Cooperative Microfinance Myth or Reality[1]: An Economic Analysis of the Welfare of Marginalized Segments

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The present study was conducted to investigate the impact of the Cooperative (Islamic) Microfinance program on the standard of life of the poor and marginalized segments in the areas under study. Islamic microfinance program of Islamic Relief-Pakistan was taken as a model of cooperative microfinance. Primary, cross sectional data about 400 respondents (300 clients and 100 non-clients) has been collected through a detailed questionnaire, from the urban slums of Rawalpindi i-e Naseerabad , Qasimabad and Dhok Mustaqim. The socio-economic impact of the said programs on the poor marginalized groups was evaluated by Mean Difference Model (MDM) and Binary logistic models. The models were used to investigate the welfare of the respondents in terms of Income and consumption. The first model had been used to investigate the impact of Islamic Microfinance program of Islamic Relief (Pak) on the respondents' income and consumption (Income and consumption are rottenly used as a proxy of welfare). The later models had been used for evaluation of respondents' perception regarding the overall welfare and by using standardized consumption expenditure, as a proxy of welfare in quantitative term. Findings of the study suggest that there is statically significant difference between the income and consumption of Clients (Islamic Relief Pak.) and non-clients. Furthermore, the Cooperative microfinance program has a positive impact on the overall welfare of the clients. This is also reflected in the empirical investigation which reveals that standardized consumption expenditure as a proxy of well-being (welfare) of the clients represents a more appropriate picture as compared to the welfare model based on respondent perceptions only. The results suggest that the respondents who avail the facility of the cooperative microfinance are approximately 10 times more likely to increase their welfare as compared to non-clients. We propose that by expanding the facility of the cooperative microfinance by sensitizing the poor and marginalized segments regarding this facility can effectively alleviate the absolute level of poverty, and also has the required potential to increase the social well being of the people of intervention area as well.

Key words: Cooperative Microfinance, quantitative approach, Welfare, impact assessment.

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[1] Cooperative/Welfare microfinance program is a micro fiancé program where the poor and marginalized group of the society will be facilitated through free-interest loans, partnership and trade based financing.

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1. INTRODUCTION

Micro-financing is considered a “new paradigm” for promoting development and eradicating absolute poverty. Microfinance institutions have received growing attention at both national and international levels during the last decade, particularly after the award of noble prize to Dr. Younas (of Bangladesh). Their primary contribution is the provision of microfinance facility to non-bankable poor on terms and conditions different from formal banking practices.

With the gradual revival of the Islamic financial system and the advent of Islamic banking practice since the late 1970’s, the microfinance institutions have also emerged overtime in the private sector. They provide credit to small scale enterprises on Islamic principles but also focus on the welfare programs in their areas of intervention. This aspect makes them more attractive to common masses in Muslim societies as compared to their conventional counterparts.

The objective of all microfinance programs, whether conventional or Islamic, is basically the same, i.e. to alleviate poverty and to help the marginalized groups of the society otherwise unable to produce physical collateral required by formal financial institutions (banks). The strategies followed by both micro-financing programs are apparently similar since they are essentially looking at a "double bottom line/ target"— social gains and commercial success. However, the philosophical approach to address these issues is different. The Islamic financial institutions naturally focus more on the welfare aspects. The welfare measures may assume different forms, for instance imposing no penalty in case of late payment for genuine reasons, risk sharing, profit and loss sharing according to ups and downs in the business, asset based/backed transactions to eliminate interest, settlement in the form of goods rather than paper transaction. The welfare aspects of Islamic microfinance programs, (facilitating the target groups through Qard-e-Hassan, Sadaqah, Zakat, Awqaf, the absence of Riba etc besides normal lending activities) make them superior to their conventional counterparts. The Islamic Microfinance Programs (IMFPs) are relatively new experiments in this field but expected to have far reaching and deeply rooted impacts on the life style of common masses. The growing magnitude of these programs has attracted the attention of researchers and policy makers in many countries of the world.

The Islamic microfinance programs have gained considerable acceptability in Muslim communities in particular and non-Muslim communities in general, since the principles of financing adopted by these organizations are neither contradictory to the values and traditions of the societies concerned nor inimical to smooth functioning of the economies. According to principles of Islamic Sharaih, the profit and loss of business is shared by financer and investor, which protects the rights of both parties. The Conventional Microfinance Programs (CMFPs) would like to avoid credit to extremely poor and marginalized groups of the society since they (debtors) are generally expected to default (Ditcher (1996). In contrast, the Islamic microfinance organizations facilitate such people by providing them with support from Zakat and Waqaf funds. As such these organizations can better serve the community and make sure the participation of all vulnerable groups in development and growth process of the economies concerned.

The Islamic Relief (Pak) is among the few popular NGOs based in Pakistan. IR-Pak is involved in micro-financing activities for quite some time. The present study is devoted to a comparative analysis of their structure, methodology, performance and to investigate the impact of Islamic Relief Pak on the welfare within the selected areas of Pakistan.

1.1 PERFORMANCE OF ISLAMIC MICROFINANCE PROGRAMS

Ahmed, Habib (2002) investigates financial health, efficiency and performance of Islamic microfinance programs by using various financial ratios i-e Return on assets (ROA), Net return Margin (NRM), Operating Costs as a Percentage of Loan Disbursed (OCL) and Beneficiaries to Employee Ratio (BER). He compares the performance of three (Al-Falah, Noble and Rescue) Islamic microfinance institutions working in Bangladesh. He concludes that the performance of Al-Falah is better than the rest of two institutions.

Ahmad. K (2002) believes that Islamic microfinance can provide greater benefit/Welfare to clients through non-interest based financing and reliance on funds from awqaf as a substitute to expensive external fund. He found that a loss in business, in case of conventional micro credit will cause double loss to creditor i-e he /she will lose his livelihood sources on one hand and will return the principal amount along with the rate of interest to conventional micro credit institute on other hand. He investigates theoretically the drawbacks of interest based loans and its negative impacts on society. He suggests that poor and marginalized segments of an Islamic society can be facilitated from Zakat and Awqaf institutions.

Sadeq (2004) while working on conventional as well Islamic microfinance organizations in Bangladesh found that negative socio-economic effects associated with conventional microfinance has led to the experiment of providing Islamic alternatives, which will be a substitute of conventional microfinance program. He further elaborates that Islamic Microfinance programs are free from the negative effects. While explaining his argument he emphasized that Islamic microfinance organizations facilitate the poor and marginalized groups by giving them support from Zakat and Waqaf funds. As such these organizations can better serve the community and make sure the participation of all vulnerable groups.

Mannan (2007) while working on microfinance programs with reference to Bangladesh finds that MFIs are based on the implicit assumption of social class conflict, so they tend to empower women, whereas IMFIs intend to empower family by ensuring joint liability of husband and wife in case of lending to family or groups of families. He comparatively studied the performance of Grameen Bank and Social investment bank limited. He concludes that Islamic microfinance is a good substitute of conventional microfinance to provide loan for productive purpose and to strengthen family integration.

Jamal.H.(2008) evaluates the impact of microfinance programs on income, expenditure, child education and women empowerment. He caries econometric analysis to examine the impact by using sufficiently large sample of about 3,400 respondents (borrowers and non borrowers) from six large microfinance institutions namely , Orangi Charitable Trust (OCT) , Sindh Agricultural and Forestry Coordination Organization (SAFWCO), KASHF, National Rural Support Program (NRSP), AKHUWAT and ASASAH of Pakistan. His empirical results suggest that microfinance intervention possibly helps in smoothing consumptions and, to some extent, generating income. Finally he concludes that results regarding women empowerment are mixed, contradictory and in many cases, unexpected. It can be argued, therefore that microfinance interventions do not seem to have a significant positive impact on the different aspects of women empowerment.

M.M Rehman (2010) uses a binary logit models for impact assessment of clients well being. He used a set of dummy variables (dummy for mature clients, educational dummy, duration of membership etc) as explanatory variables to assess the impact of microfinance on the clients well being. He collected data from a sample of 1,020 respondents in a sample survey. Result shows that a significant number of clients have improved their religious observations such as prayers and fasting. Results of the econometric models shows that household income, productivity of crops and livestock, expenditure and employment increased significantly due to the influence of changed behavior and availability of Islamic micro-finance.

2. MATERIAL AND METHODS

2.1 Simple/ Mean Difference Model

In order to investigate the impact of Microfinance program in the areas under consideration, Quasi-experimental design has been used. We shall compare beneficiaries of microfinance (Experimental group) programs with those who are not receiving such benefits (control group) but having the similar socio-economic profile and cultural characteristics as those of the first group. The objective is to investigate if the microfinance program under reference has any significant impact on the living standards of the beneficiaries or otherwise.

The simple Mean Difference Model employed for the purpose is explained below.

$$\Delta\overline{Y} = (\overline{Y}_T - \overline{Y}_C) \quad \text{.....(2.1)}$$

$\Delta\overline{Y}$ = Change in the outcome variable of interest (Income, Expenditure)

$\overline{Y}_C$ = control outcome indicator (Income, Expenditure)

T = Households in Treatment group.

C = Households in Control group (untreated).

In order to avoid selection bias, the control group has been selected from the same intervention area of microfinance organizations, who are approximately having the same socio-economic characteristics and sharing the same language and culture.

Although, the two samples (control and experimental groups) are drawn from their corresponding populations randomly, however we do not know about the form of population distribution and likewise the corresponding population parameters are also unknown. In order to investigate whether the difference between experimental and control group is statistically significant or otherwise, T-tests have been employed to the available data.

$$t = \overline{X}_T - \overline{Y}_C / \sqrt{S_T^2 / n_T + S_C^2 / n_C}$$

In case, the unknown population variances of control and experimental groups are the same, then the degree of freedom of t-statistic is equal to n_T+n_C-2. Conversely, if the unknown population variances of control and experimental groups are different, then degree of freedom of t-statistic is given by: $df = \left[\frac{[(S_T^2 / n_T)}{(S_T^2 / n_T)^2 / n_{T-1}} + \frac{(S_c^2 / n_c)]^2}{(S_c^2 / n_c)^2 / n_{c-1}} \right]$

F-statistic is used to show whether Population variances of both groups are mutually equal or otherwise. F-statistic is calculated as:

$$F = S_T^2 / df \; / \; S_c^2 / df$$

In order to rectify further the economic impact of the said microfinance programs on the life style of their respective clients, the incomes and expenditures of the clients can be cross checked

for the periods before joining the said programs and afterwards. The test statistics used for the purpose is given as: $t = \frac{\overline{d}}{Sd / \sqrt{n}}$.

2.2 Logistic models used for the measurement of Welfare

The notion of well being is something parallel and opposite to poverty. Qualitatively, it may be reflected by the perception (or feeling) of the respondent that his life style has been improved in general after getting support from the microfinance program. It is denoted by the odd ratio 'W', which may assume the form of a binary variable. The parameter 'λ' shows the probability that well being of the respondent has increased overtime. In case an individual feels that his well being has improved after interaction with the program concerned, then the dependent variable will be coded '1' and otherwise '0' if he feels no change otherwise.

Alternatively, this notion can be quantified and consumption expenditure may be considered as proxy for the level of well being. We may assume an average MPC for the population of respondents and compute a benchmark level of consumption expenditure sufficient enough to fulfill the basic needs. The variable 'W' then denotes the odd ratio of the probability that monthly consumption of an individual is equal to or greater than the benchmark level to the probability that his earning is less than the said level. This ratio will help us in evaluating the impact of intervention of the microfinance programs on well being of the clients. There is no change in the rest of the structure.

Microfinance programs are expected to promote well-being of the clients or improvement in the standard of their life. Evaluation of the impact of microfinance programs on welfare or well being of the clients is not so easy and straight forward. The notion of welfare or well being is its self very dubious and involves personal judgment. Although, the level of income may be considered as an index of well being and if the position of an individual shifts above the poverty line as a result of support from microfinance programs, his welfare is supposed to be enhanced. However, we have tried to confirm the results by introducing a binary logistic model.

$$W_i = \delta_0 + \delta_1 D_c + \delta_2 D_s + \delta_3 X_a + \delta_4 X_m + \delta_5 X_{fs} + \varepsilon_i \quad \text{..... (2.2)}$$

$W_i = \frac{\lambda_i}{1-\lambda_i}$ is the **odds ratio**, i-e the ratio of the probability that wellbeing of the individual has increased to the probability that he does not feel so.

λi = probability that wellbeing of the individual (respondent) has increased.

D_c is the dummy variable used to show clients and non-clients; assuming values of 1 or 0.

D_s is the dummy used for individuals having other sources of income, assuming values of 1 or 0.

X_a is an important determinant of income level. X_a shows education level of respondents.

X_m shows membership duration of respondents.

X_{fs} represents respondents' family size.

Qualitatively, well being may be reflected by the perception (or feeling) of the individual. Thus the binary variable W_i may be assigned some value if the respondent reveals the feelings that his/her life style has been improved in general after getting support from the microfinance program. The parameter 'λ' shows the probability that well being of the respondent has increased overtime. We asked a question on this aspect and the responses recorded in the survey.

Many studies on impact assessment of microfinance programs have used this qualitative index for well being. However, we have quantified this index and used household consumption

expenditure as proxy for welfare. Assuming a simple Keynesian consumption function: C = f(Y), we have estimated the aggregate consumption function for the data set, comprising 125 observations in the intervention area of Islamic Relief: $Ci = b_0 + b_1 Y_i + u_i$.
Using the poverty line of Rs. 5100/-, the benchmark level of consumption expenditure just sufficient to satisfy the minimum basic needs will be Rs. 4039/- or Rs. 4040[5]/- approx. per month. It is now straight forward to compute the indicator of well being 'W' where the parameter 'λ' shows the probability that consumption of the individual respondent is at least equal to this benchmark. **F**or the sake of comparison, we follow both qualitative and quantitative approaches.

3. RESULTS AND DISCUSSION

3.1 STATISTICAL INFERENCE

On the basis of data obtained from the intervention areas of the Islamic Relief (Pak) we carry out the statistical analysis as under:

3.1.1 ISLAMIC RELIEF (PAK)

(a) Testing difference between Earnings (mean difference)

The two samples (control and experimental groups) are drawn from the same population in the respective region randomly. However, we do not know about the shape of population distribution or the values of population parameters. T-test has been employed to investigate whether the difference between the earnings of experimental and control group is statistically significant or otherwise. As discussed earlier, if the unknown population variances of control and experimental groups are the same, then the degree of freedom of t-statistic is equal to n_T+n_C-2. Thus the df = (100+25) -2 =123. The test is summarized as under (the symbol 'T' stands for treatment group and 'C' for control group).

i. $$H_0 : \mu_{inc(T)} = \mu_{inc(C)}$$
$$H_1 : \mu_{inc(T)} \neq \mu_{inc(C)}$$

ii. Significance level: $\alpha = 0.01$

iii. Test statistic under H_0 is given by: $t = \overline{X}_T - \overline{Y}_C / \sqrt{S_T^2 / n_T + S_C^2 / n_C}$

iv. Critical region is $|t| \geq$ t 0.005 (123) = 2.617 v. Computation: Estimated t-value: 4.417

As the t-estimated value is greater than the corresponding tabulated t-value, therefore we reject Ho and conclude that mean income of the experimental group is statistically different from that of the control group.

We may conduct another test to verify if the unknown population variances of control and experimental groups are equal or otherwise. In this case, the degree of freedom and the corresponding F-statistics are estimated as under:

$$df = \left[\frac{[(S_T^2 / n_T)}{(S_T^2 / n_T)^2 / n_{T-1}} + \frac{(S_c^2 / n_c)]^2}{(S_c^2 / n_c)^2 / n_{c-1}} \right] = 46.46 \qquad F = S_T^2 / df \,/\, S_c^2 / df = 0.000469$$

[5] This MPC level is estimated by running a simple regression: $C_i=b_o+b_1Y_i+e_i$, where C_i is the consumption level and Y_i is income of ith respondent. The MPC estimated from the survey data for the Islamic Relief (district Rawalpindi) is 0. 816.

As the estimated F-value is very small and does not exceed the F-tabulated (2.25 at 1% confidence level) value, therefore we have sufficient evidence to accept our null hypothesis and conclude that there is no difference between the variances, i.e. $\sigma_t^2 = \sigma_c^2$.

(b) Testing difference between Expenditure (mean difference)

The mean difference test may be applied to the expenditure levels of the treatment and control groups and statistical inference derived. A significant difference between the consumption levels of the two groups will be indicative of the success of microfinance program in economic uplift of the people in the intervention area. The results are as under:

i. $H_0 : \mu_{\exp(T)} = \mu_{\exp(C)}$

$H_1 : \mu_{\exp(T)} \neq \mu_{\exp(C)}$

ii. Significance level: α = 0.01

iii. Test statistic under Ho: $t = \overline{X_T} - \overline{Y_C} / \sqrt{S_T^2 / n_T + S_C^2 / n_C}$

iv. Critical region is $|t| \geq$t 0.005, (123) =2.617 v. Computation: Estimated t-value: 3.512

As the estimated t-value is greater than tabulated value, we reject Ho and conclude that mean expenditures of experimental group is significantly different from that of control group.

(c) Testing difference between Incomes before and after association

In order to rectify further the economic impact of the concerned microfinance program on the poor and marginalized segments, we have cross checked the income and expenditures of the clients before and after joining the said programs. The difference is thus checked for statistical significance. We state our null and alternative Hypothesis for IR-Pak clients' as:

i. $H_0 : \mu_{inc(T)before} = \mu_{inc(T)after} \Rightarrow Difference = 0$

$H_1 : \mu_{inc(T)before} \neq \mu_{inc(T)after} \Rightarrow Difference \neq 0$

ii. Level of Significance: α = 0.01

iii. Test statistic under Ho is given by: $t = \dfrac{\overline{d}}{Sd / \sqrt{n}}$

iv. Critical region is $|t| \geq$t 0.005, (99) =2.617 v. Computation: Estimated t-value: 13.24

Since the t-estimated value is greater than t-tabulated value, therefore we reject Ho and infer that the difference between the incomes of clients before and after joining the microfinance program is significant. This empirical result provides sufficient evidence in favor of Islamic Relief microfinance program (IR-Pak) in uplifting the standard of living of the clients.

Table 3.1 Summary of Statistical Inference: Economic Impacts (IR-Pak

	IR-Pak	T-value
Mean difference in incomes (Experimental vs Control group)	7891	4.417*
Mean difference in expenditure (Experimental v Control group)	6435	3.512*
Mean difference in incomes Before and After intervention (Experimental group)	6160	13.64*

* Significant at 1%.

It is worth mentioning to note thatIslamic Relief Pak microfinance programs has a positive impact in terms of increasing income and expenditures of their respective clients. For Islamic Relief Pakistan, all variables are statistically significant at 1% .

3.2 Logistic Model

Under this section we have estimated the logistic model qualitatively and quantitatively.

(i) Qualitative approach: Based on the perceptions of the respondents, the dependent variable 'W_i' is distributed in two categories based on the values of the parameter 'λ'. The results are depicted in Table- 3.2 (I). The results show that if the dummy variable (D_c) increases by one unit (if an additional individual avails the facility of microfinance), the probability in favour of an increase in well- being will increase by 19%. Similar interpretation can be given for other dummy variable (Ds) measuring presence of other sources of income or otherwise. The continuous variables used for age/maturity/experience (Xa), duration of membership (Xm) and family size (Xfs) can be interpreted as usual. It can be noted from the table that all the coefficients carry the expected signs. The information regarding McFadden R-square and LR-Statistic depict the overall significance of the model.

(ii) Quantitative approach: As stated above, the dependent variable is based on the level of consumption expenditure and thereby quantified. The parameter 'λ' shows the probability that consumption of the respondent is above the benchmark level (Rs. 4040/- per month). If the consumption of an individual is above this level, it may be presumed that his/her well being has increased. The empirical position is shown in Table- 3.2 (II) above.

The results indicate that if D_c increases by one unit (if an individual avails the facility of microfinance), then probability in favor of an increase in well being will increase by 15%. Likewise the variable D_s has been used as dummy for other sources of income. This suggests that if an individual avails the facility of microfinance and he/she also enjoys some other sources of income, then the probability in favour of an increase in well being will increase by 25%. The variable used to capture the effects of age or maturity is significant and carries the expected sign. Same is the case with the variable used family size and that used for the duration of membership with the program concerned. LR-statistic (41.3228) with very small probability shows that the model is overall significant.

Table 3.2 (I). Impact on Well-Being of Clients: IR-Pak) (Qualitative)

Variable	dy/dx	Std. Error	z-Statistics	Odd ratio	Probability
C		0.556692	-2.608960	0.234011	0.00091
D_c	0.1582	0.682225	3.645851	12.02865	0.0003*
D_s	0.0425	1.156895	2.698198	22.68110	0.0070*
X_a	0.2451	0.506604	1.432023	2.065698	0.15210
X_m	0.12358	0.505309	1.813825	2.500628	0.0597**
X_{fs}	-0.0526	0.4036	-1.4333	2.152	0.05638*
LR statistics (4 df)	40.38523	McFadden R-squared			0.438154
Probability(LR stat)	1.55E-07				
*Significant at 1%, **Significant at 5%					

Table 3.2 (II) Impact on Well-Being of Clients: (IR-Pak) (Quantitative)

Variable	Dy/dx	Std. Error	z-Statistics	Odd ratio	Probability
C		0.556692	4.225810	10.23401	0.00910
Dc	0.14710	0.682225	3.974451	15.06370	0.0003*
Ds	0.21256	0.528200	4.083333	8.63698	0.0002*
Xa	0.14550	1.156895	1.828798	10.97171	0.0002*
Xm	-0.0672	0.505309	1.288320	3.17815	0.0538**
Xfs	0.0958	0.542500	1.037123	1.69124	0.0513**
LR statistics (4 df)	41.32285	McFadden R-squared			0.438154
Probability(LR stat)	1.67E-07				
*Significant at 1%, **Significant at 5%					

A comparison of the two tables [3.2 (I) and (II)] indicates that the quantitative approach followed in the analysis of well being is more reliable. The results have significantly improved in the second case [Table 7.12 (II)], since all the variables are significant and carry the correct signs.

4. MAIN FINDING AND RECOMMENDATION

I. Cooperative Microfinance program contributes positively in term socio- economic uplift of clients. Respondents who avail the facility of cooperative microfinance are approximately 10 times more likely to increase his/her welfare as compare to non-clients. We can figure out that by expanding the facility of cooperative microfinance by sensitizing the poor and marginalized segments regarding this facility can effectively alleviate the absolute level of poverty and also has the required potential to increase the social well being of these people.

II. The empirical analysis indicates that total dependence on the facilities provided by the cooperative microfinance institutions might not be sufficient for a significant uplift in the life style of poor people. The projections of this study intimate that if a client of the IR-Pak owns some other assets (sources of earnings) besides the microcredit facility, the probability of his/her crossing the poverty line will be 9 times higher than those who possess nothing else and depend only on the facilities provided by the MFO concerned.

III. The empirical investigation reveals that if credit is provided to mature clients (of age 40 or more) this will increase the chance in favor of social well being by more than 10 times as compare to immature clients. Based on this result IR-Pak Should concentrate to provide the facility of Islamic microfinance to mature clients so as to effectively contribute in socio- Economic uplift of clients.

IV. As per general observations the intensity of poverty is much higher in rural areas as compared to urban areas. The majority of poor inhibited in rural areas of Pakistan are generally illiterate, technically backward and politically depressed. As such, the rural areas deserve special attention of the cooperative Microfinance institutions.

V. Although majority of clients do utilize the micro credit efficiently for self-employment and income generating activities, however there are fair chances of wrong or inappropriate use of credit. Therefore proper inducement, effective training, monitoring and supervision of the clients are necessary.

VI. Last but not least cooperative microfinance program is performing well in intervention area (The urban slums of Rawalpindi) all such programs need to be promoted and encouraged, both by the government as well as the well to do citizen of Pakistan. Such programs, working in different areas like health, education, housing, training and skills as well as micro credit extension are the candles of hope and aspiration for the poor and deprived segments of the society

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