age, gender, education, employment status, time devoted to earning activity, and earnings. Regression equation for results reported in odd-numbered columns includes an indicator variable for gender.

* p<0.10, ** p<0.05, *** p<0.01

[Table A5 contd...]

[...Table A5 contd]

	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
	Panel A: Wage employment		Panel B: Self-employment					
	Others		Tailoring		Small business		Others	
Effect for female	0.0286	0.0316	0.253***	0.262***	0.0269*	0.0312**	-0.0300	-0.0169
	(0.0733)	(0.0736)	(0.0460)	(0.0460)	(0.0138)	(0.0149)	(0.0423)	(0.0440)
Effect for male	-0.1451	-0.1495	-0.0007	0.003	-0.0816	-0.083	-0.03718	-0.023
	(0.2112)	(0.2111)	(0.0096)	(0.0101)	(0.0709)	(0.0707)	(0.1277)	(0.1269)
Additional effect for male	-0.174	-0.181	-0.254***	-0.259***	-0.109	-0.115	-0.00716	-0.00615
	(0.222)	(0.222)	(0.0473)	(0.0473)	(0.0733)	(0.0731)	(0.135)	(0.134)
R-squared	0.139	0.143	0.060	0.063	0.034	0.045	0.073	0.081
Observations	2946	2946	2946	2946	2946	2946	2946	2946
Branch fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Baseline characteristics	No	Yes	No	Yes	No	Yes	No	Yes

Standard errors in parentheses. Baseline characteristics include marital status, age, gender, education, employment status, time devoted to earning activity, and earnings. Regression equation for results reported in odd-numbered columns includes an indicator variable for gender.

* p<0.10, ** p<0.05, *** p<0.01

Table A6. Heterogeneity of training effects for females with respect to marital status

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Self-employed (yes=1, no=0)		Wage employed (yes=1, no=0)		Employed (yes=1, no=0)		Hours of work (per day) in self-employment		Hours of work (per day) in wage employment	
Panel A: ITT Effects										
Effect for unmarried females	0.0704***	0.0763***	0.144***	0.145***	0.211***	0.218***	0.277***	0.290***	0.809***	0.810***
	(0.0183)	(0.0182)	(0.0222)	(0.0221)	(0.0257)	(0.0254)	(0.0637)	(0.0638)	(0.158)	(0.156)
Effect for married females	0.0536	0.0626	-0.0054	-0.0056	0.0460	0.0544	0.1519	0.1757	-0.2173	-0.2248
	(0.0426)	(0.0424)	(0.0448)	(0.0453)	(0.0537)	(0.0543)	(0.1666)	(0.1694)	(0.3609)	(0.3633)
Additional effect for married females	-0.0168	-0.0137	-0.149***	-0.151***	-0.165***	-0.164***	-0.125	-0.114	-1.026***	-1.035***
	(0.0455)	(0.0453)	(0.0492)	(0.0497)	(0.0589)	(0.0594)	(0.181)	(0.180)	(0.389)	(0.392)
R-squared	0.114	0.123	0.089	0.094	0.137	0.147	0.083	0.088	0.083	0.086
Panel B: TOT Effects										
Effect for unmarried females	0.0558**	0.115***	0.190***	0.219***	0.236***	0.115***	0.176	0.436***	1.242***	1.220***
	(0.0222)	(0.0269)	(0.0307)	(0.0319)	(0.0323)	(0.0269)	(0.118)	(0.0944)	(0.240)	(0.226)
Effect for married females	0.0988	0.1177	-0.0002	-0.0153	0.086	0.1177	0.1711	0.32807	-0.6639	-0.4571
	(0.0819)	(0.0809)	(0.0906)	(0.0854)	(0.1032)	(0.0809)	(0.3235)	(0.3189)	(0.7413)	(0.6901)
Additional effect for married females	0.0430	0.00295	-0.190**	-0.234***	-0.150	0.00295	-0.00460	-0.108	-1.906**	-1.677**
	(0.0844)	(0.0840)	(0.0953)	(0.0903)	(0.108)	(0.0840)	(0.348)	(0.332)	(0.776)	(0.722)
R-squared	0.100	0.128	0.083	0.121	0.105	0.128	0.049	0.092	0.076	0.102
Observations	1745	1745	1745	1745	1745	1745	1745	1745	1745	1745
Branch fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Baseline characteristics	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Control group mean at follow-up (unmarried)	0.08	0.08	0.09	0.09	0.18	0.18	0.2	0.2	0.64	0.64
Control group mean at follow-up (married)	0.19	0.19	0.19	0.19	0.38	0.38	0.61	0.61	1.46	1.46

Standard errors in parentheses. Baseline characteristics include marital status, age, gender, education, employment status, time devoted to earning activity, and earnings. Regression equation for results reported in odd-numbered columns includes an indicator variable for gender.

* p<0.10, ** p<0.05, *** p<0.01

[Table A6 contd...]

[...Table A6 contd]

	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
	Total hours of work (per day)		Earnings from wage employment (BDT/month)		Total earnings (BDT/month)			
Panel A: ITT Effects								
Effect for unmarried females	1.085***	1.100***	191.2***	196.7***	326.4***	343.0***	517.6***	539.7***
	(0.162)	(0.160)	(48.65)	(48.20)	(101.6)	(98.90)	(108.2)	(105.3)
Effect for married females	-0.0654	-0.0491	174.258	188.0	-229.441	-210.27	-55.182	-22.261
	(0.3696)	(0.3728)	(175.44)	(182.88)	(246.40)	(249.77)	(280.89)	(287.23)
Additional effect for married females	-1.151***	-1.149***	-16.92	-8.648	-555.8**	-553.3**	-572.8*	-562.0*
	(0.401)	(0.403)	(187.2)	(187.2)	(267.1)	(269.7)	(304.6)	(306.8)
R-squared	0.104	0.109	0.069	0.073	0.091	0.098	0.115	0.126
Panel B: TOT Effects								
Effect for unmarried females	1.418***	1.657***	-27.43	295.9***	586.7***	516.9***	559.3**	812.8***
	(0.248)	(0.232)	(114.1)	(71.38)	(218.0)	(144.9)	(234.6)	(154.0)
Effect for married females	-0.4928	-0.129	189.754	354.66	-541.68	-414.46	-351.93	-59.804
	(0.7561)	(0.7025)	(348.56)	(344.8)	(555.33)	(474.99)	(606.78)	(540.48)
Additional effect for married females	-1.911**	-1.786**	217.2	58.76	-1128.4*	-931.4*	-911.2	-872.6
	(0.794)	(0.738)	(371.7)	(349.6)	(596.1)	(499.0)	(652.6)	(564.5)
R-squared	0.078	0.132	0.037	0.075	0.050	0.102	0.056	0.135
Observations	1745	1745	1745	1745	1745	1745	1745	1745
Branch fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Baseline characteristics	No	Yes	No	Yes	No	Yes	No	Yes
Control group mean at follow-up (unmarried)	0.84	0.84	106.19	106.19	464.3	464.3	570.5	570.5
Control group mean at follow-up (married)	2.08	2.08	356.97	356.97	1030.8	1030.8	1387.8	1387.8

Standard errors in parentheses. Baseline characteristics include marital status, age, gender, education, employment status, time devoted to earning activity, and earnings. Regression equation for results reported in odd-numbered columns includes an indicator variable for marital status.

* p<0.10, ** p<0.05, *** p<0.01

Table A7. Correlates of share of programme coverage

Regressors (Youth's baseline characteristics)	Dependent variable: Share (%) of programme coverage in total unemployed youth
Marital status (married=1, unmarried=0)	-0.330* (0.191)
Education (years)	-0.0678*** (0.0227)
Age (years)	-0.0237 (0.0243)
Gender (male=1; female=0)	-0.267** (0.125)
Employed (yes=1, no=0)	0.388** (0.164)
Hours of work (per day)	-0.0155 (0.129)
Earnings (BDT/month)	-0.00007 (0.00008)
Dummy for urban	Yes
Districts fixed effects	Yes
Observations	2946
R-squared	0.763

Standard errors in parentheses.
*p<0.10, **p<0.05, ***p<0.01

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