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SKILLS DEVELOPMENT
WORKING PAPER

Series 02 January 2017

The Effects of Skill Training on Livelihoods
Evidence from BRAC's Intervention on School Dropout Adolescents

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Skills Development Working Paper Series No. 2

BRAC Research and Evaluation Division

Published by:

Research and Evaluation Division, BRAC
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Dhaka 1212, Bangladesh
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Fax: (88-02) 8823542
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January 2017

Copy editing, printing and publication
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Cover design and illustrator
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Printed by
Zaman Printing and Packaging | 41-42 Islampur Road, Dhaka 1100

CONTENTS

ACRONYMS

BANBEIS	Bangladesh Bureau of Educational Information and Statistics
BBS	Bangladesh Bureau of Statistics
BEHTRUWC	Basic Education for Hard to Reach Urban Working Children
BNFE	Bureau of Non-Formal Education
DID	Difference in Difference
DM	District Manager
FGD	Focus Group Discussion
GoB	Government of Bangladesh
HH	Household
IDI	In-depth Interview
IGA	Income Generating Activity
ILO	International Labour Organization
MCP	Master Craft Person
MICS	Multiple Indicator Cluster Survey
NGO	Non-Governmental Organisation
PO	Programme Organizer
PSM	Propensity Score Matching
STAR	Skills Training for Advancing Resources
TT	Technical Trainer
UNICEF	United Nations Children's Fund
WHO	World Health Organisation

ACKNOWLEDGEMENTS

We would like to express our deepest gratitude to the Skills Development programme for giving us the opportunity to be a part of the team through research. We would like to thank the staff of the "Skills Training for Advancing Resources (STAR)" programme for giving us all sort of cooperation, especially, the field staff without whose support and assistance it would not have been possible to conduct this study. We would particularly like to thank Ms Tahsinah Ahmed, Director, Skills Development Programme (SDP); Ms Farzana Kashfi, Head of Programmes, SDP and Mr Joydeep Sinha Roy, Senior Manager, SDP- for their continuous support, encouragement, and valuable suggestions at different stages of the study. We are also indebted to the survey respondents for giving their time and useful data for the study without which this report could not be published. The field management and the data management teams of RED, BRAC also deserve special thanks for their strenuous job. Thanks are also due to Dr GH Rabbani, Consultant (Editor), Knowledge Management Unit, RED, BRAC for carefully editing this report. Sincere thanks to Mr Altamas Pasha for copy editing and final proof reading of the manuscript. Mr Md Abdur Razzaque also deserve thanks for formatting and cover design. We acknowledge the generous financial support of UNICEF, the donor of the STAR programme in its pilot phase. However, the views expressed as well as any error or omission in the study remain solely ours.

ABSTRACT

School dropout rate in Bangladesh is estimated to be about 40 per cent at the secondary level. The majority of the dropouts is most likely to remain unemployed or, if employed, engaged in low paying and hazardous work in the informal sector. With the aim of producing a well-trained and empowered youths, BRAC initiated 'Skills Training for Advancing Resources (STAR)' programme in 2012. The programme provides on-the-job and classroom training in various informal trades to disadvantaged school dropout adolescents aged between 14-18 years. This study estimates the effects of the programme on employment, earning levels, financial assets, empowerment and household level welfare. The results show that the intervention succeeded in increasing labour market participation and earnings of the adolescents. The magnitude of the effect on earning is about six times the baseline mean level of earnings. Increased earnings of the adolescents translated into household welfare– as proxied by food expenditures and durable asset holdings. Evidences also show the positive effects of the programme on enhancing empowerment, improving self-confidence, and preventing substance abuse. Further, the intervention appears to have improved work place environment and job satisfaction among school dropouts. The cost-benefit ratio of the intervention is found to be about 1:3.

SECTION ONE

INTRODUCTION

A large body of literature reflects the high returns for investment in education sector. This demonstrates that investment in education reduces unemployment and increases earnings (Angrist and Krueger, 1991; Oreopoulos and Salvanes, 2011). Further evidence shows that completion of secondary level education is comparably important for youth to be prepared for decent job opportunities (Brewer, 2013). However, poverty often forces children to drop out of school at a very early stage. In Bangladesh, the context of this study, the secondary school dropout rate is assumed to be 40% (BANBEIS 2015) which seems to be close to other developing countries. For example, secondary school dropout rate is 33% in India[1] and around 44% in Pakistan[2]. It could also be observed that the majority of school dropout adolescents end up either being unemployed or underemployed in low quality jobs in the informal labour market that offers limited socio-economic security and training opportunities (Tripney *et al.* 2013).

It is being argued that training can be a potential solution to address the rising unemployment among the school dropout youths. A large amount of literature documents the effect of training with mixed results. Evaluating training programme for women in Colombia Attanasio *et al.* (2011) finds that the programme participants were able to earn about 20% more and had 7% higher probability of getting employment compared to their non-participant counterparts.[3] Elias *et al.* (2004) demonstrates that a vocational training programme to youth in Argentina yields a rate of return of 10% on total investment. Beside poverty reduction, skills training increase growth, productivity and innovative practices, especially in the informal sector (Fluitman 2002). Conducting a randomized experiment in Jordan - in which female community college graduates were assigned to receive a wage subsidy voucher, soft skills training, both, or nothing - Groh *et al.* (2016) found no impact of soft skills[4] training on employment.

[1] Estimated based on information available at http://mhrd.gov.in/sites/upload_files/mhrd/files/statistics/EAG2014.pdf

[2] http://data.org.pk/index.php?r=postdetail%2Fpostview&id=252

[3] Participants were provided with in-class training and on-the-job training.

[4] Soft skills are a combination of interpersonal, social, and communication skills

Similarly, evaluating the Job Crop programme in USA, Schochet *et al.* (2003) find a significantly positive short-run effect on both genders but little or no long-run effect.

On an empirical plane this paper describes the results of a training programme in Bangladesh on employment, earnings and household welfare of the school dropout poverty striken adolescents aged 14-18 years[5]. The programme implemented by BRAC, provides theoretical (in-class) as well as practical (on-the-job) trainings on various trades (e.g., mobile phone servicing, tailoring, motor cycle repairing, printing, fridge repairing, etc.) to school dropout adolescents. The practical training is provided through attaching adolescents as apprentices with local informal enterprises. As mentioned earlier, a large amount of literature has investigated the effects of vocational training but with different results. Hence, the findings of this study are expected to contribute to advance our knowledge regarding the effect of vocational training programme on employment and earnings. Our results show that the programme has been successful in its overall objective to increase employment of dropout adolescents–by as high as 46 percentage points. In tandem with an increase in employment, participants' earning increased as well. The magnitude of the effect on earnings is quite large, about six times the baseline earning of the participant adolescents. Evidently, this large increase in earnings translates into an increase in savings of the participants and household level welfare (food expenditures).

Moreover, by using qualitative method the study identified some vital drivers that assisted adolescents to improve their livelihood in the post-training phase of the programme. The purpose of using the qualitative method was to have a detailed understanding of the various economic and non-economic factors (from different sides- learners, trainers, etc.) that affect the performance of the intervention.

The contents of the paper are organised as follows. In Section 2, we briefly explain the context and the ingredients of the interventions, followed by a discussion on the evaluation design and the data used for this study in section 3. In sections 4 and 5, we provide descriptive statistics and the estimated equations used for identifying the casual effects of the intervention, respectively. Section 6 discusses the results of the quantitative exercise followed by conclusion in section 7.

[5] As per the labour act of 2006, child is considered to be those below 14. Those in between 14 and 18 are allowed to engage in work under specific circumstances as dictated by the Act. Source: ILO : Handbook on Bangladesh Labor Act, 2006 (http://www.ilo.org/dyn/travail/docs/352/A%20Handbook%20on%20the%20Bangladesh%20Labour%20Act%202006.pdf)

SECTION TWO

THE CONTEXT AND BRAC'S TRAINING PROGRAMME

2.1 THE CONTEXT

Bangladesh, a country of 160 million people, is on its way to attaining a lower middle-income country status.[6] Available evidences show that roughly one-tenth of the total population is adolescents aged between 15 and 19 years (BBS 2010). Although the Constitution of Bangladesh has guaranteed the right to primary education for all, the school dropout rate at the primary level reported to be very high at 21%. Moreover, at the secondary level the situation worsens more alarmingly with a dropout rate of 40% (BANBEIS 2015).

The informal sector in Bangladesh constitutes majority of the job opportunities (ADB and BBS 2012). However, the sector is marked by the low productivity of unskilled workers (World Bank 2010). Titumir and Hossain (2003) assert that the low level of education and skills are mainly responsible for the low productivity in most sectors of Bangladesh including the informal ones. Workers involved in the informal sector are the most vulnerable portion of the workforce where majority are compelled to continue working in absence of proper contracts, fixed working hour, fixed wage rates, compensation for work related injuries and legal protection, etc. (Alam 2012). According to ILO (2009), 69% of the workers in the informal sector work more than eight hours a day.

The most distinguished characteristic of the informal sector is the absence of proper training facilities, majority of informal sector workers learn the specific trades through apprenticeships. However, most apprenticeship arrangements are unpaid and the apprentices need to work fulltime with little or no employment benefit (Maligalig *et al.* 2009). Furthermore, in such arrangement the apprentices neither get the opportunity to enhance their understanding of the trade further through classroom (theoretical) training nor any type of certification of the acquired skill (ILO 2009).

[6] http://data.worldbank.org/income-level/lower-middle-income

2.2 BRAC'S TRAINING PROGRAMME

BRAC initiated a pilot programme called 'Skill Training for Advancing Resources (henceforth called STAR)' in 2012. The objective was to produce a well-trained and empowered manpower in youth group and thus enhance employment. The programme is designed for adolescents from poor households aged between14 to 18 years, who are out of school for at least one year.[7]

The pilot phase of the programme (2012-2013) covered 1000 adolescents from six divisional cities. Starting from 2014, the STAR programme is being implemented with expansion of target areas and a slight change in its targeting criteria[8], with a total target population of 1,000 adolescents for the year 2014. While the participants of the 2012-13 cohorts of the programme were selected from only divisional cities, the 2014 cohort was from several district level cities along with divisional ones. Specifically, this cohort was selected from 14 districts[9], and the intervention was implemented through 30 BRAC branch offices.[10]

The STAR programme is mainly designed to cater to the needs of two separate target groups: (1) trainee, and (2) trainer groups. The first group includes 14-18 years old school dropout adolescents (studied up-to grade 8 or less) from economically vulnerable households with per capita monthly income of not more than BDT 3000. The trainer group includes entrepreneurs or craftsman involved in local informal sector, playing the role of trainer/Master Crafts Person (MCP). In the model, each trainee is placed under MCP for hands-on training for a period of six months. The training is conducted following Competency Based Training and Assessment (CBTA) as per the National Skills Development Policy 2011 (NSDP) with training modules ranging from Pre-vocational Level 2 to Level 2. Trainings under each trade have their own Competency based Skills Log Book that acts as a documentation of the competencies achieved by the trainee during the six months training period. Additionally, classroom-based theoretical training on each trade and generic soft-skills training on various issues (i.e. financial literacy, market assessment and basic communicative English) are provided once a week. More importantly, once the training is completed, the programme tries to link the participants with potential employers for wage employments. And for those that are keen on self-employment, STAR offers them information and guidance.[11]

[7] Initially, this unique model was developed by BRAC together with ILO and UNICEF in order to support the Bureau of Non-Formal Education's (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 dropout adolescents titled as STAR.

[8] Previously programme offered eight different trades; currently it offers ten different trades. The target group of previous model was adolescents aged 13-17 years but currently it covers adolescents aged 14-18 years.

[9] Dhaka, Gazipur, Tangail, Rajshahi, Rangpur, Bogra, Khulna, Chittagong, Sylhet, Comilla, Kishorganj, Mymensign, Sunamganj, Jhenaidah, Jessor

[10] Information collected from programme documents.

[11] STAR's mandate mainly wage-employment. However the project offers informal guidance from staff or mentor for those who are keen on self-employment or entrepreneurship.

SECTION THREE

EVALUATION DESIGN AND DATA COLLECTION

3.1 EVALUATION DESIGN

For the purpose of estimating the impact of the intervention, the Research and Evaluation Division (RED) of BRAC conducted a baseline survey in 2014. The survey covered, randomly selected 530 programme participant adolescents (those supported in 2014) from 30 BRAC branch offices operating in 14 districts of Bangladesh. The sample was taken proportionately from each of the 30 branches. To control for the counterfactuals as required for assessing programme impacts, an equal number of non-participant adolescents were surveyed from the same branch offices. The non-participants were those adolescents that were primarily selected by BRAC as potential programme participants but finally found to be ineligible. The baseline survey covered a total of 517 non-participants adolescents.[12] Almost half of the surveyed adolescents were boys.

Additionally, for capturing the stories behind the success and failure[13] of the trainees some qualitative case studies were conducted. Initially, using quantitative data, we identified success and failed cases based on participants' post-training employment status and earnings. Specifically, the adolescent that were employed after the intervention and earned more than BDT 60,000 per year were considered as successful. The failuer cases include those that were unemployed after intervention. The qualitative study covers 11 success (7 boys and 4 girls) and 8 failuer cases (3 boys and 5 girls).

[12] In few branches we did not find required number of non-participants.

[13] In this case, failure refers to unsuccessful to get involved in an income generating activity by the time of conducting follow-up survey.

3.2 DATA COLLECTION

A baseline survey was conducted from June to July 2014 covering a total of 1047 adolescents, followed by a follow-up survey in November-December, 2015. Four fifth of the adolescents covered by the baseline survey (860) were successfully revisited in follow-up survey (444 from intervention group and 416 from the non-intervention group). Attrition rates were found to be 16% and 19%, respectively for the participants and non-participants and the difference is statistically significant at 10% level (Annex Table A1). The primary reasons for the attrition can possibly be adduced to :(i) temporary absence of the adolescents in the households during the survey, (ii) change of their residence due to marriage, and (iii) migration. In order to assess whether the attrition is random or not, we have analysed the baseline characteristics of adolescents coming from two groups (Annex Table A2). Our results show that for most of the characteristics the difference between the two groups is statistically insignificant, perhaps indicating a regime of randomness in attrition.

The baseline survey collected information regarding adolescents' employment, savings, and knowledge of health related issues. At the household level, the survey collected detailed information on demography, housing condition and asset holdings.

The follow-up survey repeated all the information collected by the baseline as well as included few other important indicators. These are confidence, work environment, job satisfaction, empowerment of adolescents and food and non-food expenditure at the household level. The follow-up survey also had a separate qualitative part. For qualitative data collection we conducted in-depth interviews using a semi-structured interview guideline. All the interviews were recorded using a digital recorder and later transcribed in full for further analysis.

SECTION FOUR

DESCRIPTIVE STATISTICS

This section includes descriptive statistics on the outcome variables and some basic demographic characteristics of the adolescents that were surveyed both in baseline and follow-up. Table 4.1 depicts the baseline statistics regarding age, education, and marital status of the surveyed adolescents. It shows that about two per cent of the male and one per cent of female adolescents from the treatment group were enrolled in school at baseline. Since the intervention is designed for underprivileged school dropout adolescents, this finding indicates that either these adolescents were mis-targeted or they were irregular in their school attendance. In contrast, 19% of the boys and 17% of the girls from non-participant adolescents were enrolled in school at baseline. Since the non-participants are those that did not meet the programme's eligibility criteria, these findings do not seem to be surprising. In terms of the number of grades completion, we find that on average participant adolescent boys completed 7.25 grades (for girls 7.45 grades) against 6.8 grades among non-participant adolescent boys (for girls 6.97 grades). Almost all the surveyed adolescent boys were unmarried at baseline against 1 per cent of the participant and 3 per cent of the non-participant girls. As mentioned earlier, the programme usually selects adolescents that have education level grade 8 or below. Statistics in Table 4.1 shows that 6% of the participant boys and 16% participant of the girls had education level of grade more than 8. This is perhaps due to the fact that the programme often tends to relax education criterion.

Table 4.1 Age, education and marital status of the participants and non-participants at baseline

Indicator	Boys			Girls		
	Partici-pants	Non-participants	Difference	Partici-pants	Non-participants	Difference
	(1)	(2)	(3 = 1-2)	(4)	(5)	(6=4-5)
Currently enrolled in school (Yes=1, No=0)	0.02 (0.13)	0.19 (0.39)	-0.17***	0.01 (0.11)	0.17 (0.38)	-0.16***
Completed less than grade 9 (Yes=1, No=0)	0.94 (0.24)	0.88 (0.33)	0.06**	0.84 (0.37)	0.81 (0.40)	0.03

Indicator	Boys			Girls		
	Participants	Non-participants	Difference	Participants	Non-participants	Difference
	(1)	(2)	(3 = 1-2)	(4)	(5)	(6=4-5)
Age (year)	16.22 (1.17)	16.17 (1.54)	0.06	16.45 (1.14)	16.15 (1.63)	0.30**
Marital status (Married=1, Unmarried=0)	0.00 (0.00)	0.00 (0.10)	-0.98	0.01 (0.09)	0.03 (0.18)	-0.024*
Number of observation (N)	218	204		226	212	

Note: Figures in the parentheses are standard errors. ***, ** and * denote significance at the 1%, 5% and 10% level, respectively.

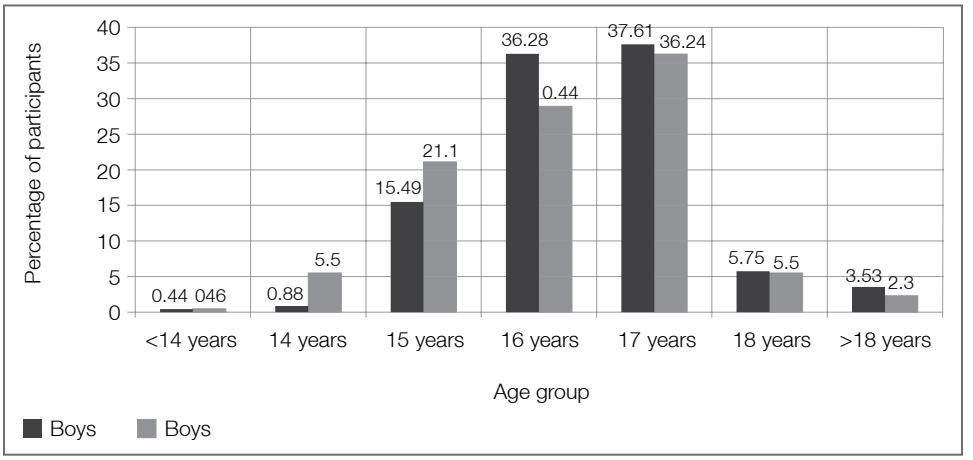
Table 4.2 reports the baseline characteristics of the surveyed adolescents' households. It shows that there is no significant difference in baseline household level characteristics between participants and non-participants. The average household size is estimated at 5.31 for participant and 5.46 for non-participant households – both being much above the national average of 4.4 for urban households (HIES 2010). About 86-87% of the surveyed households are male-headed which coincide with other studies also. The parents of the surveyed adolescents had little education, with an average of 4.26 grades for participants and 3.67 for non-participants. Moreover, over four-fifths of the participant and non-participant households had per capita per monthly income below BDT 3000 at the baseline.

Table 4.2 Household level characteristics of the participant and non-participant adolescents

Indicator	Participants	Non-participants	Difference
	(1)	(2)	(3=1-2)
Household size	5.31 (1.68)	5.46 (1.71)	-0.15
Household head sex (male=1, female=0)	0.86 (0.34)	0.87 (0.34)	-0.01
Household head age (year)	46.16 (8.96)	46.56 (9.60)	-0.40
Household head education (year)	4.26 (7.62)	3.67 (8.92)	0.59
Per capita monthly income below BDT 3000 (yes=1,no=0)	0.85 (0.36)	0.83 (0.38)	0.02
Number of observation (N)	474	460	

Note: Figures in the parentheses are standard errors.***, ** and * denote significance at the 1%, 5% and 10% level, respectively.

Fig 4.1 Age distribution of the programme participant adolescents



An analysis of the participant's age shows that the programme includes some adolescents (about 3%) with age above 18 years. The representation of the 14-year-old adolescents is very low, perhaps indicating exclusion error to some extent.[14]

Table 4.3 compares the involvement in earning activities of the participant and non-participant adolescents. At baseline, the participant adolescents on average devoted about 0.60 hours to earning activities against 1.42 hours for the non-participant adolescents. The low level of time devoted to earning activities is due to the fact that majority was unemployed at baseline. Further analysis shows that the amount of time devoted to earning activities has increased for both groups after the intervention. However, the magnitude of increase was comparatively larger for the participant adolescents. At baseline, the surveyed adolescents, both participants and non-participants, were found to be involved mostly in wage employment. Similar patterns are observed in the follow-up survey.

[14] Exclusion error happens when certain group gets excluded from the benefits even after meeting the targeting criteria.

Table 4.3 Employment status of the participants and non-participants at baseline and follow-up

Indicator	2014			2015		
	Partici-pants	Non-participants	Difference	Partici-pants	Non-participants	Difference
	(1)	(2)	(3=1-2)	(4)	(5)	(6=4-5)
Adolescent engaged in earning activity in last one year (Yes=1, No=0)	0.08 (0.27)	0.19 (0.39)	-0.11***	0.77 (0.42)	0.42 (0.49)	0.35***
Average working hour in a day#	0.60 (2.24)	1.42 (1.42)	-0.81***	6.88 (0.22)	3.94 (0.25)	2.94***
Time devoted to different activities…(Hour)#						
Non-agricultural casual day labour	0.32 (1.52)	0.61 (2.04)	-0.29**	1.60 (3.36)	1.30 (3.26)	0.31
Non-agricultural salaried labour	0.35 (1.77)	0.85 (2.61)	-0.50***	4.70 (4.62)	2.5 (4.30)	2.22***
Non-agricultural self-employment	0.00 (0.00)	0.00 (0.00)	0.00	0.1 (0.73)	0.1 (1.16)	-0.05
Agricultural self-employment	0.04 (0.26)	0.04 (0.26)	0.00	0.00 (0.25)	0.0 (0.19)	0.00
Agricultural casual day labour	0.00 (0.00)	0.04 (0.55)	-0.04	0.02 (0.38)	0.04 (0.59)	-0.02
Number of observation (N)	444	416		444	416	

#Analysis is conducted for full sample. For those that devoted no time to particular activity, amount of time is considered as zero.

Note: Figures in the parentheses are standard errors. ***, ** and * denote significance at the 1%, 5% and 10% level, respectively.

Table 4.4 reports the earnings and financial assets of the surveyed adolescents. The programme participants earned about BDT 167 per month at baseline. Since only 8% of the participants were engaged with earning activities at baseline (Table 4.3), the low level of earnings reported in Table 4.4 is predictable. The non-participant adolescents earned higher than the participants at baseline, and the difference is statistically significant. On the other hand, in 2015, about one and half years after the intervention, the earning of the participant adolescents has almost doubled in comparison to their non-participant counterparts. Similarly, savings behaviour for both groups of adolescents increased during 2014-2015 although the magnitude of increase is found to be much larger for the participant adolescents. By and large, it appears that even though participants were lagging behind in terms of income and saving during the baseline period, the intervention successfully assisted them to overcome their situation and catch up with their non-participant counterparts.

Table 4.4 Earnings and financial assets of the participants and non-participants

Indicator	2014			2015		
	Treatment	Control	Difference	Treatment	Control	Difference
	(1)	(2)	(3=1-2)	(4)	(5)	(6=4-5)
Monthly earning (BDT, constant 2014 prices)	166.8 (771.1)	375.1 (1060.4)	-208.2***	2089.4 (2250.7)	1269.9 (2208.3)	819.5***
Has savings (Yes=1, No=0)	0.11 (0.31)	0.11 (0.31)	0.00	0.27 (0.45)	0.09 (0.29)	0.19***
Amount of savings (BDT)	204.4 (1260.6)	714.5 (5875.8)	-510.12*	1652.8 (10558.3)	635.3 (3975.9)	1017.4*
Has loan (Yes=1, No=0)	0.01 (0.11)	0.00 (0.07)	0.01	0.02 (0.14)	0.02 (0.13)	0.00
Amount of outstanding loans (BDT)	98.31 (1348.4)	45.44 (678.1)	52.87	151.58 (1533.9)	154.31 (1830.5)	-2.74
Number of observation (N)	444	416		444	416	

Note: Figures in the parentheses are standard errors. ***, ** and * denote significance at the 1%, 5% and 10% level, respectively.

Appendix Tables A3 and A4 present the earnings, employment and savings of the adolescent boys and girls separately. Statistics show that at baseline, programme participant boys were more likely to be employed than participant girls. Again, as the information on employment is for last one year of the survey, this finding does not necessarily imply that these adolescent (those that were employed at baseline) were mis-targeted because they might not be actually employed at the time of selection. Furthermore, the STAR, has a policy of selecting learners who are involved in hazardous trades. Hence, the finding that few learners were engaged in work at baseline meets programme targeting criteria because it may be that they were involved in hazardous job at the time of selection process. Savings behaviour at baseline was almost similar across gender. Annex Table A5 reports the status of the surveyed adolescents regarding their knowledge of health related issues. Statistics show that at baseline, programme participant adolescents were less aware about the consequence of HIV/AIDS and less likely to be addicted to any kind of narcotics.

Descriptive statistics presented in Table 4.3 shows that among the programme participant adolescents, 23% were still unemployed at the time of follow-up survey. As we will discuss in qualitative research findings, major causes of unemployment reflected from the findings are: lack of proper knowledge regarding job seeking, absence of family support especially in case of female trainees, reluctance towards wage employment etc. However, Table 4.5 delineates the baseline characteristics of the employed and unemployed adolescents at the period of follow-up survey.

Table 4.5 Baseline characteristics of the participant adolescents by their employment status after the intervention

Indicator	Boys			Girls		
	Employed	Unemployed	Difference	Employed	Unemployed	Difference
	(1)	(2)	(3=1-2)	(4)	(5)	(6=4-5)
Adolescent's age (years)	16.18 (1.20)	16.50 (0.97)	-0.32	16.59 (1.10)	16.16 (1.17)	0.43***
Adolescent's grade passed	7.19 (1.03)	7.60 (1.04)	-0.41**	7.56 (1.47)	7.23 (1.27)	0.33*
Married adolescent (Yes=1, No=0)	0.00 (0.00)	0.00 90.00)	0.00	0.01 (0.11)	0.00 (0.00)	0.01
School going adolescent at baseline (Yes=1, No=0)	0.02 (0.13)	0.03 (0.18)	-0.02	0.01 (0.11)	0.01 (0.12)	0.00
Male headed household (Yes=1,No=0)	0.87 (0.33)	0.93 (0.25)	-0.06	0.87 (0.34)	0.81 (0.39)	0.06
Household head's education (Years)	3.49 (4.00)	3.60 (3.65)	-0.11	4.16 (4.02)	2.74 (3.31)	1.42***
Household head's age (Year)	45.66 (8.65)	47.87 (11.54)	-2.20	46.04 (8.69)	45.85 (8.96)	0.19
Adolescent employed at baseline (Yes=1, No=0)	0.12 (0.32)	0.13 (0.35)	-0.02	0.05 (0.22)	0.03 (0.16)	0.03
Baseline monthly earning	299.25 (1094.85)	193.06 (707.82)	106.20	65.05 (309.77)	29.00 (232.88)	36.05
Number of observation (N)	188	30		152	74	

Note: Figures in the parentheses are standard errors.***, ** and * denote significance at the 1%, 5% and 10% level, respectively.

We have analysed the relevant baseline characteristics of the adolescents in Table 4.5 to determine the influential factors that played important role regarding employment status of the adolescent during the follow-up survey. Our analysis shows that employment is greater for older adolescents girls compared to their younger counterparts. Additionally, household head's education level has been found to be an influential factor for employment, particularly for adolescent girls. Moreover, unemployment rate is higher across some trades (Table 4.6). For example, trades that are technical in nature such as mobile phone servicing seem to have low rate of unemployment compared to non-technical trades like tailoring and embroideries. Annex Table A6 shows gender-disaggregated information on unemployment across various trades.

Table 4.6 Unemployment, earnings and types of trades offered for training

Type of training	Number of adolescents in the sample	% of adolescents unemployed during the follow-up survey	Earnings of adolescents (BDT)
Electrical work	7	0	4439.25
Mobile servicing	107	20	2407.56
Fridge/AC repairing	59	7	3098.70
Beautician	97	25	1991.37
Tailoring/dress making	125	34	1242.09
Embroidery	8	63	465.34
Basic electronics	21	19	2204.61
Thai-aluminum	11	9	3504.67
Wooden furniture making	9	22	2133.09

SECTION FIVE

ESTIMATING EQUATION

As the descriptive statistics shows, there is a large and statistically significant difference in some baseline characteristics between participant and non-participant adolescents. Difference-in-difference (DiD), a popular method of impact assessment, controls for these baseline differences. Therefore, taking the advantage of panel data, we estimate the effect of the intervention using the DiD method. If the common trend assumption holds, that is participant and non-participation households/adolescents have a common trend in the outcome variables in the absence of intervention, DiD identifies the causal effects of the intervention. The estimating equation is as follows:

$$y_{it} = \alpha_1 + \alpha_2 INTV_i + \alpha_3 YEAR_t + \alpha_4 INTV_i * YEAR_t + e_{it} \quad \text{.....(1)}$$

Where, y_{it} is outcome variable of interest for household or individual i in year t. is a binary variable taking the value of 1 if the individual or household i is from intervention group and 0 if not. $YEAR_t$ is a dummy variable taking the value of 1 if t refers to follow-up survey year and 0 if baseline. α_4 identifies causal effect of the programme assuming that common trend assumption does hold.

As we do not have panel data for the pre-programme period, we cannot verify whether the common trend assumption holds or not. If the common trend assumption does not hold then the error term in equation (1) is correlated with interaction term, biasing the estimates of the programme's effects. One possible avenue for possible correlation between error term and interaction term is through time-invariant individual characteristics that are correlated with intervention. So, if we control for these characteristics, such bias is ameliorate/rectified. Hence, we also estimate the following equation that controls for individual level fixed effects:

$$y_{it} = \tau_i + \delta_1 INTV_i + \delta_2 YEAR_t + \delta_3 INTV_i * YEAR_t + e_{it} \quad \text{.....(2)}$$

Where τ_i are individual fixed effects. Equation (2) provides us with a robustness check of the results obtained using equation (1). δ_3 identifies the casual effect of the intervention.

For some outcome variables of interest baseline data are not available. Hence, we cannot use equations (1) and (2) for estimating the effect on these outcome variables. We have used propensity score matching to assess effects on these outcomes.

The propensity score matching (PSM) method of programme evaluation constructs a comparison group who are likely to be similar to the treated (i.e. have similar inclusion probability densities) contingent upon baseline participation by matching the intervention sample to comparison group based on observable characteristics (Asadullah and Ara 2015). Rosenbaum and Rubin (1983) also acknowledged that the probability of receiving treatment characteristics.

$$P(X) \equiv Pr\{D = 1|X\} = E\{D|X\} \ldots\ldots \quad (3)$$

Where, D takes a value of 0 or 1, indicating whether, the observation falls within the treatment of the comparison group and X represents variables displaying the pre-treatment characteristics.

The steps followed in the paper to utilise the PSM method are as follow: first a probit model using baseline data (2014) on adolescent's age, school-going status and socio-economic status indicators at household level was estimated. Second, the balancing properties of the data were checked by testing whether the two groups have the same distribution (mean) of propensity scores and of variables within groupings of the propensity score. And finally, the matching equations using the common support restriction (to ensure that matches are formed only where the distribution of the density of the propensity scores overlap between treatment and control groups) was estimated. STATA's msmatch2 command has been applied to match the propensity score between the treatment and control groups through the nearest neighbourhood matching technique (as can be seen from Table A7 in Annex).

While implementing the PSM method, the estimated impact of the programme is the average difference in the outcomes for each intervention respondent from a weighted average of outcomes in each similar comparison group of respondents from the matched sample. Average treatment on the treated (ATT) is regarded as more interesting estimation than average treatment effect (ATE) for programme evaluation in many studies (Imbens and Wooldridge 2009).

SECTION SIX

RESULTS AND DISCUSSIONS

6.1 QUANTITATIVE RESULTS

Impacts on employment, earnings and financial assets

Table 6.1 presents the effects of the intervention on the employment. Column 1 of Table 6.1 reports the effects of the programme estimated using equation (1) while column 2 reports that of using equation (2). Results are generally robust after controlling for individual level fixed effects. Findings show that, the intervention has succeeded in its aim to increase labour market participation of the adolescents. The magnitude of the effect on employment is large---about 46 percentage points (six times the baseline mean of the intervention group). Further, findings show that the intervention increased adolescents' time devoted to earning activities by about four hours per day, indicating a considerable increase in labour supply.

Table 6.1 Impacts on labour market participation

Indicators	Impact using DiD	Impact using DiD with fixed effects	Baseline mean of outcomes for participants
	(1)	(2)	(3)
Adolescent engaged in earning in last one year (Yes=1, No=0)#	0.46*** (0.04)	0.46*** (0.04)	0.08
Average working hour in a day#	3.75*** (0.04)	3.75*** (0.04)	0.60
Time devoted to earning activity (hour/day)			
Non-agricultural casual day labour	0.59** (0.26)	0.59** (0.24)	0.32
Non-agricultural wage salaried labour	2.72*** (0.34)	2.72*** (0.32)	0.35
Non-agricultural self-employment	-0.05 (0.07)	-0.05 (0.07)	0.00
Agricultural self-employment	0.00 (0.02)	0.00 (0.02)	0.04
Agricultural casual/day labour	0.02 (0.04)	0.02 (0.03)	0.00
Number of observation (N)	1720	1720	

#Using full sample, taking 0 values for those who are not engaged in earning.

Note: Figures in the parentheses are standard errors. ***, ** and * denote significance at the 1%, 5% and 10% level, respectively.

Disaggregated analysis illustrates that programme mainly increases the time devoted to non-agricultural wage/salaried employments (i.e. tailoring, mechanic, industry worker, etc). These findings are anticipated, as the intervention provides training on these activities. The effect on self-employment is very small and statistically significant. This is expected as the programme's main focus is on wage-employment.

The occupations and income from the corresponding trades adolescents were involved in the last year prior to survey was recorded including the number of days and hours they have spent in that particular occupations .

Table 6.2 depicts the effect of the intervention on earning, savings, and outstanding credit. Results show a significant positive impact of the intervention on the earnings. This is consistent with the finding reported in Table 6.1 showing that the programme has increased the labour market participation of the adolescents. The magnitude of the effect on earnings is large—about six times the baseline earnings of the participant adolescents. Results presented in Table 6.2 also document large effects on savings. Specifically, the amount of increased savings due to the intervention is about 1.5 times the monthly earning increase as a result of the intervention. On the other hand, the intervention decreased outstanding loan of the adolescents but the effect is not statistically significant, perhaps indicating that they are yet to start new business for which they need to take loans.

Table 6.2 Impacts on earnings and financial assets

Indicators	Impact using DiD	Impact using DiD with fixed effect	Baseline mean of outcomes for participants
	(1)	(2)	(3)
Monthly earning (BDT, at 2014 constant price)	1,028*** (164.7)	1,028*** (151.7)	166.85
Adolescent has savings (Yes=1, No=0)	0.183*** (0.03)	0.183*** (0.03)	10.81
Amount of savings (BDT)#	1,528** (620.2)	1,528** (618.3)	204.37
Adolescent has outstanding credit (Yes=1, No=0)	0.00 (0.01)	0.00 (0.01)	0.01
Amount of outstanding credit (BDT)#	-55.6 (136.4)	-55.6 (119.7)	98.31
Number of observation (N)	1720	1720	444

#Using full sample, taking 0 values for those who don't have savings/loans.

Note: Figures in the parentheses are standard errors.***, ** and * denote significance at the 1%, 5% and 10% level, respectively.

Table 6.3 presents the effects of the intervention on employment, earnings and savings separately for adolescent boys and girls. Results reported in columns 1-3 are for boys while that of columns 4-6 are for girls. It appears from Table 6.3 that the effect of the intervention on earnings is greater for adolescent girls compared to their male counterparts. Specifically, the intervention increased the earnings of the girls by BDT 1,150 (USD 14.74) against BDT 899 (USD 11.52) for boys. This is expected as the effect on employment is found to be larger for girls. Similarly, the effect on savings is larger for girls. Specifically the effect on girls' savings is four times higher than that of the boys. These results indicate that girls are more inclined towards investing their earnings for further earning increase.

Table 6.3 Impacts on employment, earnings and savings

	Boys			Girls		
	Impact using DiD	Impact using DiD with fixed effect	Baseline mean of outcomes for participants	Impact using DiD	Impact using DiD with fixed effect	Baseline mean of outcomes for participants
	(1)	(2)	(3)	(4)	(5)	(6)
Adolescent's monthly earning (TK)	899.62*** (272.20)	899.62*** (249.20)	284.63	1,150*** (161.5)	1,150*** (157.3)	53.24
Adolescent having savings (Yes=1, No=0)	0.19*** (0.05)	0.19*** (0.05)	0.11	0.18*** (0.05)	0.18*** (0.04)	0.11
Average savings of adolescent (TK)#	618.99 (553.30)	618.99 (540.90)	158.49	2,402** (1,095)	2,402** (1,096)	248.63
Number of observation (N)	844	844	218	876	876	226

Note: Figures in the parentheses are standard errors.***, ** and * denote significance at the 1%, 5% and 10% level, respectively.

#Using full sample, taking 0 values for those who don't have savings.

We have also estimated heterogeneity of the impacts on labour market participation and earnings with regard to age and education of the adolescents. For this purpose we have extended estimating equation (1) because in previous findings, we identified that the results obtained from equation (1) and (2) are similar. The extended equation is as follows:

$$y_{it} = \beta_1 + \beta_2 INTV_i + \beta_3 YEAR_t + \beta_4 X_i + \beta_5 INTV_i * YEAR_t + \beta_6 INTV_i * X_i + \beta_7 YEAR_t * X_i + \beta_8 INTV_i * YEAR_t * X_i + \upsilon_{it} \quad \ldots\ldots (4)$$

Where, χ_i is age or education of adolescent i. Other variables are as defined earlier. A positive coefficient of indicates that the impact on the outcomes of interest (employment/earning) is larger for the older/more educated adolescents. Annex Table A8 reports the results for heterogeneity of the effects with regard to age. Results show that the estimated coefficient on the triple interaction term is positive and statistically significant for employment, indicating that the effect of the intervention on employment is larger for older adolescents. Specifically, as the results presented in column (1) of Annex Table A8 indicate, programme effect on employment increases by six percentage points for a year increase in age of the adolescents. Based on point estimates, we can calculate to show that the effect of the intervention on employment is negative for the adolescents aged less than 8 years and positive for those aged more than 8. Note that this does not mean that the sample includes adolescents aged 8 years or less. Annex Table A9, on the other hand, presents the heterogeneity of the effects on employment and earnings with regard to education. The coefficients of the triple interaction term for both employment and earnings bear positive signs but they are statistically insignificant.

Impact on socio-psychological issues

As noted earlier, one of the components of the trainings provided by the programme is class-room-based soft skill training. In this training, participants learn about entrepreneurship, human rights and social and health related issues. This particular component is designed to boost up self-esteem and confidence of the adolescents both professionally and personally (for example case of confidence as reported in Table 6.4). Findings show that compared to the non-participants, the participant adolescents are more likely to report that they are confident that: they are capable of starting new business/expanding existing business, monitoring/guide their employees, and purchasing business materials at negotiable prices. They also possess confidence to take up jobs abroad. Considering these relevant indicators, the increase in confidence level due to the programme intervention, is found to range between 25 %-=to 35%. Annex Table A10 presents the effects on confidence separately for male and female adolescents. Findings show that for most of the indicators, the effect is larger for adolescents girls compared to boys. Interestingly, on the indicator related to confidence about taking jobs abroad, the programme has statistically significant effect for boys but not for girls. These findings, perhaps, point to the fact that international migration from Bangladesh is mostly practiced by males (BBS 2014).

Table 6.4 Impacts on confidence

Indicator	Impact using PSM	Mean of outcomes for non-participants at follow-up
	(1)	(2)
Adolescent has:		
Confidence on his/her own skill (Yes=1, No=0)#	0.13** (0.06)	0.37
Confidence to operate own business (Yes=1, No=0)	0.13*** (0.04)	0.45
The capability of starting a new business with loan or expand business (Yes=1, No=0)	0.17*** (0.04)	0.35
The ability to guide and monitor his/her employees (Yes=1, No=0)	0.14*** (0.04)	0.53
The ability to procure business products at efficient rate (Yes=1, No=0)	0.11*** (0.04)	0.61
The confidence to take up jobs abroad (Yes=1, No=0)	0.15*** (0.04)	0.42
Number of Observation (N)##	804	367

Sample was restricted to only adolescents who were found employed in the time of follow-up survey.
##Number of observations refers to matched observations.

Note: Figures in the parentheses are standard errors.***, ** and * denote significance at the 1%, 5% and 10% level, respectively.

Table 6.5 Impacts on knowledge on health related issues

Indicator	Impact using DiD	Impact using DiD with fixed effect	Baseline mean of outcomes for participants
	(1)	(2)	(3)
Familiar with the term "HIV/AIDS" (Yes=1, No=0)	0.05* (0.03)	0.05* (0.03)	0.90
The average knowledge point on HIV/AIDS transmission#	0.01 (0.02)	0.01 (0.02)	0.77
Aware of the ultimate consequence of HIV/AIDS (i.e. death) (Yes=1, No=0)#	0.05* (0.03)	0.03 (0.03)	0.90
Substance abuse (Yes=1, No=0)	-0.04** (0.02)	-0.04** (0.02)	0.01
Number of Observation (N)	1720	1720	444

#For those who reported that they are familiar with the term HIV/AIDS

Note: i) Adolescents reported true/false on 6 six questions related to how HIV/AIDS spread, 1) through sexual behaviour, 2) through using injection/needle used by AIDS patient, 3) through having germs from AIDS patients, 4) if AIDS patient tough, 5) infant gets HIV/AIDS if it's mother is AIDS patient, 6) being bitten by mosquito. These answer were coded on binary (0/1) with 1 indicating that adolescent knew the correct process how AIDS spread and averages were used as knowledge point. A higher score on knowledge point on HIV/AIDS indicates that the respondent knows more about how AIDS spread.

ii) Figures in the parentheses are standard errors.***, ** and * denote significance at the 1%, 5% and 10% level, respectively.

As mentioned earlier, the programme provides basic classroom based training on various health related issues, including HIV/AIDS and adverse impacts of substance abuse. Results indicate that the intervention has been successful in increasing the knowledge of the participant adolescents about HIV/AIDS and its consequences (Table 6.5). The intervention also decreased the habit of substances abuse among participant adolescents by four percentage points. Precisely, it decreased drug consumption by 4 times baseline mean for this outcome for participants.

Work place Environment, Job satisfaction and Empowerment

As mentioned earlier, the prevalence of extremely poor working condition is one of the major characteristics of the informal sectors in Bangladesh (Ali 2013). The STAR programme intends to improve the environments of the workplaces of the employed adolescents through providing classroom training and checklists on ideal workplace environment to its target group (adolescents and MCPs). Hence, we are intrigued to explore whether the STAR programme helps to improve workplace environments of adolescents. Among the surveyed adolescents, those who are involved with IGAs were asked about various characteristics of their workplaces (ie. availability electricity, prevalence of heavy machinery use, prevalence of harmful chemical, access to clean drinking water, access to proper sanitation facilities, etc.).

Table 6.6 Impacts on work place environment

Indicator	Impact using PSM	Mean of outcomes for non-participants at follow-up
Employed adolescents have:		
Access to electricity (Yes=1, No=0)	0.12*** (0.05)	0.84
Access to fan (Yes=1, No=0)	0.13*** (0.05)	0.78
Access to sufficient air (Yes=1, No=0)	0.08* (0.04)	0.87
To use heavy machinery (Yes=1, No=0)	-0.11** (0.05)	0.28
To use chemical (Yes=1, No=0)	0.01 (0.04)	0.10
Clean work place (Yes=1, No=0)	0.14*** (0.05)	0.76
Access to safe drinking water (Yes=1, No=0)	-0.05 (0.05)	0.36
Access to sanitary latrine (Yes=1, No=0)	0.09** (0.05)	0.75
Contaminated work place (Yes=1, No=0)	-0.03 (0.03)	0.07
Number of Observation (N)#	490	157

#Number of observations refers to matched observations among the employed adolescents during follow-up survey.

Note: Figures in the parentheses are standard errors.***, ** and * denote significance at the 1%, 5% and 10% level, respectively.

This information was collected only in the follow-up survey. Impacts are estimated by matching the employed (at follow up) participant adolescents with that of non-participants such that the types of works of the two groups of adolescents are comparable. The estimated effects on work place environments are reported in Table 6.6.

We see that the participant adolescents are 12 percentage points more likely to have access to electricity, availability of fan (13 percentage points), proper ventilation (8 percentage points) and sanitary latrine (9 percentage points) in their workplace compared to the non-participant adolescents. Similarly, the proportion of adolescents having to use heavy machinery and harmful chemicals at work is higher among the non-participants. These results indicate that the programme perhaps help improve work place environment of the adolescents.

The survey asked the employed adolescents several questions about their job satisfaction. However, the information is available only for the follow-up survey. Five specific indicators were used to measure job satisfaction: (1) paid-leave during festive period (2) having bonus during festive period, (3) getting paid-sick leave, (4) can share personal issues (sickness, financial issues etc) with his/her employer and (5) share good bonding with colleagues. Table 6.7 reports the effects of the intervention on these indicators. For all the indicators reported in Table 6.7, the programme has positive effects although not all of them are statistically significant. Impacts are found to be statistically significant for two indicators (getting sick leave and having good relationship with colleagues). The participants are 13 percentage points (22%) more likely to get sick leave and 23 percentage points (82%) more likely to have good relationship with co-workers.

Table 6.7 Impacts on job satisfaction of the employed adolescents

Indicator	Impact using PSM	Mean of outcomes for non-participants at follow-up
	(1)	(2)
Get paid leave during festive period (days)	0.27 (0.43)	6.25
Get festival bonus (Yes=1, No=0)	0.08 (0.06)	0.64
Get sick leave with pay (Yes=1, No=0)	0.13** (0.06)	0.60
Can share personal issues (sickness, financial issues etc) with his/her employer (Yes=1, No=0)	0.08 (0.05)	0.83
Have good relationship with co-workers (yes=1, No=0)	0.23*** (0.06)	0.38
Number of Observation (N)#	369	122

#Number of observations refers to matched observations among the employed adolescents during follow-up survey. There were few missing data under job satisfaction sector.

Note: Figures in the parentheses are standard errors.***, ** and * denote significance at the 1%, 5% and 10% level, respectively.

To analyse the effect of the intervention on adolescents' empowerment, an index was constructed using four indicators. The follow-up survey asked respondent adolescents to report whether they are allowed to make decision regarding: (1) household issues (2) their own lives, (3) travelling outside of the country and (4) city for work. The answers were coded on a binary (0/1) scale, with 1 indicating that the adolescent played significant role in the decision-making process and had freedom of movement and vice-versa. The index is calculated by summing up all four variables and then divided by the total number of indicators. The value of the index ranges between 0 to 1 where a higher value indicates higher level of empowerment. Since the information on empowerment indicators was not available for baseline survey, we have estimated the effect of the intervention on it using PSM. Results are reported in Table 6.8 to show that the programme has significant positive effect on the empowerment of the adolescents. Specifically, the programme increased empowerment level of the participants by about 20 per cent. This indicates that their role in household and/or personal decision-making has enhanced extensively. Annex Table A11 presents the estimated effects on empowerment separately for male and female adolescents. The impact has been found to be larger for girls, perhaps because the boys were still more empowered at baseline as revealed from information reported in the last column of Annex Table A11. A possible consequence of increased empowerment of the adolescent girls is that they may be less likely to marry early—a common phenomenon in rural Bangladesh. Analysing the effects of the programme on early marriage of the adolescent girls, we find that the programme reduces early marriage (by about 2 percentage points) but the effect is not statistically significant, perhaps because the sample is not large enough to detect the effect on early marriage.

Table 6.8 Impact on empowerment

Indicator	Impact using PSM	Mean of outcomes for non-participants
	(1)	(2)
Empowerment index	0.08*** (0.28)	0.41
Number of Observation (N)#	804	367

#Number of observations refers to matched observations.

Note: Figures in the parentheses are standard errors.***, ** and * denote significance at the 1%, 5% and 10% level, respectively.

Impact on household welfare

Table 6.9 reports the effects of the intervention on food and non-food expenditures. Information on household food and non-food expenditures was collected for last three days and one year, respectively. We have estimated the effect on expenditures

using PSM because baseline information on expenditure is not available. We see that the intervention increased both food and non-food expenditures of the adolescents' family members but the effect on the latter is not statistically significant (Table 6.9). The magnitude of the effect on food expenditure is equivalent to about 10% of the mean of the non-participants' food expenditures. At follow-up, the household size of the intervention group was 5.54. Hence, the results indicate that due to the intervention household expenditure increased by BDT 715 per month. As mentioned earlier, adolescents' per month earnings has increased by about BDT 1,028 as a results of the intervention, thus indicating that more than half of the increased earnings of the adolescents goes to household food expenses.

Table 6.9 Impacts on food and non-food expenditures

Indicator	Impact using PSM	Mean of outcomes for non-participants
Per day per capita food expenditure (BDT)	4.30** (1.68)	45.74
Per day per capita non-food expenditure (BDT)	2.26 (3.10)	46.55
Number of Observation (N)#	879	409

#Number of observations refers to matched observations.

Note: Figures in the parentheses are standard errors.***, ** and * denote significance at the 1%, 5% and 10% level, respectively.

Impacts on household assets

Since the programme increased earnings of the participant adolescents, we expect that this may translate into an increase in the holding of household durable assets. Table 6.10 explores the effects of the intervention on the key household durable assets. We see that the intervention has positive effects on some durable assets such as refrigerator, technological devices (i.e. computer, cell phones, sewing machine etc). Point estimate of the effect on the number of mobile phone owned is positive although statistically insignificant.

Table 6.10 Impacts on household assets

Asset items (number)	Impact using DiD	Impact using DiD with fixed effect	Baseline mean of outcomes for participants
	(1)	(2)	(3)
Mobile phone	0.02 (0.09)	0.03 (0.07)	1.55
Television	0.00 (0.05)	-0.01 (0.04)	0.57
Electric Fan	-0.02 (0.09)	-0.03 (0.07)	1.34
Vehicle (Rickshaw/CNG/Taxi)	0.01 (0.03)	0.01 (0.03)	0.09
Fridge	0.05** (0.02)	0.05** (0.02)	0.03
Computer	0.01* (0.01)	0.0120* (0.01)	0.00
Sewing Machine	0.12*** (0.04)	0.10*** (0.03)	0.12
Number of Observation (N)	1748	1748	

Note: Figures in the parentheses are standard errors.***, ** and * denote significance at the 1%, 5% and 10% level, respectively.

Adolescents' perception of various programme components

The follow up survey asked the participant adolescents to give an opinion on few pre-specified statements about various components of the programme (i.e. MCP's dedication, role of theory class, effectiveness of English class, dissemination etc). Regarding theory class, for example, they were asked to give their opinion on the following statement "theory class is very effective". The answer options for each statement were pre-specified. They are as follows: "strongly disagree", "disagree", "agree" and "strongly agree". Figure 6.1 graphs the responses of the participant adolescents. Findings show that the programme participants are in general satisfied with the theoretical part of the training.

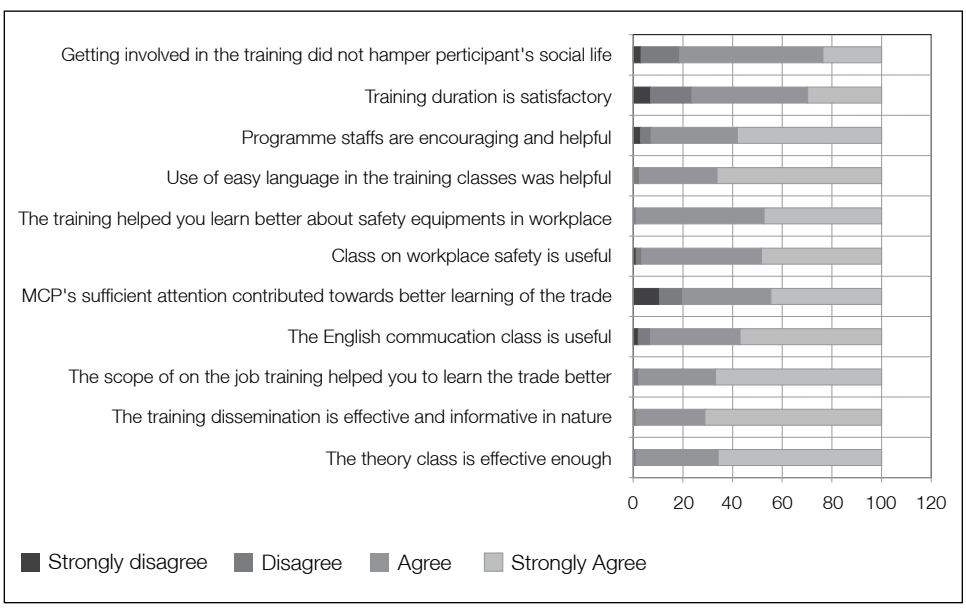
Our qualitative findings seem to be in consort with the quantitative results that the participants are mostly satisfied with the training process. Yet, some of them also suggested expansion of the course duration by additional 4-6 months. A number of participants also requested to increase the frequency of classroom training in a week. Further, qualitative analysis depicting participants' expectations from the intervention are listed as follow:

- As the programme targets trainees from various age groups with varying educational background many young or less educated trainees struggle

to understand specially materials covered in theory classes. Thus, many suggested revising the course length and module as per the participants' characteristics (i.e. age, education and physical and mental status/ability).

- Timely delivery of certificate should be ensured as it serves as an important credential to get job quickly. As per the trainees the process of obtaining certificate after graduation is bit long and tedious. Thus, they have requested to make this process more prompt.
- Facebook can be used as a platform for maintaining a network between MCP's and current and former trainees. Facebook is an undoubtedly a great platform for maintaining communication. As per the trainees, with progress of digital technology and connectivity in all parts of Bangladesh a Facebook group of current and formal trainees and MCPs will help build up network of the both target groups.
- Post training follow-up period should be extended up to one year instead of one month. This extension will assist participants who have weak social network or tapered knowledge of the job market.
- Few suggested for development of video modules particularly for more technical trades like mobile servicing, fridge repairing etc in order to ensure better learning.
- Finally, there should be an opportunity of advanced level of training for STAR graduate who are interested in mastering the nitty gritty of a particular trade.

Fig 6.1 Perception about various components of the programme



Usefulness of the issues taught in the theory classes

In order to understand the importance of each components of the theoretical part of the trainings, programme participants were asked to grade them on a scale of 1 to 6, 1 being the lowest and 6 being the highest grade. Table 6.11 presents average grade points for each components of the theoretical training. Results show that the participants have given very high grades for each components of the training except for classes on entrepreneurship. It needs to be mention here that although the programme has on average very large effects on employment, the effect on self-employment (i.e. entrepreneurship) is very small and statistically insignificant. The finding that the participants gave low grade on entrepreneurship classes thus seems to be consistent.

Table 6.11 Usefulness of the issues taught in the theoretical classes (self-perceived)

Class	Average grade
Theory class on trade	5.24
Class on English communication skill	5.25
Class on entrepreneurship	4.83
Class on work-place etiquette	5.30
Class on life skill	5.19

Cost-benefit analysis

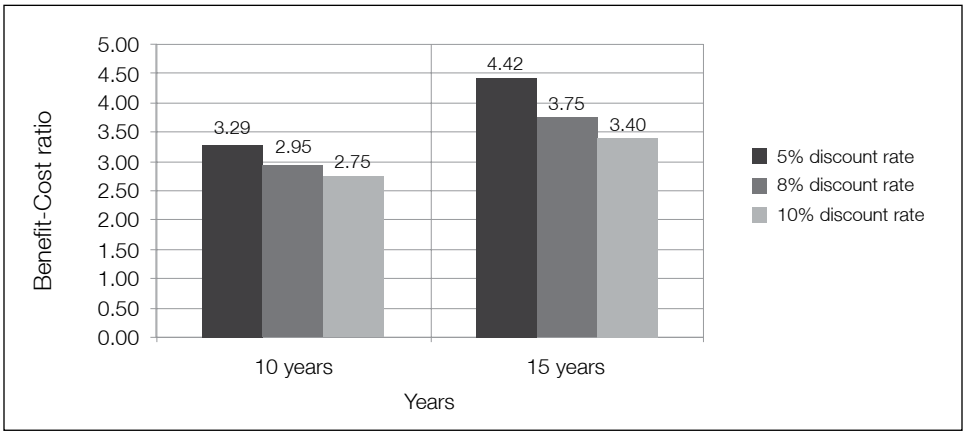
In order to compare the costs of the STAR programme with its benefits, we have conduct a cost-benefit analysis. The indicators of benefits used in this study include: household's food and non-food expenditures, total asset value and adolescents' savings while cost includes programme's cost for per learner/ participant adolescent. Cost information was obtained directly from the programme, which is about BDT 33,000 per adolescent (for 2014 cohort).

Using information from Tables 6.9 and 6.2, we find that the programme has increased household's (considering household size of 5.54) total expenditure and adolescents' savings by BDT 13,068 and BDT 1,528 per year, respectively. On the other hand, the impact on asset value has been estimated at BDT 928. Total gain from the programme is thus BDT 15,524 per year. Following Bandiera, *et al.* (2016) and Sinha *et al.* (2008), we assume that the consumption and savings benefits will continue for about 10-15 years. All gains except for asset value were year 2 (i.e. after one year of programme intervention) using different social discounts rates (5%-10%). Since costs were incurred at the first year, they were inflated to year 2. We have included programme's impact on total asset value only for one year only (year 2) assuming that the benefit of further increase in asset value will be used for consumption purposes. Considering the costs (BDT 33,834 per learner) and the benefit (BDT 15,524 per year) and the length of continuity of benefits for 10-15 years, we estimated the programmes benefit-cost-ratio (BCR).

The steps involved in BCR calculation assuming that benefit will continue for 10 years at 8% social discount rate, for example are as follows:

- For 2015, the calculated benefit is BDT 15,524 including increase in household's (considering household size of 5.54) total expenditure and adolescents' savings and the total asset value while for each of the rest of the year (2016-2024), the calculated benefit is BDT 14,596 as we are including asset value benefit for only 2015.
- Then, we have deflated the benefits to year 1(2015) using 8% discount rate for each year (2016-2024). For example, the deflated benefit for 2016 is BDT 13,515.
- Finally, we have inflated the cost of the programme per adolescent by adjusting inflation (7%). Inflated costs are BDT 36,202. Total benefits of the programme is BDT 106,706 per adolescent. This gives us benefit-cost ratio of 2.95. Similarly, benefit cot ratios are calculated based on different assumptions regarding discount rate and duration of the benefits.

Fig 6.3 Benefit-Cost Ratio (BCR) for different continuity length of gain using different discount rates



As seen from Fig 6.3, the BCR estimates range between 2.75 and 4.42, suggesting very high returns to the investment made in the STAR programme.

6.2 QUALITATIVE RESULTS

The findings of qualitative analysis on the factors that affected the success of the participant in the post training phase are summarised as follows.

Matching trainees' interest and experience with trade

Most respondents reported that the intervention helped them materialise their aspiration since the offered courses were relevant to their interest. Some participants

had prior experience on similar trades though it was very informal in nature. While most of the trainees were unaware of the next step to transform their hobbies and interest into profession, others thought that enrolling in professional training would be very costly. Therefore, the option of matching trade with participants interest/hobbies offered by the intervention worked effectively for success of the trainees as:

- It created instant interest and positive vibe for the trainees.
- It helped trainees to decide their course easily and with confidence.
- It confirmed trainee's sincerity during the period of training.
- It motivated trainee to be focused on their career as well as strive to be successful.

Self-motivation and moving up

The temperament of success varies based on participants' self-motivation, confidence, prudence, future plans and determination. The STAR programme assists it trainees to find their first job mostly in their locality. However, several successful respondents report that they moved to new workplace after completion of their training with their own efforts or networks that offered quite satisfactory salary. Overall, we find that social network is an important driver behind the success of the STAR trainees. Respondents opine that one has to be determined and motivated to use his/her networks properly, indicating that the level of personal motivation and effort results variations in success cases. Here is the story of a girl (mentioned in Box 6.1) who started small but her motivation and effort helped her secure a better job.

BOX 6.1 SHERIN'S ACCOMPLISHMENTS

Like many girls in Bangladesh Sherin dropped out of school just after passing grade 7 due to a financial crisis in her family. In order to support her parents, Sherin was desperate to find a job. She heard about the BRAC STAR programme from friend and immediately pursued BRAC officials for enrolling into offered beautician course. According to her, both the practical and theoretical trainings helped her learn the trade. She claimed that she has learned many things from her MCP, even techniques that were beyond the programme curriculum. Additionally, the certificate she received after completion of the training assisted her to endorse her credentials to potential employers. After completion of the course Shirin continued working with her MCP for a while as well as kept searching for better opportunities and finally succeeded. Presently, Shirin is working at Persona Chittagong, renowned beauty salon chain in Bangladesh. However, getting this job was not an easy process for her as Persona prefers mainly workers with an indigenous background. But her self-motivation and continuous effort helped her get the job. Now her monthly salary is BDT 7500. Moreover during the weekend she also works as a door-to-door beautician which helps her to earn about BDT 2500 – 3000 per month. Apart from contributing to her family she is also saving money for starting her own salon.

Self-motivation drove adolescents to find better jobs even without any support from BRAC or their social network. They developed potential social connections and always kept them updated with useful information. Thus they found the avenues for better opportunities. Their enthusiasm paid back.

But it should not be expected that every trainee possess such zeal. Following the training, majority of the unsuccessful cases were waiting for BRAC's support as received during the training period So such expectation and dependence toward BRAC weakened trainees' personal motivation and effort and undermined their post-SKILL journey. Some respondents, particularly females, said that they had very limited knowledge about job market and did not know how to explore and eventually find a job on their own.

Ageing affects skills

Learning and cognitive capacities as well as capacity of skill acquisition vary from person to person (Ackerman 1987, 1988 and 1992, Ackerman and Cianciolo 2000). Evidently the variation occurs in three attributes among the learners or trainees: (a) students' learning styles (ways of taking in and processing information), (b) approaches to learning (surface, deep, and strategic), and (c) intellectual development levels (attitudes about the nature of knowledge and how it should be acquired and evaluated) (Felder and Brent 2005). Besides age-related difference is also a factor that produces diverse outcomes from the trainees (Head *et al.* 2002, Janacsek *et al.* 2012).

Our qualitative findings reveal that several trainees who were found unemployed at the time of follow-up survey have experienced difficulty in learning the trade during tenancy. Such comments particularly came from those who were trained in air conditioning (AC) and refrigerator repairing or mobile servicing. Even some successful male trainees trained in AC repairing and mobile servicing suggested an extension of the course duration up to one and a half years. Few participants shared that younger trainees struggled to learn the trade and such experience resulted in less self-belief over skill acquisition leading to obstruction of their career progress.

Social capital

Several of the successful participants reported that their families supported them morally and even financially. A significant number of trainees availed better jobs with the help and recommendation of their relatives and neighbours. Hence, social network seems to be an important pathway to materialise the programme supports.

In some cases, adolescents' aspiration was shaped firmly by his/her family members. For example, Anawar's expat elder brother suggested him to acquire training on AC (air conditioner) repairing as skills in this particular trade have high demand abroad.

Hence, Anawar chose AC repairing and still working under his previous MCP as well as preparing for going abroad.

Findings show that adolescents with better social network and family support were likely to get better opportunities (better jobs). Most of unsuccessful respondents stated that their family members were unable to support them. Besides, they did not have any influential relatives or neighbours who could help them to find a job or provide them the startup capital even as loan for starting their own venture.

In two of the unsuccessful cases (one in Rangpur and other in Chittagong) in which girls both trained to be beautician quitted their job after getting married due to their husband's reluctance towards wage labour. None of the husbands opposed the profession but was strictly against their wives getting engaged in wage work. Both were girls tried perusing their career from home but failed in absence of proper capital and network.

Perception on self and wage-employment

Some of the participant adolescents that were unemployed at the time of follow-up survey were found to be not interested in wage employment. In particular, several female trainees in Chittagong and Bogra selected tailoring thinking that it would eventually help them start self-employment. However, in the absence of a proper start-up capital despite of having the skill they remained unemployed. Several trainees informed that initially BRAC staffs motivated them assuring that they would be given business assets such as sewing machine accompanied by soft loan after completion of training. Thus, trainees who were capital constrained expected BRAC to play such role during the post-skill period. But, things did not work out for them as they had expected. They informed that after the completion of skill training the frequency of visits by BRAC staffs came to nil while it was regular during the training period (It should be noted that BRAC staff are required to visit programme participant for a month after the completion of the course). In these cases, skill trainees were not undergoing lack of confidence or skill rather experiencing the need of startup capital or seed money. We interviewed a female trainee Fatema (mentioned in Box 6.2) who is unable work outside due to her health condition. Hence she had a practical plan of setting up a small tailoring shop beside her house. Here is her story:

BOX 6.2 FATEMA'S ORDEAL

Fatema's education stopped at a very early age due to her deteriorating health condition caused by a chronic illness. And unfortunately she is experiencing its persistent effects till today. After dropping out of school she mostly remained involved in household chores. Fatema found ray of hope when she got selected as a trainee of STAR programme since then she started dreaming of running a tailoring shop from her home. She did not informed BRAC of her chronic condition as she was only asked about her physical and mental disability. However, after the completion of the training due to her health condition, she was unable look for wage employment. Fatema's parents are not financially well-off. Moreover, recently one of her elder brother, who was one of the earners of the family, got married and is living separately with his wife now. This change also financially weakened Fatema's family. Due to her health condition, Fatima always wanted to do something from home. Besides, she expected (she claimed that she was told so) that BRAC would give her at least a swing machine after the successful completion of the course. Her father also assured her if she could manage some loan from BRAC he would help set up a small shop beside their house. So, with the dream of being a stay-home, self-employed tailor she began her journey of hope. However, in absence of proper opportunity Fatima is still unemployed.

Thus, the STAR programme needs to have a closer look on cases like Fatima's and think where they can do some exception to protect these potential entrepreneurs.

SECTION SEVEN

CONCLUSIONS

Bangladesh has has making commendable progress in various development indicators but the country is reported to lag behind in terms of secondary school completion rate. While enrollment rate has appreciably gone up, the disconcerting dropout rate emerged as a major concern. Moreover, in absence of proper skills training opportunities, a majority of the dropout adolescents get involved in low quality and hazardous jobs in the informal sector that offers limited socioeconomic security and working conditions. To address this problem, BRAC initiated a 'Skill Training for Advancing Resources (STAR)' programme in 2012. The perennial purpose of this programme is to produce a well-trained and empowered youth group geared to suitable employment. The programme is mainly designed for the adolescents aged between 14 to 18 years mostly from poor households, who have been out of school for at least a year. They are supplied with a range of supports including on the job training and classroom based training on various trades, life skill courses, and English language courses etc.

This paper estimates the impacts of the STAR programme on employments, earnings, financial assets, and empowerment of the adolescents and welfare of their family members. At first glance, the findings show that the intervention succeeds in its aim to increase labour market participation of the adolescents. The magnitude of the effect on employment is large about 46 percentage points (six times the baseline mean). Results also show that the intervention increases the time devoted to earning activities (by 4 hours per day) and earnings. Further, the increased earnings of the adolescents as a result of the programme participation translate into household welfare (food expenditures and durable asset holdings). We also document positive effects on empowerment and self-confidence. Moreover, the intervention increases work place environment and job satisfaction. By and large, it has been found that benefit of the investment in the programme is very high, with a cost benefit ratio of around 3.00. This implies that (a) one dollar invested in such type of training could yield 3 dollars and (b) the programme could be scaled up.

The STAR programme targets the adolescents aged 14-18 years. But we find that the representation of the younger group aged 14 is very negligible. This perhaps indicates some exclusion error. Moreover, both qualitative and quantitative findings show that

the intervention is less effective for relatively younger participants. This could be the case because these particular age-group faces difficulty to learn trades that are fairly technical in nature (i.e. mobile servicing, fridge repairing etc). These findings, at first glance, indicate that the programme should revise the targeting criteria by dropping the younger group such as those aged 14 years. But the programme's objective is to improve not only economic indicators but also non-economic ones. If the later is given priority, then the programme should continue with its existing targeting criterion relating age but it should minimise exclusion errors by targeting more adolescents from age group of 14, because as we have shown representation of this group is negligible.

Trades like refrigerator and mobile servicing shown to have higher return over others. Therefore, based on availability of MCPs, priority can be given to trades with high returns.

The STAR programme played a significant role in the lives of adolescents by improving their knowledge, and increasing their confidence and decision-making power. However, it has also unveiled some of the struggles faced by the participants' while pursuing livelihood opportunities in the post-training phase (i.e. absent of proper post-training follow-up, delay on certificate delivery etc). Thus, we recommend to make the process of delivering certificates faster, and to emphasise on post-training follow-up. However, further research can be conducted to estimate the benefits of additional investment for the post-training follow-up.

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APPENDIXES

Table A1. Sample and attrition

	Baseline (2014)		Follow up (2015)		Attrition rate		Difference
	Partici-pants	Non-participants	Partic-ipants	Non-participants	Partic-ipants	Non-participants	
Male	261	252	218	204	16.5	19.0	-2.57
Female	269	265	226	212	16.0	20.0	-4.01
Total	530	517	444	416	16.2	19.5	-3.31*

Note: ***, ** and * denote significance at the 1%, 5% and 10% level, respectively.

Table A2. Baseline characteristics of the attrited and non-attrited adolescents

Indicator	Adolescents surveyed in both baseline and follow -up (not attrited)	Adolescents not surveyed in follow-up but in baseline (attrited)	Difference
Male adolescent (%)	49.07	48.66	0.41
Adolescent engaged in IGA (%)	16.16	18.18	-2.02
Adolescent has saving (%)	10.70	11.23	-0.53
Average amount of saving (BDT)	451.99	399.58	52.41
Adolescent heard about HIV (%)	90.12	90.37	-0.26
Adolescent knows the ultimate consequence of AIDS/HIV (%)	83.14	82.89	0.25
Number of observation	860	187	

Table A3. Employment, earnings and savings of the surveyed boys

Indicator	2014			2015		
	Treatment male	Control male	Difference	Treatment male	Control male	Difference
Adolescent monthly Earning (TK)	284.63	522.94	-238.3**	2753.87	2092.55	661.31***
Adolescent having saving (Yes=1, No=0)	0.11	0.09	0.01	0.29	0.09	0.200***
Average savings of adolescent (TK)	158.49	296.57	-138.08	1405.41	924.51	480.90
Adolescent engaged in earning activities in last one year. (Yes=1, No=0)	0.12	0.25	-0.13***	0.86	0.58	0.28***
Number of Observation (N)	218	204		218	204	

Note: ***, ** and * denote significance at the 1%, 5% and 10% level, respectively.

Table A4. Employment, earnings and savings of the surveyed girls

Indicator	2014		Difference	2015		
	Treatment female	Control female		Treatment female	Control female	Difference
Adolescent monthly Earning (TK)	53.24	232.80	-179.55***	1448.48	478.29	970.19***
Adolescent having saving (Yes=1, No=0)	0.11	0.12	-0.01	0.26	0.08	0.17***
Average savings of adolescent (TK)	248.63	1116.64	-868.01	1891.37	357.08	1,534.30
Adolescent engaged in earning in last one year (Yes=1, No=0)	0.04	0.14	-0.09***	0.67	0.26	0.41***
Number of Observation (N)	226	212		226	212	

Note: ***, ** and * denote significance at the 1%, 5% and 10% level, respectively.

Table A5. Knowledge on health related issues

Indicator	2014		Difference	2015		Difference
	Participant	Non-participant		Participant	Non-participant	
Familiar with the term “HIV/AIDS” (Yes=1, No=0)	0.90	0.90	-0.01	0.96	0.92	0.04***
Number of Observation (N)	444	416		444	416	
The average knowledge point on how AIDS spread	0.77	0.76	0.01	0.82	0.80	0.02*
Adolescent knows the ultimate consequence of AIDS (Yes=1, No=0)	0.90	0.94	-0.04*	0.90	0.89	0.01
Number of Observation (N)	399	376		428	384	
Any kind of drug substance abuse	0.01	0.03	-0.02*	0.03	0.08	-0.05***
Number of Observation (N)	444	416		444	416	

Note: ***, ** and * denote significance at the 1%, 5% and 10% level, respectively.

Table A6. Unemployment, earnings and trade offered by gender

Type of training	Boys			Girls		
	No of adolescent	Unemployed (Yes=1, No=0)	Mean earnings of adolescents (BDT)	No. of adolescent	Unemployed (Yes=1, No=0)	Mean earnings of adolescents (BDT)
Electrical work	7	0.00	4439.25	-	-	-
Mobile servicing	100	0.17	2534.03	7	0.57	600.80
Fridge/AC repairing	58	0.07	3079.61	1	0.00	4205.61
Beautician	-	-	-	97	0.25	1991.37
Tailoring/dress making	9	0.11	3586.88	116	0.36	1060.16
Embroidery	3	0.33	306.33	5	0.80	560.75
Basic electronics	21	0.19	2204.61	-	-	-
Thai-aluminum	11	0.09	3504.67	-	-	-
Wooden furniture making	9	0.22	2133.09	-	-	-

Table A7. Probit regression for propensity score matching

Indicator	Coefficient	Standard Error	P value
Amount of land	-0.00213	0.001834	0.244
Number of livestock	-0.02431	0.014051	0.084
Number of tree	-0.17411	0.221123	0.431
Number of fridge	0.042653	0.01925	0.027
Number of computer	-1.11892	0.717276	0.119
Number of other vehicle	-0.18101	0.172362	0.294
Number of rickshaw/van	0.007089	0.023456	0.762
Number of bed	0.057021	0.055494	0.304
Number of mobile	0.107752	0.051687	0.037
Number of sewing machine	0.292875	0.117333	0.013
Number of fan	-0.12283	0.0601	0.041
Number of tv	0.019503	0.104168	0.851
Number of room	-0.02645	0.052113	0.612
Total saving (BDT)	1.43E-06	1.47E-06	0.328
Adolescent's age (Year)	0.093178	0.031631	0.003
Drop-out adolescent (Yes=1, No=0)	-1.72638	0.216186	0.00
Employment status of adolescent (Yes=1, No=0)	-0.78097	0.196492	0.00
Monthly earning of adolescent(BDT)	1.51E-05	7.08E-05	0.832
Constant	-1.33197	0.50903	0.009

Table A8. Heterogeneity of the effects on employment and earnings with regard to age of adolescents

Explanatory variables	Engaged in labour market in last year (Yes=1, No=0)	Monthly Earning (BDT, constant 2014 prices)
Time variable (Follow-up=1,Baseline=0)	1.09***	757.40
	(0.30)	(1,283)
Programme participation (Yes=1, No=0)	7.26	22,590
	(7.30)	(30,935)
Time variable*Programme participation	-0.48	-1,539
	(0.51)	(2,141)
Adolescents' age (Year)	0.80***	219
	(0.26)	(1,078)
Adolescents' age* Time variable	-0.05***	-6.51
	(0.02)	(74.31)
Adolescents' age* Programme participation	-0.83*	-2,158
	(0.42)	(1,790)
Adolescents' age* Time variable* Programme participation	0.06*	148.5
	(0.03)	(123.30)
Constant	-15.94***	-12,294
	(4.38)	(18,535)
Observations	1,720	1,720
R-squared	0.31	0.18

Note: ***, ** and * indicate significance at the 1%, 5% and 10% level, respectively. Table reports regression results of estimating equation (4).

Table A9 Heterogeneity of the effects on employment and earnings with regard to education of adolescents

Explanatory variables	Engaged in labour market in last year (Yes=1, No=0)	Monthly Earning (BDT, constant 2014 prices)
Time variable (Follow-up=1,Baseline=0)	0.38***	1,489***
	(0.11)	(476.9)
Programme participation (Yes=1, No=0)	-3.69	-4,244
	(2.86)	(12,091)
Time variable*Programme participation	0.25	244.3
	(0.197)	(833.3)
Adolescents' education (Year of schooling)	0.29	1,103
	(0.23)	(968.9)
Adolescents' education * Time variable	-0.02	-85.79
	(0.02)	(66.78)
Adolescents' education * Programme participation	-0.405	-1,473
	(0.39)	(1,645)
Adolescents' education * Time variable* Programme participation	0.03	111.6
	(0.03)	(113.4)
Constant	-5.00***	-19,786***
	(1.64)	(6,920)
Observations	1,720	1,720
R-squared	0.308	0.18

Note: ***, ** and * indicate significance at the 1%, 5% and 10% level, respectively. Table reports regression results of estimating equation (4).

Table A10. Impact on confidence by gender

Indicator	Boys		Girls	
	Impact using PSM	Follow-up outcome mean of control	Impact using PSM	Follow-up outcome mean of control
	(1)	(2)	(3)	(4)
Confident on own skill of the employed adolescents# (Yes=1, No=0)	0.07 (0.06)	0.37	0.05 (0.11)	0.48
Able to conduct own business (Yes=1, No=0)	0.07 (0.06)	0.55	0.20*** (0.06)	0.35
Able to start new business with loan or expand business (Yes=1, No=0)	0.07 (0.06)	0.48	0.26*** (0.06)	0.24
Able to guide and monitor his/her employees (Yes=1, No=0)	0.09 (0.05)	0.63	0.16*** (0.06)	0.46
Able to purchase business products at efficient rate (Yes=1, No=0)	0.02 (0.05)	0.74	0.18*** (0.06)	0.52
Confident to take up jobs abroad (Yes=1, No=0)	0.17*** (0.05)	0.59	0.08 (0.06)	0.33
Number of Observation (N)##	377	170	387	167

For those who were employed in the time of follow-up survey.
##Number of observations refers to matched observations.

Note: Figures in the parentheses are standard errors. ***, ** and * indicate significance at the 1%, 5% and 10% level, respectively.

Table A11. Impact on adolescents' empowerment index by gender

Indicator	Impact using PSM	Follow-up outcome mean of control
	(1)	(2)
Empowerment index for boys	0.03 (0.04)	0.59
Number of observation (N)#	377	170
Empowerment index for girls	0.08** (0.04)	0.28
Number of observation (N)#	387	167

#Number of observations refers to matched observations.

Note: Figures in the parentheses are standard errors. ***, ** and * indicate significance at the 1%, 5% and 10% level, respectively.

SKILLS DEVELOPMENT

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The Skills Development Working Paper Series is a part of RED's on-going research agenda. This series has been initiated with the aim of documenting the learnings from BRAC's experiences with its Skills Development initiatives. The findings contained in this series are expected to help policymakers and development practitioners to be better equipped to enhance skills of disadvantaged youths, and thus facilitate their job placement. These would also help to promote decent work and social inclusion.

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