

RESEARCH ARTICLE

Evaluating Government Programs for Enhancing the Welfare of the Youth Towards Entrepreneurship

Mitzie Irene P. Conchada, Marites M. Tiongco, Paulyne J. Castillo, and Divina E. Edralin

De La Salle University, Manila, Philippines
mitzie.conchada@dlsu.edu.ph

Abstract: The Bureau of Labor and Employment Survey data on youth employment reveal that the Filipino youth are predominant in entrepreneurial activities in the country. The youth is defined by the Youth in Nation Building Act of 1994 (RA 8044) as individuals between the age of 15 and 30 years old. Unfortunately, the youth also experience the highest level of unemployment, where 49 percent of the unemployed belong to the age bracket of 15 to 24 years old. To immediately address this problem of youth unemployment, the government encourages the youth to go to into business. Two of the programs of the government, specifically that of Department of Labor and Employment (DOLE), aimed at reducing the number of unemployed as well as addressing the education for employment needs of the youth are the Youth Education-Youth Employability (YE-YE) Project and Youth Entrepreneurship Support (YES) Project. Applying the propensity score matching (PSM) method on the Community-Based Monitoring System (CBMS) data, the study focused on assessing the impact of government programs—such as the YE-YE and YES projects—in improving the welfare of the Filipino youth. Results show that the youth who availed of one or two of the entrepreneurial programs received higher incomes and wages of around three thousand pesos and two thousand pesos per year, respectively. Despite this favorable results, however, only a small proportion of the youth avail of government-sponsored training and education programs. Hence, there is a need to promote the entrepreneurial programs among the youth and to monitor their progress and continually support their efforts in sustaining entrepreneurial endeavors.

Keywords: propensity score matching method, youth entrepreneurship, youth unemployment, government entrepreneurial programs

JEL classification: H53

Poverty and unemployment are two main perennial problems that the Philippine government has been trying to solve by promoting entrepreneurship. Indeed, Philippine Statistics Authority (PSA, as cited by the Department of Trade and Industry, n.d.) reported that 99.6%—or 946,988 firms—of the country's registered enterprises in 2014 were micro, small-, and medium-enterprises (MSMEs). Concentrated primarily in the National Capital Region, CALABARZON (Region

4-A), and Central Luzon (Region 3), majority of these establishments were engaged in the retail and wholesale industry.

In 2014, the Global Entrepreneurship Monitor [GEM] (GEM, 2014) survey confirmed that the Philippines has among the highest rate of start-ups in the ASEAN region. A closer study of these business ventures revealed that, indeed, Filipinos are mostly engaged in the retail sector (i.e., the sale of food and

beverage items and other basic essentials) that can be operated in the entrepreneurs' homes and where capital requirements are at a minimum. However, GEM also disclosed that the Philippines has the highest business discontinuance rate in the ASEAN region in 2014 owing to business non-profitability, inadequate financing, and personal reasons/obligations (Velasco et al., 2015).

The youth, based on Republic Act 8044, refers to "the critical period in a person's growth and development, from the onset of adolescence towards the peak of mature, self-reliant and responsible adulthood; comprising (a) considerable sector of the population from the age of 15 to 30 years." As of 2014, the youth population in the country is estimated at more than 56.7 million. The Bureau of Labor and Employment Survey [BLES] (2015) revealed that the Filipino youth were predominant in entrepreneurial activities in the country. To complement, the GEM report revealed that the youth had the highest levels of unemployment and underemployment and may, thus, be the primary reason for their increased involvement in start-up businesses since 2006 (Philippine Global Entrepreneurship Monitor, 2013). The GEM survey revealed that: 1) majority of the youth entrepreneurs are engaged in consumer services such as retail trade, eating and dining places, health and wellness care, repair services, cleaning and laundry services, among others; and 2) the youth are more optimistic about entrepreneurial activities relative to the other age groups.

Entrepreneurial rewards, however, are highly variable—influenced by the entrepreneur's skills, market competition, and opportunities that are available in the community. As the Philippine government actively promotes entrepreneurship—mostly through its various training programs—as an alternative to employment, particularly for the youth who are not able to find jobs in the formal sector, it is worthwhile to examine if the youth's likelihood of enjoying higher benefits from employment and entrepreneurial activities if they participate in government-sponsored youth education programs.

Review of Related Literature

Despite a relatively strong economy—which grew by 5.41% per year from 2006 to 2015 (World

Bank Group, 2016)—and the Philippine government-proclaimed commitment to improving the lives of the poor, poverty incidence among Filipino families hardly changed during the same time period—from 23.4% in 2006 to 21.1% in 2015 (PSA, 2016a). Per the Asian Development Bank [ADB] (2009), chronic and persistent poverty in the country is a product of a number of factors including, but not limited to, the "low to moderate economic growth for the past 40 years" (p. 2); difficulty in providing gainful employment; and "failure to develop the agriculture sector" (p. 2). In fact, the Philippine unemployment rate, which hovered at roughly 7.2% from 2009 to 2013, was placed at 5.4% in July 2016 (PSA, 2016b).

The Philippine government's continuing response to the twin problems of joblessness and indigence, for the most part, is to encourage individuals who cannot find work to start a business. These programs—which mainly focused on training, market information dissemination, and some micro-financing (Castillo, in press)—resulted in the Philippines topping the ASEAN countries in nascent and early-stage entrepreneurship activity rates in 2014 (Velasco et al., 2015). Although research findings are mixed on entrepreneurial rewards, the Philippines is not alone in pursuing the entrepreneurship promotion strategy when supply exceeds the demand in the labor market. Indeed, Giannetti and Simonov (2004) reported that, while high unemployment rates may discourage investments, individuals who are unable to find work pursue entrepreneurship as a source of income.

Entrepreneurial income, however, is highly variable. Carter (n.d.) ascribed variability in entrepreneurial rewards primarily to specific attributes of the entrepreneur—which includes appetite for risk, business acumen, creativity and insight, and leadership—and evolving household requirements. Giannetti and Simonov (2004) agreed that business proceeds are influenced by the observable and unobservable skills of the owner of the enterprise as well as market competition as measured by rates of market entry and exit. Moreover, they maintained that the "unemployed workers, lower-paid wage workers, and individuals who have changed jobs a lot—are more likely to enter into self-employment" (p. 273). Hence, per Shane (2008), they are likely to participate in industries "that are easiest to enter, not the ones that are best for start-ups" (p. 7); thus, reducing earning potentials and raising the likelihood of business failure.

Furthermore, research findings show that the income of employed workers is higher than the entrepreneurs' median income. Hence, while business owners are perceived to enjoy higher living standards, self-employed earnings are, in fact, lower—by 35%—as compared to employed earnings (Carter, n.d.). Copious studies argue that self-employed incomes may be understated. Measurement methodologies, for instance, that determine the employed and self-employed hourly wage by dividing total earnings by the number of hours worked may suffer from an inflated report on the entrepreneurs' total working hours; thereby reducing the incomes of the self-employed. Carter (n.d.) placed the under-reporting of entrepreneurial rewards at 28% to 40% of the reported earnings from self-employment. Alternatively, Hamilton (2000, as cited in Carter, n.d.) posited that “the self-employed earnings differential reflects entrepreneurs' willingness to sacrifice substantial earnings in exchange for the non-pecuniary benefits of owning a business” (p. 10). Business owners, per studies in this area, assert that entrepreneurs put a premium on job satisfaction that stems from autonomy, task variety, and performance feedback (Carter, n.d.). Hence, for those who choose to start and manage their own businesses may indeed draw lower compensations but the non-pecuniary rewards from entrepreneurship may outweigh the potentially higher earnings from employment. Additionally, employment in the formal sector offers non-monetary benefits (i.e., medical insurance, emergency/sick/vacation leaves, productivity/longevity benefits, etc.) and psychological benefits (i.e., job security) that, depending on the status of the business operated by the self-employed, may not be available to the entrepreneur.

Certainly, operating a business is risky. Closure or discontinuance is an ever-present reality, particularly in a highly dynamic and very competitive market. GEM, for example, revealed that, among the ASEAN economies, the Philippines has the highest business closure rate. Per the GEM survey, many establishments in the country shut down in 2014 because of non-profitability, inadequate financing, and personal reasons/obligations—40.45%, 24.4%, and 24.48%, respectively (Velasco et al., 2015).

Finally, is age a factor in entrepreneurship? Initially, researchers hypothesized that an inverse relationship exists between age and risk aversion. Evans and Leighton (1989, as cited in Giannetti & Simonov, 2004) discovered that individuals approaching 40 years old have a higher probability of starting a business relative to their older cohorts, which led them to conclude that age is not a good measure of risk. Instead, Evans and Leighton (1989, as cited in Giannetti & Simonov, 2004) proposed wealth accumulation as a more appropriate proxy. Subsequent studies in the area determined that not only are wealthier individuals more likely to be self-employed but they also tend to generate higher entrepreneurial rewards (Evans & Leighton, 1989 and Evans & Jovanovic, 1989 as cited in Giannetti & Simonov, 2004). In the Philippines, the start-up capital of roughly 50.8% of the low-income individuals who were engaged in entrepreneurship and 32.8% of the young business owners (aged 18 to 35) ranged between PHP200 and PHP5,000* (Velasco et al., 2015).

Theoretical Framework

Participation in entrepreneurship programs can yield various results. For one, it can result in an improvement in welfare such as an increase in income. This part of the study discusses the theory of change that helps to explain the relationship between a program and its outcomes.

The theory of change is a very straightforward framework that describes the process and relationship of a program intervention and the intended outcome. It is often used to understand the impact of a program on the beneficiaries. It can also serve as a tool to improve the efficiency of a program by identifying and designing the specific interventions and methods that can be used to achieve the desired social and political changes (Rogers, 2014).

In mapping out the outcome of the youth entrepreneurship programs, the study utilized the diagram below based on the theory of change:

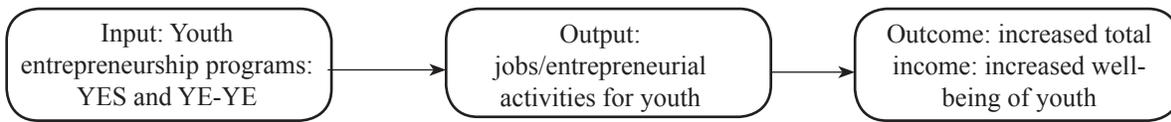


Figure 1. Outcome map of the youth entrepreneurship program

The Philippine government offers a variety of entrepreneurship programs including the Youth Employability (YE-YE) and Youth Employment Support (YES) projects. The main objective of these programs is to provide the opportunity for the youth to either set-up/start their own business or be employed. In the long run, this will improve the youth's likelihood of enjoying higher benefits from employment and entrepreneurial activities. Accordingly, the continued implementation of these government-sponsored youth entrepreneurship programs would be justified if they increase the welfare or well-being—evidenced by better labor market outcomes (e.g., increased total income and wage)—of the youth. Through the propensity score matching method used in the study, the impact of the program on the beneficiaries can be ascertained.

Data and Methodology

Achieving the study's objectives required the utilization of the CBMS 2015 survey data, which includes statistics on selected households'—from Manila, Marikina, Cavite, Misamis Occidental, and Negros Occidental—demographic characteristics, entrepreneurship activities, and employment/self-employment characteristics.

The effect of entrepreneurial training programs on the well-being of young entrepreneurs (proxied by income) is evaluated through Propensity Score Matching (PSM). Developed by Rosenbaum and Rubin (1983), “the predicted probability [propensity scores] that an individual is in a particular group, either treatment or non-treatment group, given a set of covariates” (Nichols, 2007, p. #517) is estimated using a probit or logit function. In this study, the generated propensity score is the probability that an entity is part of a group that participated in entrepreneurial training programs—limited to Work Improvement in

Small Enterprise, Youth Entrepreneurship Program, Special Program for the Employment of Students, Youth Education-Youth Employability, Sustainable Livelihood Program, Community-based Employment Program, TechVoc Program, other TESDA programs, DILEEP-Livelihood or Kabuhayan Program, and TESDA Technology-based Community Training.

The propensity score is defined as the conditional probability of receiving treatment given X as shown in equation 1.

$$p(x) = \Pr(T=1 | X=x) \quad (1)$$

Per Conchada (2016), if $Y(0)$ and $Y(1)$ denote the potential outcomes under control group and treatment group, respectively, then, the designation of treatment is conditionally unconfounded if treatment is independent of potential outcomes that are dependent on X . Rosenbaum and Rubin (1983) proved that selection on observables implies:

$$(Y_1, Y_0) \perp D | p(X) \quad (2)$$

where \perp denotes statistical independence. Equation 2 states that conditioning on the propensity score is enough to have independence between the treatment and potential outcomes (Rosenbaum & Rubin, 1983). Owing to the Rosenbaum-Rubin result, if $(Y_1, Y_0) \perp D | X$, then

$$E[Y_1 - Y_0 | p(X) = 1, p(X)] = E[Y | D = 1, p(X)] - E[Y | D = 0, p(X)] \quad (3)$$

This motivates a two-step procedure to estimate the causal effects under selection of observables: estimate the propensity score using logit or probit and perform matching or subclassification on the estimated propensity score (Abadie, 2013).

Accordingly, the following steps were followed to estimate the PSM in this study: 1) covariates

(independent variables), which simultaneously influence youth participation in the entrepreneurship programs as well as the outcomes of participation, were selected and 2) the covariates and outcomes were then used in the probit model that generated the propensity score.

Since the study was not able to have access to pre-treatment data, variables that were not affected by treatment were used in the study. It utilized household characteristics such as the gender of the household head, civil status, highest educational attainment of the household, family size, location (whether living in urban or rural), and whether or not the household is poor. The treatment variable pertains to the youth who participated in the entrepreneurship program.

The probit model is described in equation 4 as:

$$\Pr(\text{training} = 1) = F(\beta_1 + \beta_2 \text{sex}_i + \beta_3 \text{civstat}_i + \beta_4 \text{urb}_i + \beta_5 \text{educ}_i + \beta_6 \text{phsize}_i + \beta_7 \text{povp}_i + \varepsilon_i) \quad (4)$$

Where:

Sex – whether male or female (with value equal to 1 if male, 0 if female)

Civstat – dummy variables for various civil status (with value equal to 1 if married, 0 if not married; 0; widowed, 1, not widowed, 0; live-in, 1, not live-in, 0; and separated, 1, not separated 0)

Educual – highest educational attainment as proxy for living standards — the higher the education the more likely to raise living standards

Phsize – family size

Urb – urban; denotes the location (with value equal to 1 if living in urban areas, 0 if not living in urban areas)

Povp – socio-economic standing (with value equal to 1 if poor, 0 if non-poor)

The probit model consists of independent variables that 1) affect both the probability of participation and influence the outcome (i.e., income) and 2) are not affected by the treatment. The model estimates the propensity score to match the beneficiaries and non-beneficiaries of the entrepreneurship program, along a common support (the overlap between the values

of the independent variables for both groups). After matching along a common support, balancing tests are conducted to ensure that the households from both groups have balanced covariates, which would ensure that the results are not biased. The next step is to estimate the average treatment effect on the treated group using the beneficiaries and matched non-beneficiaries. Finally the standard errors are computed.

The average treatment effect on the treated (ATT) is depicted in equation 5:

$$\alpha \text{ ATT} = E[Y_1 - Y_0 | D = 1] \quad (5)$$

where the variables Y_i are the observed outcomes for the beneficiary and non-beneficiary groups. Variable D is an indicator of whether or not the individual availed of the program (Abadie, 2013). Using the average treatment effect on the treated instead of the average treatment effect helps determine the impact of the entrepreneurship programs on the beneficiaries and not just the overall impact.

Using the 2015 CBMS data, the typical youth who availed of government-sponsored education programs had the following characteristics: 1) male; 2) married; 3) working but not self-employed; 4) belonging to a household that consists of about five members; 5) resides in an urban area; 6) with elementary schooling as the highest educational attainment; and 7) majority reside in Marikina (35%).

The data gathered also point to a wide disparity in income levels. The 2015 CBMS data, for example, revealed that the 802 respondents' lowest and highest cash incomes were PhP0 and PhP1.8 million, respectively. The average of PhP181,678 cash income, therefore, implies that most of the surveyed individuals earned cash incomes that were closer to the lower limit. Statistics on the total annual income, which ranged from PhP0 to PhP1.92 million, followed a similar pattern. The average total annual income for the same 802 respondents was computed at PhP254,339; once again indicating that a considerable number of the individuals/households' total income hovered near around the lower end of the spectrum. A careful analysis of the 2015 CBMS data also revealed that majority of the respondents received low-wages and that compared to the rest of the income brackets, low-income households benefited the most from non-cash income. The 2015 CBMS data further confirmed that

Table 1. *Descriptive Statistics*

Variable	Definition	Obs	Mean	Std. dev	Min	Max
<i>Dependent variable</i>						
Availprog	Availed and did not avail of entrep program	802	0.4514	0.4979	0	1
<i>Independent variables</i>						
Sex	Male or female	802	0.5311	0.4993	0	1
Civstat1	Widow	802	0.0087	0.0930	0	1
Civstat2	Live-in	802	0.2182	0.4132	0	1
Civstat3	Separated	802	0.0224	0.1482	0	1
Civstat4	Married	802	0.2655	0.4419	0	1
workcl1	Self-employed or not	802	0.0336	0.1804	0	1
Educa1	Grade school	802	0.1521	0.3593	0	1
Educa2	College	802	0.1284	0.3347	0	1
Educa3	Technical vocation	802	0.0361	0.1868	0	1
Educa4	Postgraduate	802	0.0049	0.0704	0	1
Phsize	Household size	802	5.1533	2.6610	1	16
Busasset	Business asset (start)	582	1387.45	21342.44	0	500000
Povp	Poor or non-poor	802	0.2543	0.4357	0	1
Urb	Urban location	802	0.7518	0.4321	0	1
<i>Outcomes</i>						
Totinesh	Total income in cash	802	181677.6	186802.8	0	1800000
Totin	Total income	802	254339	244912.1	0	1920000
Wagcsh	Wage in cash	802	160518.9	181977.5	0	1800000
Etotcsh	Total income from entrepreneurial activities (cash)	802	7099.258	33079.19	0	540000
Totexp	Total expenditures	582	1744.50	11247.68	0	120000
Totsales	Total sales from entrepreneurial activities	582	2830.06	25563.21	0	540000

Source: Based on authors' computation

the disparity is detected in the distribution of cash and total incomes extends to assets entrepreneurial sales, income, and expenditures.

Refer to Table 1 for all the quantitative bases of the discussions in this section.

Testing Assumptions

Assumption #1: Conditional independence assumption. The propensity score matching method assumes that randomization ensures that all relevant characteristics of the households are balanced or equally distributed between the group who availed

of the program and the group who did not (Heinrich, Maffioli, & Vasquez, 2010). The mathematical notation is

$$(Y_0, Y_1) \perp D|X \quad (6)$$

Equation 6 states that the potential outcomes from the implementation of the program are independent of whether or not the group received treatment after controlling for the independent variables or the covariates. This ensures the randomness of the selection of the households in determining the impact of the treatment (Heinrich et al., 2010).

Table 2. *Marginal Effects for Probit Regression*

variable	dy/dx	Std. err	P>z	
povp	0.0963	0.0429	0.0250	**
phsize	0.0317	0.0071	0.0000	**
educal1	0.0175	0.0510	0.7320	
educal2	0.0574	0.0548	0.2950	
educal3	0.0492	0.0977	0.6150	
educal4	0.1271	0.2497	0.6110	
sex	0.0028	0.0361	0.9370	
civstat1	0.4302	0.1385	0.0020	**
civstat4	-0.0846	0.0393	0.0310	**
Urb	0.0125	0.0422	0.7660	

Number of obs = 802

***significant at 95%*

Source: Based on authors' computation

Hence, in order to satisfy the assumption in this study, the independent variables or covariates should not be influenced by the training program. Note that the paper utilized independent variables—demographic characteristics such as the gender, civil status, and place of residence—that are not affected by the program. Another way to test this assumption is to examine the statistical significance of the covariates after running the probit regression model. Per Heinrich et al. (2010), there is a positive correlation between the predictive power of the model and the number of significant covariates. Table 2 shows the marginal effects from the probit model, which identifies four characteristics as significant to the decision of the surveyed youth to avail of the government-sponsored training programs: 1) poverty status; 2) household size; and 3) civil status, specifically, those who are widowed and those who are married.

Per the results of the probit model, the poor, who are in most need of livelihood training, are the most likely to avail of government-sponsored youth education programs. The poor, who have the most difficulty in finding a job or may be the first to be laid off during economic downturns, take advantage of the opportunity to re-tool for the purpose of securing employment and/or pursuing entrepreneurial endeavors. Velasco et al. (2015) suggested that the reason behind the poor and the youth's relative high propensity to engage in entrepreneurship is that starting a business is the only available option for them to earn a living.

Household size, per the probit regression results, has a direct/positive and significant relationship with youth participation in government-sponsored training programs. In the Philippines, despite the presence of public schools, a significant number of children are still unable to complete basic education. Low-income households with many children are particularly vulnerable and are, thus, more likely to participate in government-sponsored youth education programs in order to equip themselves with the necessary skills and knowledge to find gainful employment or start a business.

Lastly, the youth who are widowed and married are more likely to avail of government-sponsored education programs. Widowed youth and married couples have to generate sufficient income to support their respective families, particularly their children. Widowed youth respondents were mostly 28-year old females (48% of respondents) with an elementary education (71%). Whereas majority of the married youths were females (54%), between the ages of 25 and 30 (80%), with a high school diploma (31%) who belonged to a family with an average of four members (33%).

In sum, the probit regression results imply that the need to find employment and/or other sources of income (i.e., entrepreneurship), more than interest or aptitude, determines youth participation in government-sponsored education programs.

Assumption #2: Common support condition. The second assumption is that there is a significant overlap in the characteristics in both the group that received training and the group that did not. The mathematical notation is

$$0 < P(D = 1|X) < 1 \quad (7)$$

Equation 7 implies that for each value of X, there is the same probability of being part of the treated or non-treated group (Heinrich et al., 2010). The probability of participating in the training program lies between 0 to 1. The area of common support, shown in Table 3, indicates that the lower and upper limit values are within the bounds that signify a sizeable overlap between the beneficiary and non-beneficiary group.

Balancing tests. Aside from checking whether the model fulfilled the two assumptions discussed, a balancing test, which will help verify that the treatment is independent of unit characteristics after conditioning on observed characteristics, must be performed. A series of t-tests of equality of means before and after matching were conducted (Heinrich et al., 2010). The results of the two-sample t-test with equal variance are shown in Table 4.

The t-values in Table 4 are not significant in all blocks, which imply that the null hypothesis (i.e. propensity score is equivalent across both groups) is accepted. There is, therefore, no difference in the mean propensity score between the beneficiary and the non-beneficiary group. A comparison of the standard bias before and after matching was also performed (refer to Table 5 for the results). Graphs for the density plots and ptest results are found in the appendix.

All variables, except the variables for the highest education of household head (technical vocation) and if he/she is a widow, are insignificant. Hence, with the exception of the two variables on education and civil status, there is no significant difference in the means of the treated and non-treated of all independent variables.

Choosing the Appropriate Algorithm and Performing Propensity Score Matching

According to Heinrich et al. (2010), there is no clear rule for establishing which method is more appropriate in performing the propensity score matching. In this study, the Nearest Neighbor Matching method was utilized; wherein an individual from the non-beneficiary group is chosen as a match for a treated individual based on the closest propensity

Table 3. *Region of Common Support (pscores)*

Outcomes	Lower Limit	Upper Limit
Income and wages	.25169203	.87548415

Source: Based on PSM runs done by authors.

Table 4. *Balancing Test Results (Before Balancing)*

Block	t-value*	Number of observations (beneficiary)	Number of observations (non-beneficiary)	Mean (beneficiary)	Mean (non-beneficiary)	Standard Error (beneficiary)	Standard Error (non-beneficiary)
Block 2	0.9419	115	186	0.0348	0.0591	0.0172	0.0173
Block 3	0.3281	32	99	0.1563	0.1818	0.0652	0.0390
Block 4	-1.1013	78	57	0.2949	0.2105	0.0520	0.0545
Block 5	0.3245	73	75	0.4932	0.5200	0.0589	0.0581
Block 6	-1.3044	55	21	0.7273	0.5714	0.0606	0.1107

*variable used: poverty (poor or non-poor)

Source: Based on PSM runs done by authors.

Table 5. *After-matching Covariate Balance Results by Matching Technique*

Variables in propensity score model	Nearest neighbor			
	N=1, common, ties			
	Mean Training Prog Beneficiary	Mean Non-beneficiary	SB (%)*	p>t
poor or non-poor	0.3094	0.2956	3.2000	0.6860
household size	5.7017	5.5414	6.0000	0.4530
grade school (household head)	0.1658	0.1630	0.8000	0.9200
college (household head)	0.1298	0.1133	4.9000	0.4960
technical vocation (household head)	0.0387	0.0138	13.3000	0.0360
post graduate (household head)	0.0055	0.0000	7.8000	0.1570
sex of household head	0.5249	0.5166	1.7000	0.8240
widow (household head)	0.0166	0.0414	-25.8000	0.0460
married (household head)	0.2127	0.2403	-6.3000	0.3750
urban location	0.7514	0.7569	-1.3000	0.8630

Source: Based on PSM runs done by authors

Table 6. *PSM Results for Youth Who Availed or Did Not Avail of the Training Programs*

		Outcomes		
Treated	Control	ATT	Std. Err.	t-value
<i>Total income (cash and kind) per capita, annual</i>				
362	312	3389.30	4629.05	0.732
<i>Wage in cash per capita, annual</i>				
362	312	2725.88	3346.89	0.814

Source: Based on PSM runs done by authors

score. The bootstrap method was used to create valid standard errors (results are shown in Table 6). The default number of repetitions for sampling that was used in the data was 500 repetitions. The Nearest Neighbor Matching chooses the individuals who have propensity scores that are close to that of the treated. This allows for more matches compared to using Radius or Caliper Matching. The final results of the average treatment effect on the treated are contained in Table 6.

Data analysis using the CBMS survey revealed that the respondents who availed of various government-sponsored youth education programs—such as the Youth Entrepreneurship Support (YES), the Youth

Education-Youth Employability (YE-YE), TESDA, and community-based programs—enjoyed higher total incomes (in cash and kind), more than PhP3,300 annually and higher wages, more than PhP2,700 per year. Although the results for both outcomes are significant at various levels, the model determined that total income was more significant than wage. Accordingly, per the results, the programs are helpful in improving the beneficiaries' quality of life through increased total incomes (both in cash and kind) and wages, which, in turn, could certainly allow individuals to expand their consumption baskets and provide access to more goods—aside from food—such as education and health.

Robust Checks on PSM Results

To verify whether or not the average treatment on the treated (ATT) results are robust, the study performed a Rosenbaum sensitivity analysis or Rbounds test in stata. The Rbounds calculates Rosenbaum bounds for average treatment effect on the treated in the presence of unobserved heterogeneity or hidden bias between the treatment and non-treatment group (StataCorp, 2013). The estimated tolerance is between 1 to 3 and implies that the estimates are valid until the point where the odds that two individuals with similar observable characteristics have different treatment status are less than 2.5 (based Rbounds result using 0.5 as an interval). The calculations for gamma values start from 1 meaning there is no hidden bias. This implies that the results do not change even if some independent variables or covariates are removed. The study thus concludes that the estimated impact of the training programs is fairly robust.

Conclusion and Recommendations

The main objective of this study was to determine whether there was a significant difference in the income of the youth who availed of the entrepreneurship programs compared to those who did not. Utilizing the propensity score matching method, individuals who participated in government-sponsored youth education programs (i.e., YE-YE and YES) earned significantly higher total incomes, incomes in cash, and wages as compared to young workers and entrepreneurs who possess essentially the same characteristics but did not avail of the youth education programs. Relative to the cash income and wage, total income (in cash and kind) was determined to have the highest level of significance and the largest magnitude. Hence, the promise of increased earning capacities and the benefits of a higher purchasing power are compelling reasons to convince the youth, particularly those who are unemployed, to avail of government-sponsored youth education programs. Likewise, the results provide bases for continued and, undoubtedly, increased funding for worthy youth education programs.

Accordingly, future studies could build on the findings of the paper by assessing the adequacy of the various government-sponsored youth education programs, which the paper is not able to do owing to a limited sample size—especially if the survey results

are sorted and analyzed per type of youth education program. With additional and relevant data, these researches could then examine related issues such as sufficient funding, appropriateness of targeting protocols, reasons for non-participation, the long-term effects of youth education programs, particularly on key outcomes like education and health, and differences in outcomes between community-based entrepreneurship/ social entrepreneurship and individual ventures.

Policy and Strategy Recommendations for Youth Development and Employment

There is an abundance of policy and strategy recommendations for youth development and employment in the literature. The European Commission (2008), for instance, asserted that entrepreneurial education and training should focus on developing creativity and innovativeness. Cooney (2012) categorized these essential entrepreneurial skills into three: entrepreneurship skills (includes inner discipline, ability to take risk, innovativeness, change oriented, and persistence); management skills (include planning, decision-making, motivating, marketing, finance, and selling); and technical skills (operations specific to industry, communications, design, research and development, and environmental observation).

In the Philippines, the Youth Entrepreneurship Program (YEP), enacted in 2005 through Executive Order 470, is tasked with cultivating specific skills that fosters “entrepreneurial capacities and mindsets.” This program, along with other entrepreneurship programs, should be made accessible to the youth, especially those who are poor. It is, thus, imperative to aggressively promote these programs to encourage and motivate the youth with the help of their parents and community leaders to avail of them. The promotional strategy that can be done at the LGU level to advertise the programs is by using traditional medium like poster, tarpaulin, leaflet, and brochure. The big poster and tarpaulin can be placed in the bulletin boards of the Municipal building and outside the Barangay hall where announcements are posted. Leaflet and brochure can be given house-to-house to target beneficiaries in the community by the Barangay officials. In this age of technological advancement, another effective means to promote the programs is by utilizing the social media like the Facebook, Twitter, and Instagram. Each Barangay should be able to create their account in each of this social media platform to reach as many

youth as possible since many of them will most likely have access to any of this. Lastly, the ever reliable town hall meetings regularly done by the mayor and the barangay captain should be another means where they can promote the programs intended for the youth as well as get their feedback.

Another strategy of promoting these programs is to culminate the training programs with a trade fair in coordination with the DOLE and DTI. The trade fair will be the culminating activity where the youth will have a chance to showcase their output/product and sell it for a minimal price. This will also help prepare them on how to market their product/s or service and build their network. In this way, they could be more motivated to sustain their business. The third strategy to encourage the youth is for the training unit of the LGU to coordinate with TESDA to have some sort of a crediting system for National Certification, a certificate which is recognized not only in the Philippine labor market but also abroad as an additional incentive if they decide to work abroad. Lastly, as a strategy to promote the following recommendations, the LGU should work closely with DEPED given the K to 12 revised educational systems. The senior high school is a good opportunity where those young people who are studying can be strongly encouraged to choose the TECHVOC track.

Note

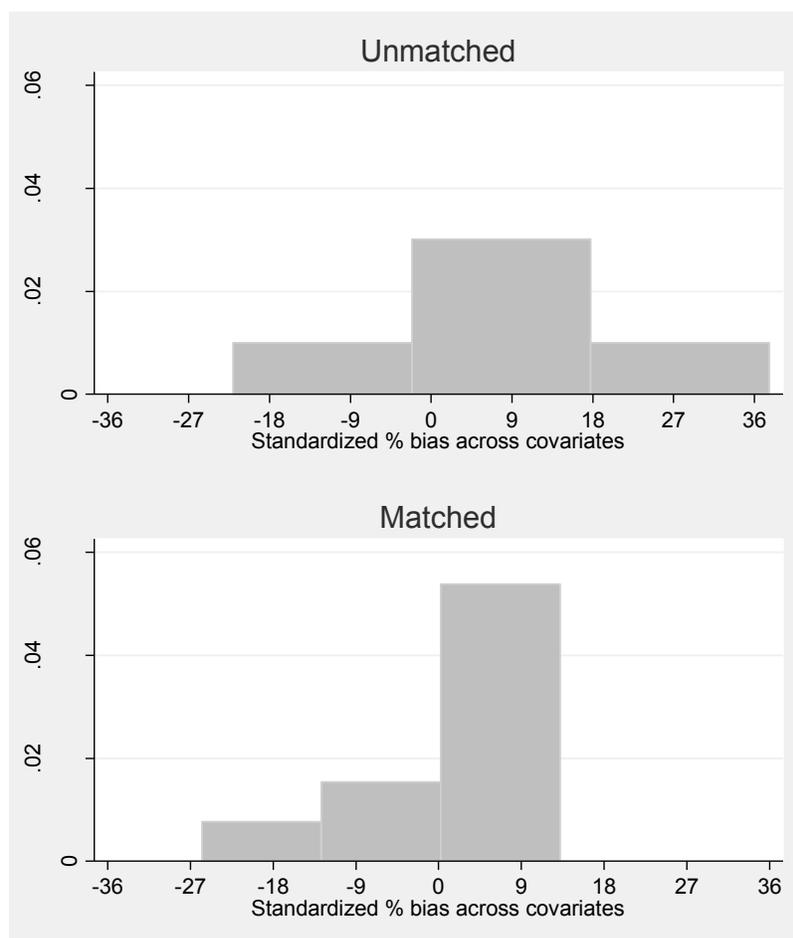
* Start-up capital ranges from US\$4.14 to US\$103.51 at PHP48.30282 per US\$1, official exchange rate as of 08 October 2016 (The Money Converter.com, 2016).

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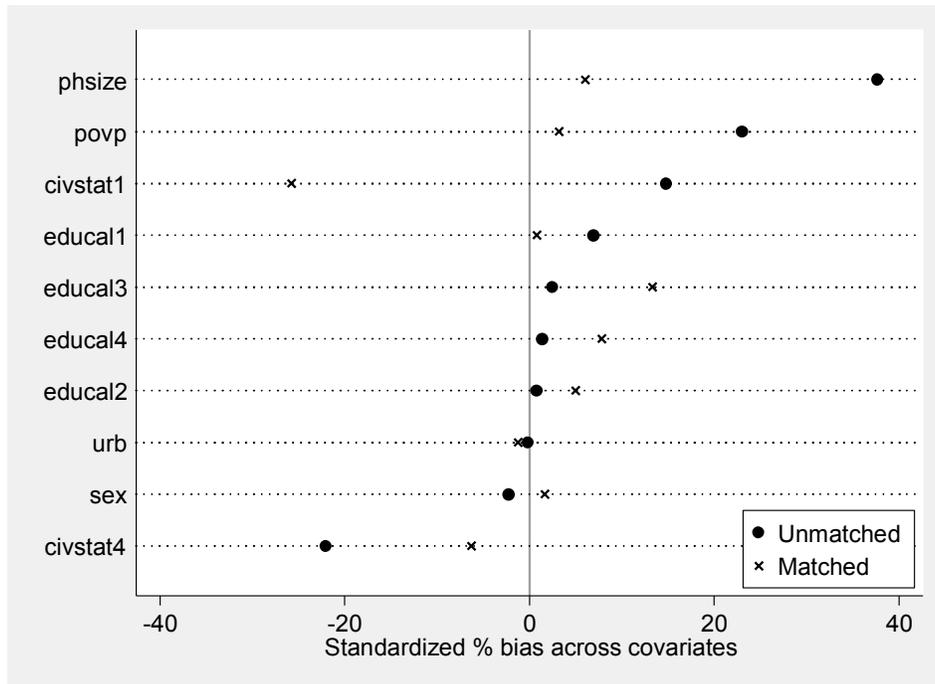
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Appendix A: Density Plot (Bar Graph) for Beneficiaries and Non-Beneficiaries



Appendix B: Density Plot (Dot Graph) for Beneficiaries and Non-Beneficiaries



Appendix C: Propensity Score Graph for Beneficiaries and Non-Beneficiaries

