RESEARCH ARTICLE

Making Social Health Insurance and Micro-Savings Programs Work for the Informal Sector in the Philippines

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Abstract: In the Angelo King Institute annual report of Monitoring the Philippine Economy, the Philippines maintained its growth momentum in 2014, besting other Asian economies. Given this backdrop, it is interesting to find out whether various sectors have benefited from this growth, particularly the informal sector which includes bulk of the poor who are self-employed and are mostly engaged in the services sector. The intention of this study is aimed to determine the effect of social protection, particularly social health insurance program (known as PhilHealth Insurance) and the micro-savings scheme (known as AlkanSSSya) on informal sector especially those who are poor and self-employed. By the end of 2014, total benefit payment for all sectors amounted to PhP78.2 billion (PhP19.2 billion for the informal sector). Since the government spends so much on PhilHealth, especially with its expansion of the indigent program, there is a need to investigate the effectiveness of the program especially on the poor. Utilizing data from the Community Based Monitoring Survey (CBMS) collected in 2015 from selected provinces in the Philippines, the propensity score matching method showed that those who availed of PhilHealth Insurance (both individual paying and sponsored member) have a higher total income and income in cash compared to those who did not avail (PhP288 and PhP595 respectively). PhilHealth Insurance beneficiaries are also more likely to have higher total sales from entrepreneurial activities in the informal sector (PhP69) than non-beneficiaries. On the other hand, AlkanSSSya beneficiaries also had higher annual income, higher total sales from entrepreneurial activities, and higher expenditure than non-beneficiaries (PhP986, PhP18, and PhP304 respectively). The results support the claim that social protection is indeed effective in improving the income of the poor, especially those who are dependent on the informal sector. Expanding the coverage of the programs for the informal sector, thus, will aid in increasing social inclusion and in reducing poverty levels.

Keyword: social protection, informal sector, Philhealth insurance, AlkanSSSya, Community Based Monitoring Survey

JEL codes: C31, O15, O17

In the Angelo King Institute (2014) annual report of Monitoring the Philippine Economy, the Philippines maintained its growth momentum in 2014, besting other Asian economies. Despite doubts over growth prospects and challenges in the external market, the Philippine economy attained a solid 6.1% growth in 2014. Favorable demand and supply side factors combined with improvements in the global market, particularly a recovering US economy and intensifying demand in Asia, led to the 6.1% growth in the country's Gross Domestic Product (GDP). This brings the year-end forecast to a higher estimate (Angelo King

Institute 2014). Given this, it is interesting to find out whether various sectors have benefited from this growth, particularly the informal sector, which includes bulk of the poor who are self-employed and are mostly engaged in the services sector.[1]

Despite the performance of the economy, unemployment still remains one of the major concerns. By the end of 2014, unemployment rate was recorded at 6.8% (down to 5.5% by the end of 2016), which implies that there is still a large number of Filipinos who are unemployed given our population (PSA, 2014; 2016a). Moreover, the Philippine Statistics Authority (2016a) reported that of the 2.4 million (5.5%), 62.8% were males while 37.2% were females, 31.2% were high school graduates, and 48.4% belonged to the age group 15 to 24 years old. Given fewer stable job opportunities in the country, Filipinos are seeing entrepreneurship as an alternative to earn income.

As of 2012, there were 940,886 registered micro, small, and medium enterprises (MSMEs) in the Philippines (99.6% of the total establishments), majority of which are in the retail and wholesale industry. Despite this impressive number, there is a huge number of businesses, mostly belonging to self-employed Filipinos, that are not registered and are part of what is called the informal sector. There are many barriers as to why many of them are not registered and one of the reasons is the high opportunity cost of having to register their business especially for micro establishments such as sari-sari stores, food stalls, and other small scale businesses.

More often than not, these businesses belonging to the informal sector are exposed to different types of shocks, both internal and external, such as sickness in the family and natural disasters. Their vulnerability to shocks hinders the business from realizing its full potential and, thus, resources are wasted. To protect the informal sector from shocks, the government invested in social protection. The definition of social protection in the Philippines was formalized in 2007 and covers four components, namely: social insurance, social welfare, social safety nets, and labor market interventions http://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/documents/publication/wcms_243961.pdf. On the other hand, the National Economic Development Authority has a set of policies and programs that seek to reduce proverty and vulnerability to risks and to enhance social status and rights of the marginalized. One of the initiatives on social protection was the passage of the National Health Insurance Act of 1995 (2004), which aims to provide equitable access to quality health care to everyone (http://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/documents/publication/wcms_243961.pdf). Through the Act, the National Health Insurance Program (or Philhealth Insurance) is administered by the Philippine Health Insurance Corporation (PHIC), which is government owned and is an attached agency of the Department of Health. The PHIC was mandated to provide all Filipino citizens health insurance to cover financing of their health needs, from preventive primary to hospital care including catastrophic conditions, and achieve universal health care or universal coverage by 2016.

As of the December 2014, there were a total of 2,023,696 members of Philheath Insurance from the informal sector, which was only 9% of the total number of informal sector (PHIC, 2014). Membership has increased by 62,586 by the end of December 2015, but in terms of proportion, growth has not affected the 9% share from the informal sector (PHIC, 2015a). It is thus important to increase the coverage of the informal sector since they are more vulnerable to economic and catastrophic shocks such as disasters and calamities.

According to the International Labor Organization, social protection is crucial as the country faces socio-economic factors that affect the population (http://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/documents/publication/wcms_243961.pdf). For one, the Philippines has the most unequal income distribution among East Asian middle-income countries. Second, general and youth unemployment are high (7.1% and 16.6% respectively). Furthermore, the rapid population growth at the rate of 1.9% places pressure on the labor market. Third, aside from unemployment, a high percentage of the employed are considered vulnerable (38.4%). Fourth, a strong service sector is prevalent, which requires more manpower. Lastly, the exposure of the country to natural disasters such as typhoons makes its people more vulnerable (http://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/documents/publication/wcms_243961.pdf).

It is the intention of this study to determine the effect of social protection, particularly PhilHealth Insurance and the AlkanSSSya,[2] on informal sector, especially those who are poor and self-employed.[3] By the end of 2014, total benefit payment for all sectors

amounted to PhP78.2 billion (PhP19.2 billion for the informal sector). Since the government spends so much on the PhilHealth Insurance progam, especially with its expansion of the indigent program, there is a need to investigate the effectiveness of the program especially on the poor. This study will focus on answering the research question: "Are people in the informal sector better-off availing PhilHealth Insurance and the AlkanSSSya program?"

Specifically, the research aims to address the following objectives:

1. Provide an overview of the coverage of the Philhealth Insurance and the AlkanSSSya programs in the informal sector;
2. Identify barriers to access Philhealth Insurance and the AlkanSSSya program by the informal sector; and
3. Determine whether PhilHealth Insurance and AlkanSSSya members who are part of informal sector experienced an improvement in their income.

Review of Related Literature

Poverty in the Philippines

In an effort to address poverty through the MDGs on human capital development through education, health, and women empowerment, various programs have been implemented. However, progress has been slow in reducing poverty. Table 1 shows that poverty incidence in the Philippines has not improved that much since 2003. Moreover, the magnitude of poor families has increased from 3.8 million families in 2006 to 4.2 million in 2012 (National Statistical Coordination Board, 2012). The poverty incidence among Filipino families in 2012 was the highest in the *Autonomous Region in Muslim Mindanao (*ARMM), Eastern Visayas (region 8), and Soccsksargen (region 12) with 48.7%, 37.4%, and 37.1% respectively. In the ARMM, Lanao del Sur had the most severe incidence of poverty among families with 67.3%. This was followed by Maguindanao with 54.5% of the total number of families are considered poor.

Table 1. *First Semester Poverty Incidence Among Families (%)*

Major Island Group	1991	First Semester Poverty Incidence among Families (%)							
		2003	2006	2009	2012	2015	Increase/Decrease		
							06-09	09-12	12-15
PHILIPPINES	**29.7**	**22.9**	**23.4**	**22.9**	**22.3**	**21.1**	**(0.5)**	**(0.5)**	**(1.3)**
Luzon		14.73	15.4	15.0	14.5	13.4	(0.4)	(0.5)	(1.0)
NCR			2.8	3.7	3.8	4.5	0.9	0.1	0.7
Without NCR			19.3	18.4	17.6	16.1	(0.9)	(0.8)	(1.5)
Visayas		32.44	31.6	30.7	29.1	28.7	(0.9)	(1.6)	(0.4)
Mindanao		35.17	36.2	35.6	36.0	33.8	(0.6)	0.4	(2.1)

Source: Philippine Statistical Authority (2016b).

Table 2. *Poverty Incidence Among Population (%)*

Region/Province	First Semester Poverty Incidence Among Population Estimates (%)				
	1991 a/	2006	2009	2012	2015
PHILIPPINES	34.4	28.8	28.6	27.9	26.3

Source: Philippine Statistical Authority (2016b).

The same story can be found in Table 2 on poverty incidence among the population. Not much improvement can be seen since 2003, although the poverty incidence has dropped from 34.4% in 1991 to 26.3% in 2015. The regions ARMM, Eastern Visayas, and Soccsksargen had the highest poverty incidence in 2015 among the population with 59.0%, 47.3%, and 44.5% respectively (not shown in Table 2).

Social Protection for the Poor

One of the ways to minimize the shocks experienced by the poor is to provide an enhanced health insurance. In 2014, the government expanded the PhilHealth Insurance coverage through the PhilHealth Indigent Program which enlisted 14.7 million families based on the Department of Social Welfare and Development's (DSWD) National Household Targeting System for Poverty Reduction. The National Government has paid the premiums for such coverage, as provided for in National Health Insurance Act of 2013 (2013) with a total cost of PhP35.7 billion. The health insurance covers hospitalization and other special packages for facility-based deliveries and newborn screening and treatment of illnesses. The Sponsored Program has an Out-Patient Benefit Package (OPBP) that includes preventive services such as primary consultation, blood pressure monitoring, breast and rectal examination, and diagnostic and laboratory services (Lee et al., 2014).

Aside from the Indigent Program, PHIC also has a specific program for those who are part of the informal sector. This sector includes street hawkers, market vendors, pedicab and taxi drivers, small-time construction workers, and home-based industries and services, which includes self-employed professionals like doctors and lawyers. Membership was voluntary through the PhilHealth Organized Groups Interface (POGI) but was not successful in terms of universal coverage because of the segmented nature of the informal sector between professional and non-professional, and the irregularity of their incomes. They PHIC also cover dependents of the informal sector such as the legitimate spouse, child or children below 21 years old and are still unmarried, children above 21 years old but are suffering from physical or mental disability, and parents who are 60 year old and above (PHIC, 2015b). The problem, however, still remains in identifying the informal sector that are poor and near poor who could be sponsored members

subsidizec by either the national government or the local government units.

Another social protection program from the government is Social Security System's (SSS) program for self-employed people. The program includes self-employed professionals, owners of business, farmers and fisherfolk, and workers in the informal sector such as market and ambulant vendors, public utility transport drivers, tourism industry-related workers, and others in a similar situation (Social Security System, 1997).

Launched in 2011, AlkanSSSya is a micro-savings program intended for self-employed members in the informal sector, particularly those who have irregular income such as tricycle drivers and market vendors. It is designed to fit the way of life of informal sector workers and to make saving for monthly SSS premiums as affordable as only PhP11.00 per day for a minimum SSS monthly contribution of Php330. The informal sector groups are organized and are registered as SSS Self-employed members that must meet the monthly salary of Php3,000. Those who have a higher month salary can contribute a higher monthly contribution.

Prior to AlkanSSSya, there were already several affordable saving schemes through commercial banks introduced by SSS. However, there was very low participation from the informal sector because saving was difficult to do for those who had highly irregular incomes in addition to being risk averse to formal banking transactions.

The AlkanSSSya derived its concept from a piggy bank, and makes use of large metal safety box with secure individual compartments in which members can put their savings to pay for their monthly contribution. The money saved will be picked up by SSS authorized collectors by the end of the month and will be credited to their monthly contribution. This does away with the hassle of having to go to a bank or the SSS office to remit their money, which is often the hindrance that members experience. The program was initially conceptualized for tricycle drivers in Las Pinas but has spread nationwide because of its effectivity and popularity. This program was deemed to be successful because of the benefits of the micro-savings program (Dela Peña, 2013). The program has more than 80 partners across the country that service the self-employed and the informal sector workers.

These social protection programs are aimed at minimizing the negative impact of internal and external

shocks that may affect families who are dependent on self-employment and informal sector activities. Very few studies have shown the effectivity of social protection programs for the informal sector, thus, this study aims to look deeper into how the program works and what benefits do the beneficiaries receive compared to non-members.

Framework and Empirical Model

To help explain the relationship between the PhilHealth Insurance and AlkanSSSya programs and their outcomes, the study used the theory of change framework. The theory of change framework is based on a process and relationship of a treatment; in this study the PhilHealth Insurance and AlkanSSSya programs, and the intended outcome. The framework is used to prove the relationships and to understand the impact of the programs. The diagram shown in Figure 1 describes the outcome and impacts of the programs:

The outcomes are expected from the program as they are the main objectives on why the program was established. They are short-term in nature and are realized directly. The impacts, on the other hand, could be indirectly felt by the beneficiaries and are realized more in the long-term. In this model, the social protection programs for people working in the informal sector aims to provide them with access to health care and pension support when the need arises. As a result, instead of people spending their income or borrowing against their income once an emergency or catastrophic event happens, they can use their PhilHealth Insurance and AlkanSSSya. In the long run, the quality of life improves as individuals have more resources to meet their needs and they become more productive in their work.

Empirical Model

In assessing whether the social protection programs of PHIC and SSS are effective, the study employed an impact evaluation method, particularly the propensity score matching (PSM). Usui (2011) discussed the various approaches to conducting an impact evaluation study. The basic idea behind an impact evaluation study is to compare the indicators before and after the implementation of the program. Setting up time-bound and measurable performance indicators is very important because this will allow proper monitoring and evaluation. Usui (2011) identified the first step as setting up an ex-ante target for each performance indicator with a specific time frame. To determine the impact of the program, the actual value of the indicator is measured at a certain stage after completion of the project (Usui, 2011). The baseline value is usually used as a point of comparison. This baseline could be the initial characteristics of the household before implementation of the program.

The study evaluated the impact of the Philhealth Insurance and Alkansssya programs on the informal sector using PSM. PSM, as developed by Rosenbaum and Rubin (1983), is a statistical technique that tries to estimate the effect of an intervention or treatment given certain covariates that predict receiving the treatment. The PSM technique is used for observational data to estimate the impact of an intervention and helps answer the question "what is the treatment effect on the treated." In the case of this study, we answer the question, "what is the impact of PHIC's Philhealth Insurance and SSS's AlkanSSSya on income and wage of the beneficiaries?" Moreover, the PSM technique establishes the counterfactual, that is, "what would have happened to the beneficiaries had they not received the social protection program." Through the PSM, a proper counterfactual can be found by matching a beneficiary to a non-beneficiary with similar pre-intervention characteristics (also called covariates). For the households with matched characteristics, each has an equal chance of becoming a beneficiary or non-beneficiary (Capuno et al., 2015).

For observational studies such as this, the assignment of treatments to subjects is not randomized and the
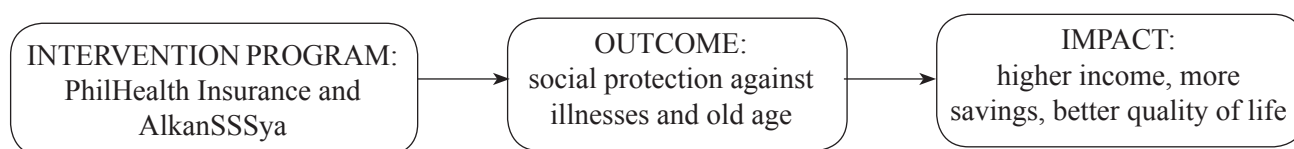

Figure 1. Results chain of PhilHealth Insurance and AlkanSSSya programs.

PSM thus mimics an experiment by creating a sample of units that received the treatment that is comparable on all observed covariates to a sample of units that did not receive the treatment. The propensity scores that will be generated will be used to match a beneficiary to a non-beneficiary, which is better than using covariates to match the two groups because the latter has too many dimensions which may result in the failure of common support (Capuno et al., 2015).

In carrying out the PSM in this study, the following steps were implemented. First, covariates (independent variables) that simultaneously influence participation into the program as well as the outcome were selected. The covariates and outcome were used in the probit model that would help estimate the propensity score.

In the absence of pre-treatment data, the study utilized variables that are not readily affected by participation or are measured before participation in the program. The study utilized household characteristics such as gender of the household head (1 if male, 0 otherwise), highest educational attainment of the household (under the assumption that household head had finished his/her educational pursuit), age of the household head, civil status (following the presumption that household head only marry once), and family size (before participation). The treatment variable was whether the household is a beneficiary or not of the two social protection programs. The model was regressed against several outcome variables such as income and wage.

The model is described as:

$$\Pr(SS = 1) = F(\beta_1 + \beta_2 individual\ characteristics_i$$
$$+\beta_3 household\ characteristics_i + \varepsilon_i) \quad (1)$$

Equation 1 was used for both the PhilHealth Insurance and AlkanSSSya programs. The equation describes the relationship of the independent variables, which are the observable characteristics of the households and of the individuals to whether they are beneficiaries or non-beneficiaries of PhilHealth Insurance and AlkanSSSya programs using the latest CBMS data that includes questions on unemployment, social protection, and entrepreneurship.

The outcome variables included in the study were total income, total income in cash, wage in cash, total sales from entrepreneurial activities, and total income from entrepreneurial activities (cash).

Results and Analysis

Making PhilHealth Insurance and AlkanSSSya accessible to the informal sector might be a challenge in itself as contribution is not mandatory and accessibility might post a cost to the contributor. Despite the long term benefits that could be drawn from the program, the short-sightedness and lack of foresight of some individuals can hinder them from availing of the program.

Access to PhilHealth Insurance

According to Silfverberg (2016), Philhealth Insurance coverage rates were at 56–58%, indicating that over 40% of people who did not qualify as dependents and are unemployed did not have healthcare. The study also noted that Bicol and Eastern Visayas Regions had some of the lowest rates at 23.85% and 28.95% respectively, although Sulu and Tawi-tawi posted even worse rates of 3%.

Silfverberg (2016) mentioned that the availability of health care resources in the area seemed to be an essential factor in ensuing level of coverage in the province, with more private hospitals making it more likely for a province to have higher coverage rates. Moreover, Silfverberg stated that the problem may have to do with informal sector workers sometimes classifying themselves as members of the formal sector. Silfverberg (2016) therefore recommended that the government channel funds into the health insurance system instead of public providers and examine the depth of Philhealth Insurance coverage, especially the Individually Paying Program, since some people may perceive that coverage will end up accounting for only a minute part of their medical expenses.

Access to AlkanSSSya

According to SSS 2014 Annual Report, the AlkanSSSya Program was conceived by the SSS as a service to informal sector workers like public utility vehicle drivers, market vendors, farmers, fishermen, and prison detainees, who face demands to focus on basic needs in addition to 12–14 hour work days, and thus do not have the time to learn about and exercise financial planning. It allows for members to save as little as PhP12 day or around PhP330 a month; it serves just like a literal piggy bank for savings for the future (Social Security System, 2014).

Since the implementation of the AlkanSSSya Program in 2011 until December 2014, it has covered 122,387 members of 1,236 informal sector groups (ISGs), collecting PhP167 million in contributions. The program experienced an improvement in 2014, achieving a coverage of 63,758 members from 673 ISGs, more than half of all cumulative members and reached ISGs since 2011; total contributions also reached PhP66.2 million in 2014, accounting for 40% of the cumulative contributions since 2011.

Barriers to Access of Social Security Program

Based on the survey results, the common barriers identified were: 1) no regular income to sustainably contribute; 2) low income that is not enough to allow contribution; 3) no necessary requirements to become a member; 4) not aware of benefits; 5) lack of information on how to become a member; 6) offices not available; and 7) others (see Table 3). The other reasons include: 1) too young to contribute; 2) not able to take care of it; 3) too far/not accessible; 4) well enough or okay not to avail of SSS; and 5) no money/resources (Table 4).

In general, most of the respondents identified no regular income and low income (33.1 % for both) as the top reasons why they are not able to continue on being a member. For those who answered others (Table 4), the top answers were: 1) ok not to contribute (34%); and 2) no time to take care of it (25%).

Having no regular source of income or low income makes it difficult for them to contribute regularly. Regular employees do not have to make a conscious effort to set aside money since their social security contributions are deducted already from their income. But this is not the case for those who are working in the informal sector. Before they can set aside their contribution for social security, they have to think about their other expenses which make it difficult to prioritize the contribution. Moreover, some are resigned to the idea that they are okay with not having a social security because of the high opportunity cost for them to contribute. The conscious effort to set aside money and to go to the nearest SSS office every month is quite taxing on their part as they have to take care of other pressing matters. As for the barriers to PhilHealth Insurance, the dataset is limited and does not have information regarding this.

Table 3. *Barriers to Availment of Social Security program*

Reasons	Percent
No regular income to sustainably contribute	33.1%
Low income that is not enough to include contribution	33.1%
Does not have necessary requirements to become a member	9.8%
Not aware of benefits	9.6%
Lack of information how to register or become member	8.1%
Offices are not accessible	5.9%
Others	0.5%

Source: CBMS Network Coordinating Team, 2015.

Table 4. *Other Reasons for Non-Membership in SSS*

Other Reasons	Percent
Too young to contribute	6.25
Not able to take care of it	25.00
Too far/not accessible	21.88
Well enough or okay not to avail of SSS	34.38
No money/resources	12.50

Source: CBMS Network Coordinating Team, 2015.

Descriptive Statistics

This section describes the variables used in the analysis. There were a total of 275 random respondents for the AlkanSSSya program, 135 were beneficiaries and 140 non-beneficiaries. For the PhilHealth individual paying and sponsored programs, there were a total of 1,026 individuals: 506 506 were beneficiaries and 520 were non-beneficiaries.

Table 5 provides some information about the characteristics of individuals who are beneficiaries and non-beneficiaries of PhilHealth Insurance in the DLSU-AKI CBMS 2015 database on social protection in the informal sector and on youth employment and entrepreneurship. The beneficiaries and non-beneficiaries were from NCR: Manila and Marikina, Batangas, Cavite, Negros Occidental, and Misamis Occidental. Most of the individuals who are part of the informal sector are males (at least based on the dataset). Most of them are married, have high school as their highest educational attainment, and belong to a family with an average size of six members. When it comes to the economic profile of the individuals, the average

annual total income (in cash) is PhP59,557 while the average wage is PhP23,129. Only a few of them are unemployed as most are self-employed in different kinds of economic activities, especially those related to the services sector. Since all of the respondents are poor, access to household appliances, land, and a vehicle is very low: only less than ¼ or 23% have access to such wealth variables. Moreover, access to internet, which measures social connectedness, is also very low: only 3% of the respondents have access. The next table describes the profile of the respondents who availed of the AlkanSSSya program.

The profile of those who availed of AlkanSSSya is almost similar to the PhilHealth Insurance beneficiaries except that all the respondents are from Marikina. Most of the respondents are females (52%) and are married, and have high school as their highest educational attainment. Only 14% have finished college and 4% have finished a technical/vocational course. Most of them belong to a family of six and rely on self-employment activities. The individuals who are engaged in activities in the informal sector

Table 5. *Descriptive Statistics of Variables used for Analysis of the Impact of PhilHealth Insurance on the Informal Sector*

Variable	Definition	Mean	Std. dev	Min	Max
Dependent variable					
Availprog	Availed of PHILHEALTH	0.4932	0.5002	0	1
Independent variables					
Phsize	Family size	6.3177	2.3030	1	21
educal1	Grade school	0.3392	0.4737	0	1
educal2	College	0.0390	0.1937	0	1
educal3	Technical vocation	0.0107	0.1030	0	1
sex	Male or female	0.3216	0.4673	0	1
civstat1	Widow	0.0565	0.2311	0	1
civstat2	Live-in	0.1355	0.3424	0	1
civstat3	Separated	0.0351	0.1841	0	1
civstat4	Married	0.6511	0.4769	0	1
Outcomes					
totin	Total income	74,352.96	43,357.78	0	286,800.00
totincsh	Total income in cash	59,557.36	40,631.29	0	283,200.00
wagcsh	Wage in cash	23,129.66	37,330.90	0	214,036.00
totexp	Total expenditures	1,269.61	8,339.41	0	100,800.00

Number of observations: 1026
Income and expenditure are in current prices (Philippine pesos) and represent annual figures.

Table 6. *Descriptive Statistics for of Variables used for Analysis of the Impact of AlkanSSSya on the Informal Sector*

Variable	Definition	Mean	Std. dev	Min	Max
Dependent variable					
availprog	Availed of ALKANSSSYA program	0.4909	0.5008	0	1
Independent variables					
Phsize	Family size	6.2473	2.7705	1	15
educal1	Grade school	0.2691	0.4443	0	1
educal2	College	0.1455	0.3532	0	1
educal3	Technical vocation	0.0400	0.1963	0	1
Sex	Male or female	0.4764	0.5004	0	1
civstat1	Widow	0.0582	0.2345	0	1
civstat2	Live-in	0.0691	0.2541	0	1
civstat3	Separated	0.0327	0.1782	0	1
civstat4	Married	0.4364	0.4968	0	1
Outcomes					
totin	Total income	70,965	58,651	0	251,000
totincsh	Total income in cash	42,606	50,925	0	239,000
Wagcsh	Wage in cash	34,067	49,887	0	239,000
totsales	Total sales from entrep activities (cash)	68	585	0	5,000
Totexp	Total expenditures	1,753	14,048	0	120,000

Number of individuals   275
Income and expenditure are in current prices (Philippine pesos) and represent annual figures.

are mostly in the retail business (44%): sari-sari store, food vendors; and are engaged in the services sector (25%)—either drivers, carpenters, work in the parlor as a stylist, manicurist, and other self-employed individuals.

The indicator for social connectivity or access to internet is very low—only 6% have access. Moreover, access to the other household appliances, land, and a vehicle is very low. In fact, on the average, the individuals belong to households that do not have any of the appliances which is an indicator of how poor the households are. The average total income (annual) is PhP70,965 or P11,154 monthly; average wage (annual, in cash) is PhP34,067 or PhP4,524 monthly. Total sales from their entrepreneurial activity is only PhP68 monthly and average expenditure is PhP1,753 monthly.

Both beneficiaries and non-beneficiaries of the PhilHealth Insurance and AlkanSSSya programs are poor and almost have no ownership to property such as land and other assets. Their main source of income is from self-employment activities that yields a very low income and may not be enough to meet the needs of the

family. Given their economic status, being a member of the PhilHealth Insurance and AlkanSSSya programs would help augment their expenses especially in health care.

Propensity Score Matching Results

To determine the impact of the PhilHealth Insurance and AlkanSSSya programs, the study compared the impact on beneficiaries and non-beneficiaries. The study made sure that the characteristics of the two groups were the same in order to find out the counterfactual: what have happened if the program was not implemented? Controlling for the characteristics of the two groups would really point out the impact of the programs. After matching, for the PhilHealth Insurance program (both individual and sponsored), there were a total of 970 individuals: 506 were beneficiaries and 464 were non-beneficiaries; for the AlkanSSSya program, there were a total of 239 respondents: 135 were beneficiaries and 104 non-beneficiaries. The non-beneficiaries were randomly chosen from a pool of non-beneficiaries who had the

same characteristics as those with the beneficiaries. The underlying common characteristic among the beneficiaries and non-beneficiaries are the following: poor (fall below the poverty line) and are engaged in self-employed activities or business in the informal sector.

The following results are based on the CBMS 2015 database (CBMS Network Coordinating Team, 2015). The study used the PSM method, which is an impact evaluation tool used when no baseline survey has been conducted and the only data available are the characteristics of the beneficiaries. The aforementioned method is a quasi-experiment method that tries to determine what would have happened if the program was not implemented. The final model used in the study is described as:

$$PrSS = F(\beta_1 + \beta_2 household\ size_i + \beta_3 sex_i + \beta_4 educ_i + \beta_5 civstat_i + \varepsilon_i) \quad (2)$$

where:

Household size – number of family members

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

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

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)

Testing Assumptions #1–Conditional independence assumption. Several assumptions have to be fulfilled for the PSM method to be robust. The first assumption, according to Heinrich, Maffioli, and Vazquez (2010), states 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 other group who did not. The mathematical notation is

$$(Y_0, Y_1) \perp D | X \quad (3)$$

Equation 3 states that the potential outcomes from the implementation of the program are independent of whether the group received treatment or not after controlling for the independent variables or the covariates. This ensures the randomness of the selection of the households into the impact evaluation study (Heinrich et al., 2010).

To fulfill this first assumption in this study, first the independent variables or covariates should not be influenced by the training program. These variables include the demographic characteristics of the household head such as his/her sex, highest educational attainment, and civil status. Other variables included are the place where the households reside in (assumed not to have changed in the short term—3 to 5 years), whether the household is poor or not (based on poverty threshold), and household size (before program implementation).

Another way to test this assumption is examining the statistical significance of the covariates after running the probit regression model. According to Heinrich et al. (2010), the more there are significant covariates, the higher the predictive power of the model. The next table shows the marginal effects results from the probit model.

PhilHealth individual and sponsored member. Applying the probit model to the data gathered, the results identify two characteristics as significant to the decision of the household to avail of the Philhealth Insurance program: 1) education; and 2) family size. After running several tests to determine which combination of independent variables would yield the best results, the following table was derived. The probit model for PhilHealth Insurance yielded the following marginal effects results:

The results in Table 7 show that households with a bigger family size are more likely to avail of PhilHealth Insurance. Moreover, household heads who have a higher level of educational attainment are less likely to be a PhilHealth Individual or Sponsored member. For instance, college and technical and vocational graduates are less likely to be a PhilHealth Individual or Sponsored member (13% and 9%, respectively). This type of PhilHealth insurance is more for those who are not employed in a full-time job, thus, those who have a higher level of educational attainment (college or technical or vocational) are not likely to avail of this.

AlkanSSSya program. Table 8 describes the probit regression results for the AlkanSSSya program.

Table 7. *Marginal Effects for PhilHealth Insurance*

variable	dy/dx	Std. Err.	P>z	
phsize	0.0257	0.0062	0.0000	**
educal1*	-0.0131	0.0295	0.6570	
educal2*	-0.1351	0.0595	0.0230	**
educal3*	-0.0921	0.1169	0.4310	
sex*	-0.0308	0.0293	0.2920	
civstat1*	0.0545	0.0749	0.4660	
civstat2*	-0.0302	0.0547	0.5810	
civstat3*	-0.0511	0.0802	0.5240	
civstat4*	0.0500	0.0443	0.2590	

(*) dy/dx is for discrete change of dummy variable from 0 to 1

** significant at 95% level

Table 8. *Marginal Effects for AlkanSSSya*

variable	dy/dx	Std. Err.	P>z
phsize	0.0139	0.0109	0.203
educal1*	0.0197	0.0705	0.780
educal2*	-0.1246	0.0810	0.124
educal3*	-0.0356	0.1517	0.815
sex*	0.0212	0.0621	0.733
civstat1*	-0.0478	0.1253	0.703
civstat2*	-0.0400	0.1144	0.726
civstat3*	0.0912	0.1760	0.604

The probit regression results reveal that there are no significant variables. This implies that the household characteristics may not necessarily affect participation into the AlkanSSSya program.

Testing assumptions: Assumption #2–Common Support Condition

The second assumption is that there is a significant overlap in the characteristics in both the group who received training and the group that did not. The mathematical notation is

$$0 < P(D = 1|X) < 1 \tag{4}$$

Equation 4 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 being a member of PhilHealth Insurance and AlkanSSSya lies between 0 to 1. The area of common support is shown in Table 9.

Table 9. *Region of Common Support (pscores)*

Outcomes	Lower Limit	Upper Limit
PhilHealth Insurance outcomes	.2052	.7856
AlkanSSSya outcomes	.3234	.6473

Source: Based on PSM runs done by author

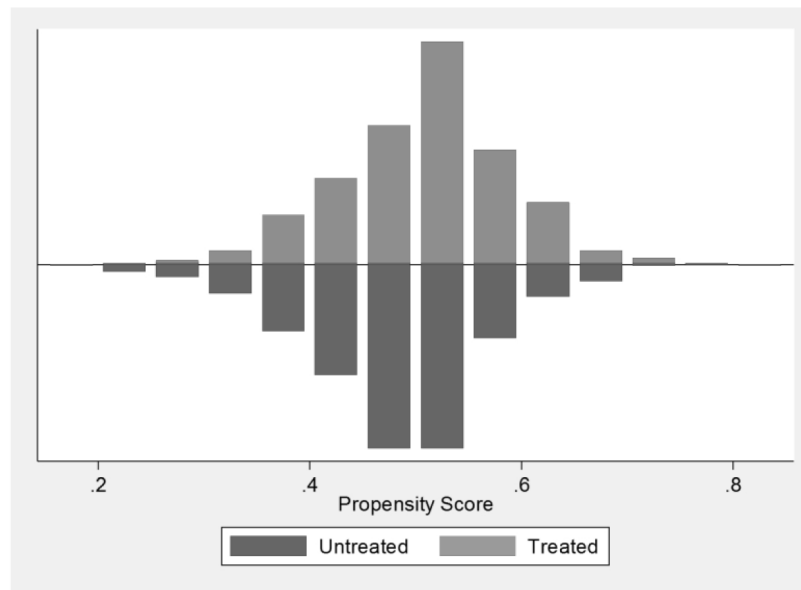The values of the lower and upper limit are within the bounds (between 0 and 1) that imply that there is

Figure 2. Pr(x) distribution by matching technique (PhilHealth Insurance).
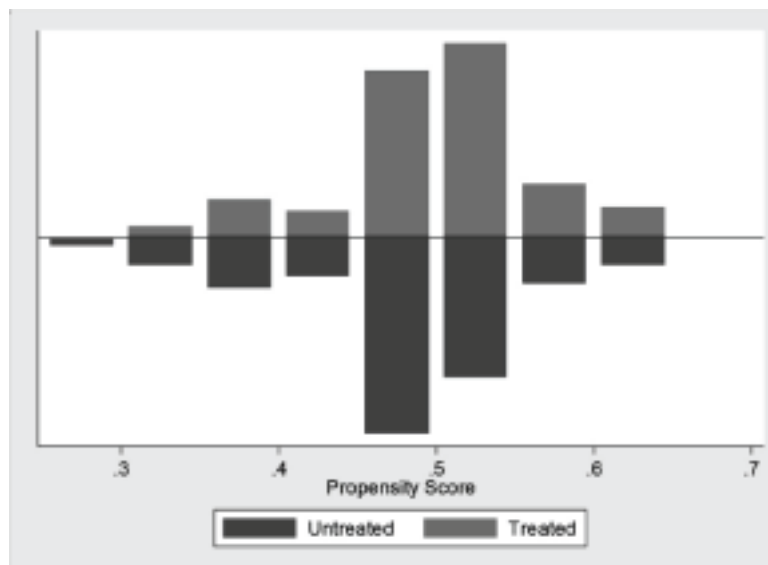

Figure 3. Pr(x) distribution by matching technique (AlkanSSSya)

a sizeable overlap between the treated and non-treated group.

Another way to test common support is by visual inspection of the histogram. The graph below reveals that the treated and non-treated group are more or less mirror images of each other.

Balancing tests. Aside from checking whether the model fulfilled the two assumptions discussed, several tests have to be performed and one is the balancing test. This will help verify that the treatment is independent of unit characteristics after conditioning on observed characteristics. This was done through performing a

Table 10. *After-Matching Covariate Balance Results by Matching Technique (PhilHealth Insurance)*

Variables in propensity score model	Nearest neighbor			
	N=1, common, ties			
	Mean Beneficiary	Mean Non-beneficiary	SB (%)*	p>t
Family size	6.6304	6.5316	4.300	0.4910
Grade school	0.3419	0.3439	-0.400	0.9470
College	0.0257	0.0217	2.000	0.6800
Technical vocation	0.0079	0.0059	1.900	0.7050
Male or female	0.3063	0.2945	2.500	0.6810
Widow	0.0573	0.0395	7.700	0.1880
Live-in	0.1146	0.1107	1.200	0.8430
Separated	0.0296	0.0138	8.600	0.0850
Married	0.6858	0.7154	-6.200	0.3040

Table 11. *After-Matching Covariate Balance Results by Matching Technique (AlkanSSSya)*

Variables in propensity score model	Nearest neighbor			
	N=1, common, ties			
	Mean Beneficiary	Mean Non-beneficiary	SB (%)*	p>t
Family size	6.4815	6.3852	3.500	0.775
Grade school	0.2889	0.2222	15.000	0.211
College	0.1111	0.1111	0.000	1.000
Technical vocation	0.0370	0.0815	-22.600	0.123
Male or female	0.4815	0.5333	-10.300	0.396
Widow	0.0519	0.0296	9.500	0.358
Live-in	0.0667	0.0074	23.300	0.010
Separated	0.0370	0.0370	0.000	1.000

series of t-tests of equality of means before and after matching. Table 10 shows the results of the two-sample t-test with equal variance.

Results from the balancing tests after running propensity score matching reveal that the t-values produced are not significant in all blocks which implies that the null hypothesis (mean propensity score is not different for the treated and non-treated group in all blocks) is accepted. There is therefore no difference in the mean propensity score between the treated and the non-treated group. A comparison of the standard bias before and after matching was also performed and is presented in Table 10.

All variables for the PhilHealth Insurance model except the variable *separated* were insignificant. This implies there is no significant difference in the means of the treated and non-treated that all independent variables except the aforementioned.

All variables for the AlkanSSSya model were insignificant except the variable *live-in*. This implies there is no significant difference in the means of the treated and non-treated in all independent variables.

Table 11 shows the results for AlkanSSSya.

Choosing appropriate algorithm and performing propensity score matching. The choice of a method in propensity score matching is really not that important. According to Heinrich et al. (2010), there is no clear rule for establishing which method is more appropriate in each context. In this study, the nearest neighbor matching method was utilized. This works when an individual from the non-treated group is chosen as a match for a treated individual based on the closest propensity score. The final results of the average treatment effect on the treated (ATT), that is, for whom the treatment is intended, are found in Tables 12 and 13.

The results for PhilHealth Insurance reveal that those who availed of the program have a higher annual income than those who did not avail—by PhP563. Furthermore, annual income in cash is PhP714 higher than those who did not avail, while income from entrepreneurial activities is PhP968 higher. The other variables appeared to be insignificant. The results are consistent with the a-priori expectations that individuals who have access to social security

insurance such as PhilHealth Insurance gives them more savings which they can use for more important expenses such as education and food.

Table 13 shows the results the AlkanSSSya program. All of the outcome variables turned out to be significant. This implies that the impact of the program is effective in improving the welfare of the beneficiaries, especially in terms of their income, wage, total sales from entrepreneurial activities, and total expenses.

Those who availed of the AlkanSSSya program in Marikina enjoy higher total income of (PhP3,007), higher income in cash (PhP2,375), and higher wage (PhP2,651).

Given the benefits of being a member of PhilHealth Insurance and AlkanSSSya programs, there is more than enough reason to believe that the money paid for the premium (PhP2,400/year for PhilHealth, and PhP330/month for AlkanSSSya) will go a long way. It helps the members augment their expenses for health and other investment generating activities through the

Table 12. *Estimated Impact of PhilHealth Insurance Individual Member*

Outcome variables	Nearest neighbor N=1, common, ties		
	ATT	S.E.	
total income	563.096	365.860	*
total income in cash	714.662	368.157	*
wage in cash	-839.054	382.990	
total sales from entrepreneurial activities	-189.565	245.831	
total income from entrepreneurial activities	968.548	350.882	**

statistically significant at p<0.10
**statistically significant at p<0.05*

Table 13. *Estimated Impact of AlkanSSSya*

Outcome variables	Nearest neighbor N=1, common, ties		
	ATT	S.E.	
total income	3007.338	1143.211	**
total income in cash	2375.534	920.685	**
wage in cash	2651.846	869.368	**
total sales from entrep	18.939	19.765	
total income from entrep	-258.102	445.807	

statistically significant at p<0.10
**statistically significant at p<0.05*

benefits that they get from being a member. Being part of the informal sector makes them vulnerable to shocks such as sudden changes in prices and one of the ways to minimize the negative economic impact of this is there is access to social protection such as in this case, the PhilHealth Insurance individual paying and sponsored program and the AlkanSSSya program.

Robust checks on PSM results. To verify whether the results are robust, the study performed a Rosenbaum sensitivity analysis or Rbounds test in Stata software (StataCorp, 2013). 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 is less than 2.5 (based Rbounds result using .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 for both PhilHealth Insurance and AlkanSSSya programs are removed. The study thus concludes that the estimated impact of the PhilHealth Insurance and AlkanSSSya programs is fairly robust.

Conclusion and Policy Recommendations

This study has shown some initial evidence on the effectiveness of some social protection programs such as the PhilHealth Insurance and AlkanSSSya programs for those who are involved in the informal sector. Being part of the informal sector implies that the individual has no permanent source of income, thus, there is no financial security. The PhilHealth Insurance and AlkanSSSya programs aim to provide health and insurance security.

The results show that both programs are effective for poor individuals involved in the informal sector in terms of being able to save more of their income. The programs help augment the financial needs by allowing them to use their income to expand their business instead of using it for emergency purposes such as hospitalization or other health needs.

Given the results of this exercise, it is recommended to increase the low coverage in terms of membership among the informal sector. This can be done by promoting enrollment that can be initiated by the local chief executives and local government units in partnership with civil society and non-government organizations. However, there is inadequate data on the number of people in the informal sector so the problem lies on how to identify individuals and households that are poor, vulnerable, and marginalized within the informal sector. It is expected that the informal sector will be more visible and will be identified efficiently as potential beneficiaries of social protection programs in the new database from DSWD's National Household Targeting System for Poverty Reduction or "Listahanan." The Listahanan is an information management system that assesses and identifies who the poor are and where they are located in order to maximize the social protection programs.

The use of DLSU-AKI CBMS 2015 database on social protection in the informal sector and on youth employment and entrepreneurship data can also help provide baseline information with its rider questionnaire on social protection by expanding its coverage to all provinces and municipalities. With the CBMS data, the informal sector will no longer be invisible and thus better profiling of this sector will be achieved.

Promoting enrolment and increasing the coverage would also mean increasing the budget for health at the local government level. One source of funds would be revenues from the sin tax, in which 85% of the total revenue is earmarked to fund universal health care, which could also be used to cover the poor informal sector who cannot afford health care.

Another possible policy implication is to improve the accessibility to a payment facility. The local chief executives and local government units can facilitate information campaigns on what services are offered by Philhealth Insurance and AlkanSSSya. Another one is identifying partners that can assist in the payment of contributions, for example, in partnership with a telecom network through the use of an e-load facility or mobile phones in remitting one's contribution. An individual would simply purchase a load and have a choice to remit part of it or all of it as PHIC and SSS contributions. Another possible way of making payment more accessible is through retail pawnshops (e.g., Cebuana or Palawan Express) that are very prevalent in the provinces. Exploring more avenues in partnership with the private sector can make payment

facilities more accessible and less costly on the part of the contributor, especially in geographically isolated areas.

Though it is difficult to reach individuals in the informal sector since most are undocumented, it is best to involve the participation of the local chief executives and local government units in identifying, monitoring, and providing support for the informal sector. Community support such as providing assistance in filling out registration forms or creating opportunities for livelihood and job-creating enterprises that will sustain their incomes. A sustainable employment will help encourage the poor to set aside a few pesos daily as they can now afford to save and seek better health care.

Notes

[1] The authors adapt the operational definiton of the informal sector by the Philippine Statistics Authority, which shall refer to "household unincorporated enterprises which consist of both informal own-account enterprises and enterprises of informal employers. Informal own-account enterprises are household unincorporated enterprises owned and operated by own-account workers, either alone or in partnership with member/s of the same or other households which may employ unpaid family workers as well as occasionally/seasonally hired workers but do not employ employees on continuing basis. Enterprises of informal employers are household unincorporated enterprises owned and operated by own-account workers, either alone or in partnership with members of the same or other household which employ one or more employees on a continuing basis…" (Retrieved on July 20, 2015 from https://www.dole.gov.ph/fndr/bong/files/Workers%20in%20the%20Informal%20Economy.pdf)

[2] The AlkanSSSya is an innovative micro-saving mechanism which allows people to pay premiums whenever they can. It was introduced by Social Security System to address expansion coverage of PhilHealth Insurance members to include the informal sector.

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