IMPACT OF MICROFINANCE ON HOUSEHOLD WELFARE: ASSESSING THE CASE OF SAMURDHI PROGRAM IN SRI LANKA

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ABSTRACT

Household Income & Expenditure Survey (2006/07) data were used to estimate the impacts of 'Samurdhi' – the largest state-sponsored microfinance program in Sri Lanka – on the status of household income, health, education, and food and non-food consumption. Propensity Score Matching was used to minimize selection bias. Propensity scores were estimated using a Probit Model to match "treated" households with "control" group to identify the impacts. The results show that Samurdhi possesses a significant impact on household welfare on income, consumption and education, despite the inefficiencies and political interferences associated with distribution of intended services.

KEYWORDS: Household welfare, Propensity Score Matching, Samurdhi Poverty
Alleviation Program.

INTRODUCTION

Poverty exists where some persons fall short of reasonably defined minimum levels of wellbeing such as access to certain consumption or income levels, housing, health and education facilities and human rights. Poverty line is, therefore, defined as the minimum level required to be acquired by the poor to escape poverty. According to the Department of Census and Statistics of Sri Lanka (2008), the Official Poverty Line of the country is Rs. 2,233 real total expenditure per person per month.

Food security, health and nutrition status and education play the major role in deciding household welfare. The findings of recent Demographic and Health Survey (2006/2007) reveal the prevalence of malnutrition and under-nutrition (underweighted, stunted and wasted children) among the poor households. Moreover, an average poor in Sri Lanka receives only 1696 kilo calories per day contrary to 2194 kilo calories received by a non-poor, while the dietary energy consumption of 50.7 per cent of the population is below the recommended level. This is similar in both urban and rural sectors in almost all districts which can partially be attributed to the lack of access to balanced dietary requirement and better health facilities.

According to the Household Income and Expenditure Survey (HIES) 2006/07, around 13 per cent of children in the poor category do not attend school at all while school attendance up to grade 5 is 44.3 per cent. Moreover, only 0.9 per cent receives higher education beyond the secondary education which is comparatively undesirable. This is mainly due to the fact that the poor people possess less financial capability to invest in education which in turn affects the employability and social welfare of those families.

With the aim of alleviating poverty, the respective governments in power since independence provided an extensive array of social protection services including income transfer programs aimed at assisting the poorest groups. The range of social protection services provided, and the ways in which these are delivered, become increasingly important as society shifts from a poverty alleviation effort based more on pro-poor economic growth and less on the provision of government welfare programs and public employment. The major objectives of these income transfer programs have been to improve household welfare and income distribution while reducing poverty and food insecurity. However, these programs are costly and impose a financial burden that must be covered by taxation or debt. Moreover, they can affect people's economic behavior by distorting their incentives. In addition, any social assistance program must compete with other government social spending (such as basic education and health) and other government programs that alleviate poverty (Glinskaya, 2000).

Social protection programs in Sri Lanka, which are complex and include a large number of programs, are, in general, decomposed into three categories depend on their services to specific target group, namely: (1) Employment Protection and Promotion: *"To Enhance Opportunities"* – labor legislation, unions, collective bargaining and related institutions, and training/retraining of workers; (2) Social Security / Insurance Programs: *"To Promote Security"* – pensions, disability, survivor insurance (coupled with universal health coverage),

and (3) Social Safety Nets: *"To Enhance Equity"* – mainly cash transfers and social welfare and care services. These programs are designed and administered, both at the National and Provincial level, by a number of Ministries and Departments. The benefits and services offered by which to those in need are usually in the forms of cash transfers, food and nutrition, targeted human development and social funds etc. Within this framework, an extensive Social Safety Net (SSN) is in place to promote equitable growth.

The "Samurdhi Poverty Alleviation Program" is the largest government sponsored welfare program in Sri Lanka designed with different programs to provide relief while empowering the households in poverty. The program claims almost one percent of the Gross Domestic Production (GDP) of Sri Lanka or roughly half of all welfare expenditures, excluding the expenditures on education and health. This program was conceived by the government of Sri Lanka to alleviate poverty and create opportunities for the youth, women and disadvantaged. The bulk of program resources are distributed as transfers of consumption grant (food stamp) to eligible households. This component claims 80% of the total Samurdhi program budget. Other components of this program include savings, credit program, habilitation and development of Community and infrastructure though workfare and social development programs (Jayasinghe-Mudalige and Udugama, 2010; Samaratunga and Thibbotuwawa, 2009).

However, the exact impact of Samurdhi Program on household welfare is still not clear and under researched calling for more attention. Hence, the purpose of this study was to elicit the impact of Samurdhi Program on household welfare in Sri Lanka with the specific objective of identifying the impact of this program on household income, food and non-food consumption, health status and education, in particular.

METHODOLOGY

Propensity Score Matching Method (PSM)

Matching Method is considered a non-parametric method that is used to estimate the treatment effects when controlled randomization is impossible and rich data are available. The Propensity Score Matching (PSM) method – the most used type of matching – was used in this study to evaluate the impact of Samurdhi program on household welfare. In the analysis, a Samurdhi grant-receiving household (Treated / Participants) was matched with a household with the same observable characteristics, but that does not receive Samurdhi grant (Control / Non-participants) to isolate the impact of the grant on their welfare.

The PSM method balances the observed characteristics between the "Treatment Group" and a "Control Group" based on similarity of their predicted probabilities (Propensity Scores) of receiving the treatment (i.e. Samurdhi grants). The key identifying assumption for PSM is that there is a selection of observables and the outcomes are independent of program participation, given a set of observables (i.e. conditional independence) (Heckman and Robb, 1985). This can be expressed as:

$$(Y1, Y0) \perp D \mid X \qquad (1)$$

Y is the outcome of interest in the untreated state. The term D indicates participation in Samurdhi Program, whereas X is the set of observable characteristics (covariates). A practical limitation that exists in PSM is that when the number of covariates (X) increases, the chances of finding a match reduces. Rosenbaum and Rubin (1983) showed that matching on P(X) gives consistent estimates than X such that:

$$(Y1, Y0) \perp D \mid P(X) \qquad (2)$$

The probability of participating in the program (i.e. being treated) can, therefore, be selected as a function of the individual's observed characteristics as follows:

$$P(X) = \text{Prob. } (D = 1|X) \qquad (3)$$

where, P(X) is the Propensity score of X. Apart from the conditional independence, the common support of overlapping condition also needs to be satisfied. It ensures that household with the same X values have a positive probability of being both Samurdhi recipients and non-recipients. In other words, for each participant there is another non-participant with a similar X, and accordingly, the perfect predictability of D given X (i.e. overlap) can be presented as:

$$0 < p (D = 1|X) < 1 \qquad (4)$$

If both the above conditions hold, the treatment parameter can be identified using a weaker condition of conditional mean dependence as follows:

$$E (Y0 \mid D = 1, P(x)) = E (Y0 \mid D = 0, P(x)) \qquad (5)$$

Each treated individual is matched to the nearest neighbor with the closest Propensity Score. Finally, the program impact was calculated by comparing the means of outcomes across participants and their matches. The PSM estimator is the mean difference in outcomes over the common support, appropriately weighted by the Propensity Score distribution of participants. As a result, we can express the impact of Average Effect of Treatment on the Treated (ATT) as follows:

$$ATT = E(\Delta \mid D = 1) = E(Y1 \mid D = 1, P(x))Y0 \mid D = 1, P(x) \qquad (6)$$

Probit Regression

In implementing the PSM, the Probit Regression can be used to estimate the Propensity Scores on the covariates for each observation in the participation and comparison groups (Himaz, 2008). Whether the Households was a Samurdhi reciepient (1= Receiving or 0 =

Otherwise) was use as the Dependent cariable. The Explanatory variables used were; Demographic characteristics (i.e. District, Sector, Gender, Age), The ownership of Durable goods (i.e. TV, Radio, Fridge, Telephone) and Housing characteristics (i.e. Structure, Floor, Roof, Wall etc)

Two Sample t -Test

The Two Sample t-test was used to compare the "Unmatched Sample" (before receiving Samurdhi) with the "Matched Sample" (after receiving Samurdhi) to evaluate the impact of Samurdhi Program on household welfare. If the match made is of good quality, then the matching procedure would have balanced the distribution of the relevant variables in both the Treatment and Control Groups. A common approach is to use Two Sample t-test to check whether the means of the covariates are not significantly different between the Treatment and Control Groups after matching, even though such differences are expected before matching.

Data

The data required for the empirical analysis was extracted from the Household Income and Expenditure Survey (HIES) 2006/07 conducted by the Department of Census and Statistics of Sri Lanka. It contains information on demographic characteristics, health status, income and expenditure, housing characteristics, assets and basic facilities belonging to 20,681 households within 19 districts in Sri Lanka for both Samurdhi recipients as well as non-recipients.

As shown in Figure 1, the sample comprised of almost equal amount of "Male" (49%) and "Female" (51%) respondents. Further, the majority of households were belonging to the ethnic group "Sinhala" (75%) and the religious group of "Buddhist" (69%) where these percentages were almost equal to that in the population of Sri Lanka. Moreover, almost half of the employed persons in the sample were employed by the private sector. Out of the total sample, only 8 percent of households (i.e. 1,652) received the Samurdhi benefits leaving other 92 percent were not qualified (i.e. 19,029).
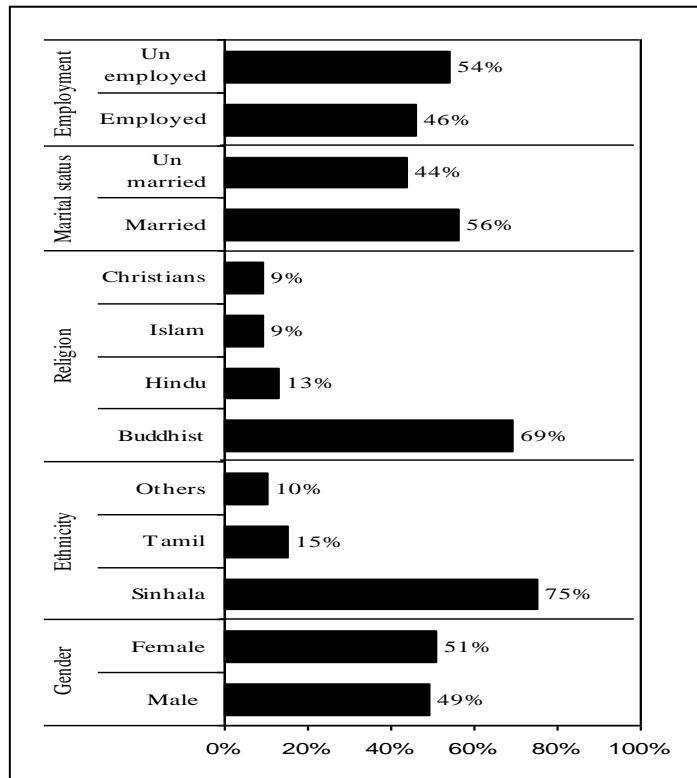
Figure 1 – Descriptive statistics of the sample

RESULTS AND DISCUSSION

Effect of Samurdhi on Household Welfare

The summary statistics are reported in Table 1 for both "Unmatched" and "Matched" samples with the outcome of t-test for the equality of means based on the nearest neighbor algorithm. The results based on the raw data show that Samurdhi receiving households are significantly worse off in terms of all the outcome variables except for primary education and agricultural income. These results are confirmed by the t-tests for the matched sample. This implies that the Samurdhi recipients were not able to increase their food expenditure in order to have a more balanced diet even after receiving Samurdhi.

The situation was similar in non-food expenditure also as no improvement was shown even after receiving Samurdhi. Although the major component of Samurdhi program was provision of a consumption grant transfer (food stamp) to eligible households, the results were not in conformity with the aforementioned main objectives. The reasons for such a situation could be partially attributed to the insufficiency and targeting problems in grant delivery.

Table 1 – Summary statistics for outcome variables:

Outcome Variable	Unmatched sample			Matched sample		
	Treated	Control	p > t	Treated	Control	p > t
Food Expenditure	1627.3	2038.3	0.000*	1628	1756.1	0.025*
Nonfood Expenditure	5850.7	13432	0.000*	5856.7	6603.2	0.000*
Level of Education						
Primary	0.407	0.195	0.000*	0.407	0.36	0.005*
Secondary	0.398	0.483	0.000*	0.399	0.459	0.000*
Tertiary	0.001	0.016	0.000*	0.001	0.004	0.034*
Duration of Illness	2.820	0.897	0.000*	2.801	2.604	0.421
Employment Income	562.14	2522.4	0.000*	562.82	930.89	0.002*
Agricultural Income	8810.4	8631.7	0.866	8821	8573.8	0.399
Other Agric. Income	1907.6	4327.1	0.166	1909.9	4293.3	0.004*
Non Agricultural Income	5375	19442	0.003*	5288	6246.3	0.623
Total Income	17129	35548	0.001*	17159	20847	0.117

With regard to the level of education, the Primary level education showed positive results leading to improvement after receiving the Samurdhi benefits unlike Secondary and Tertiary levels. This can be due to the less financial burden associated with primary education as compared to other two levels and the lack of awareness of the importance of higher education due to prevailing ignorance of the parents and poor families as a whole. Mainly due to the unbearable expenses in attaining higher levels of education, there is a high tendency for the children to get employed at younger ages instead of higher education. Interestingly, health status of those households did not show any significant improvement with the receipt of Samurdhi.

All income generating categories, except agricultural income, did not show any improvement after receiving Samurdhi. Grant receiving families showed less mean values for both employed and other agricultural incomes. The results highlighted that the agricultural income of grant receiving families showed an increasing trend. This may be due to the fact that the beneficiaries may have allocated certain amount of the grant for their agricultural activities. The majority who obtained grants were farmers from rural villages whose main income source was agriculture. Samurdhi Program is principally a poverty alleviation program. Results suggest that targeting Samurdhi grants for poor farmers is more beneficial in terms of improving their agricultural income with a view to moving them out of poverty trap at least in the long run.

The Probit estimates for the propensity scores and results of t-tests for quality of the match are presented in Table 2. It is clear that most of the explanatory variables used are statistically significant at the 95% confidence levels.

Table 2 - Results of Probit Estimation and the t-Test

Variable			Mean	
	Coefficient (SE)	S	T	C
Demographic Characteristics				
District	0.002 (0.01)*	UM	47.475	39.388
		M	47.439	46.372
Sector	-0.173 (0.04)*	UM	1.887	1.823
		M	1.886	1.909
Age	0.028 (0.01)*	UM	52.906	26.962
		M	52.837	54.336
Gender	0.282 (0.03)*	UM	0.591	0.428
		M	0.589	0.581
Durable Goods				
TV	-0.112 (0.43)*	UM	0.496	0.690
		M	0.497	0.513
Radio	-0.179 (0.03)*	UM	0.634	0.711
		M	0.636	0.673
Fridge	-0.318 (0.06)*	UM	0.075	0.334
		M	0.075	0.094
Telephone	-0.299 (0.06)*	UM	0.068	0.292
		M	0.069	0.071
Housing Characteristics				
Structure	-0.674 (0.23)*	UM	0.093	0.137
		M	0.093	0.092
Floor	-0.027 (0.07)*	UM	0.231	0.124
		M	0.229	0.243
Roof	-0.116 (0.21)	UM	0.052	0.027
		M	0.052	0.049
Wall	-0.189 (0.12)	UM	0.749	0.729
		M	0.751	0.757

*Note: * Significant at 95% confidence interval S = Sample, T = Treated, C= Control,*
UM = Un Matched, M = Matched,mSE = Standard Error.

CONCLUSIONS

Although the results indicate that the Samurdhi Program does not improve the overall household welfare, the analysis shows that a cash transfer in the within a poverty alleviation scheme can have a positive impact on some household welfare indicators like primary education and agricultural income. This is a positive sign in a situation where primary education in rural areas is relatively rich and agricultural incomes are to a greater extent stable. Thus targeting Samurdhi program subsidy for the people engaged in agricultural sector could be an operative solution to overcome some of the current problems facing the agricultural sector though improvement of rural agricultural income. In summary, Samurdhi Program seems to have been effective in meeting its aim of improving household welfare

levels, at least for household with more children and particularly for the people in the farming sector. The results are in conformity with the remarkable criticisms on the inefficiency and poor targeting of the Samurdhi program as the results failed to describe the improvement in household welfare in this scenario.

It is also amiss to attribute the benefits purely to the cash transfer as various other components i.e. the positive externalities through forming small savings groups, other transfer program, access to credit, advice and awareness on various social development aspects (household nutrition, home gardening, etc) may have had an impact to a certain extent. Moreover, though analysis gives consistent results in the short run, PSM may not reflect the impact of Samurdhi program in the long run as the improvement of income due to the grant cannot be measured in a point of time. Also the impact of the period of received benefits by Samurdhi Program is not captured in this analysis.

However, the core of the conclusions in this study remains that Samurdhi program does not have an overall significantly positive impact on the short and long run. Thus, future research should focus on measuring the impact before and after receiving "Samurdhi" benefits for a longer period of time accounting for externalities of such participation.

ACKNOWLEDGEMENTS

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