Can Microcredit and Job Under NREGS Jointly Bring More Happiness to the Villagers?

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Abstract

This paper aims to investigate whether access to microfinance loan and job under National Rural Employment Guarantee Scheme (NREGS) have any significant impact to bring life satisfaction as well as happiness, an important well-being indicator to the villagers of West Bengal. Here we consider microfinance system under individual liability loan contract and joint liability loan contract separately. This paper shows participation in microfinance programme, size of microcredit and more number of man-days of getting job under NREGS bring more happiness to the village people. It is also established that members of Self-Help Group under SGSY scheme become happier in compare to members of VSSU a microfinance system operating on the basis of individual liability loan contract. This is because most of the members under SGSY scheme are women and that of VSSU are men and the members of Self-Help Group under SGSY scheme have become much more empowered after joining the microfinance programme through forming Self-Help Group.

Key Words: Microfinance, Individual Liability, Joint Liability, NREGS, Impact Study, Happiness

JEL Classifications: G21, G28, R28

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Introduction:

Amartya Sen in his capability approach theory (1993) stated that the individual opportunities (capacities) are the deciding factors for conducting a better life as per one's own choices and terms. He said that income and wealth cannot be a straight forward indication of quality of life; they are just means for attainment of functioning. According to Sen, capability refers to the alternative combinations of functioning from which a person can choose or the range of options a person has in deciding what kind of life to lead. Poverty of a life reduces the options. It is actually a matter of 'capability deprivation. People's capacities could indeed be enhanced if they face opportunities in the family and the society she belongs. So the basic objective of development should be expansion of human capabilities; not giving focus only on growth of GDP. The expansion of human capabilities can clearly be enhanced by economic growth but the impact of economic growth on human capabilities can be extremely variable depending on the nature of that growth for example whether the economic gains from growth can be channeled into remedying the deprivations of the most needy. Recently Martha Nussbaum is trying to relate Sen's capability approach with a theory of happiness in order to arrive at an objectification of the 'good life'. 'Good life' is not merely a subjective perception but one should measure how people actually live or how *happy* the people are. So the quality of life approach or capability approach considers self-reported happiness as an important component of well-being. Low capability of a household indicates very few alternatives of living which automatically makes that household less happy. Most happiness studies find that within countries, wealthier people are on average happier than poor ones. Happiness seems to rise with income up to a point, but not beyond that (Oswald, 1997, Diener et.al., 2003). Again where there is high level of poverty, members of the family may not be able to meet their economic needs which ultimately may make them unhappy. Actually deprivation reduces happiness among individuals. Yet after basic needs are met, other factors such as rising aspirations, relative income differences and the security of gains become

increasingly important in addition to income during the time of calculating happiness of an individual.

We know that most important objective of any government policy is to improve the well-being of the poor and make them happy. The relationship between income and happiness, more generally between subjective and objective well-being is relevant not only for highly industrialized countries but also for poor underdeveloped economy. No doubts, income and consumption which are normally explained as proxies of welfare do contribute to human happiness. Happiness indicators represent a unique measure of wellbeing, which cannot be suspected of imposition from external experts and reflect the real desire of those who are targets of a policy intervention (Sugden, 1993). But numerous studies demonstrate that happiness levels can change significantly in response to a variety of factors such as health, family factors, stable employment etc.

Most of the world poor are either self-employed or work in the unorganized sector. All or most of their earnings are spent for basic survivals. There is little or no money left over to improve their quality of life or to expand business. Due to lack of acceptable collateral they have no access to get credit from any formal credit sector. So they have to depend on professional money-lender when loan is required and most of them face huge debt burden and it becomes very difficult for them to improve their standard of living. Microfinance programme is a good prescription to enhance the capability as well as well-being of the rural poor. In the microfinance system, disbursement of credit to an uncollateralized borrower may save her and her family from social exclusion. This can help the borrower to generate economic values in the society which ultimately helps them to generate more dignity, self-esteem and recognition not only from their own family but also from the society she belongs. It is not just a credit delivery system, but it helps to create stability at home, teaches individuals how to save and how to utilize the credit for the welfare of her (his) family. It also plays a positive role to improve education and health among the rural poor. It is now necessary to broaden the scope of microfinance impact analysis by considering any performance variable not only standard economic like monthly income or monthly per capita consumption expenditure but also through non-pecuniary well-being indicators. Now a day 'happiness' can be considered an important 'well-being' indicator of the rural household. It is argued that happiness indicators represent a unique, subjective and non

paternalistic measure of well-being which should reflect the real desires of those who are targets of policy interventions (Sugden, 2004). The economics of happiness does not purport to replace income-based measures of welfare but instead to complement them with broader measures of well-being. These measures are based on the results of large scale survey of individuals who are asked to assess their own welfare. The survey provides information about the importance of a range of factors such as absolute as well as relative income, health status, employment status, economic status of other family members and civic trust all of which are components of well-being as well as happiness of the individuals.

Availability of microfinance system in a village can improve the financial capability of the rural poor. They can now protect themselves from the crunches of the professional moneylenders. Microfinance programme is operated either under joint-liability or under individual-liability loan contract. The group-lending method is based on joint liability loan contract when the borrowers linked by joint liability have to help through repaying the debt of any one of the group she belongs who fails to repay. Actually under group lending microfinance scheme, loans are sanctioned individually to the group members but all in the group will have to face consequences if any member runs in to serious repayment difficulties. Hence non-borrower co-members of the group will have to constantly monitor the borrower group-members. In the group lending under joint liability, that can be done most efficiently and at very minimum effort. As the lenders now have to bear fewer amounts of monitoring, she can charge low interest against loan. In case of individual liability, each borrower is only responsible for her own loan. Here loan should be dearer, because the lender has to bear good amount on monitoring and that type of loan is comparatively more risky. But we cannot ignore microcredit under individual liability, which looks no less successful particularly after observing the performance of Bank of Rakyat in Indonesia as well as Vivekananda Sevakendra-O- Sishu Udyan (VSSU) operating in the extreme southern part of West Bengal. Lenders who use individual liability loans look no different than same under joint liability when judged by repayment rates. The better lender both joint liabilities as well as individual liability has repayment rates as high as 95%. The repayment rate in each and every financial year of Bangladesh Grameen Bank and Bank of Rakyat as well as VSSU establishes the fact. Almost all microcredit lenders offer only one type of contract either under joint liability or under individual liability. In this paper we consider two different types of microfinance system simultaneously: one is operated by the government of India under SGSY

scheme through joint liability credit contract and the other one is operated by VSSU a microfinance organization operating on the basis of individual liability credit contract. Besides that to investigate the subjective well-being of the villagers we also consider the impact of National Rural Employment Guarantee Scheme (NREGS) which can solve the problem of unemployment among the rural poor who mainly in village economy.

Operating Procedure of VSSU and Self-Help Group under SGSY Scheme:

 VSSU operates the microfinance programme on the basis of individual lending in nine blocks of South 24 Parganas district of West Bengal. The blocks are Kulpi, Mandir Bazar, Pathar Pratima, Kakdeep, Sagar, Diamond Harbour, Mathurapur -1 and 2 and Raichak. VSSU is operating without any financial support from the government. Total number of members under VSSU in 2007-08 had crossed 45000. It is involved in the provision of small scale savings and loan to rural individuals and business enterprises. VSSU collects savings of its clients from their doorsteps through his employees called 'motivators'. The savings can be daily savings, weekly savings or monthly savings. In daily savings scheme, each client can save at least Rs.10 daily. The rate of interest against savings deposit is 4% per annum. After accumulation of certain amount of savings regularly that individual can get credit from the micro-finance institution at least six months after becoming member of VSSU. The repayment period is generally one to three years depending on the size of loan. The loan has to be repaid in installment where monthly interest rate varies between 2% to 2.5% provided the size of borrowing is more than the amount of his savings deposits in the financial institution. But if the size of borrowing is less than the amount of his savings deposit, then the interest rate charged by the financial institution is 1.5% per month. As reported, most of the borrowers from VSSU borrow more than their savings deposit. If a client takes Rs.10,000 as loan from VSSU, then he has to pay around Rs.600 if we wants to repay within two years and Rs.800 if he wants to repay that within 18 months. Besides that the borrower has to save at least Rs.10 daily i.e. Rs.300 monthly. So a borrower has to deposit Rs.900 altogether to VSSU if he borrows Rs.10000 and wants to repay that within two years. The respondent can borrow more than his savings deposit provided he has good amount of assets with high collateral value and he can present a guarantor during the time of sanctioning loan. So the borrower is monitored not only by the motivators of VSSU but also by the

guarantor. At the time of sanctioning individual loan by VSSU no specific preference is given to the female members of the households.

In those same blocks we also observe the existence of government supported microfinance programme under Swarnajayanti Grameen Swarojgari Yojana (SGSY) scheme operated by the Central government with the help of local panchayet and District Rural Development Agency (DRDA). This programme is motivated by the concept of group lending adopted by Bangladesh Grameen Bank. Here each group consists of not more than 15 members. The members are homogeneous in nature and they belong to same socio-economic background. It is operating like ROSCA (Besley, Coat, Loury, 1993). Self Help Group is formed by the intended participants. They initially have to contribute a minimum amount in their respective groups regularly and on monthly (and sometimes on weekly) basis. The total collected amount is deposited in to nearby commercial bank. Each group has a group leader and a treasurer who are selected democratically by the group members. After accumulation of certain amount of group corpus, a member can take credit from the group she belongs. At the time of demanding loan she has to explain clearly in which purpose loan is required for her. If her explanation satisfies other group members, then only loan is granted where written consent of all the members is necessary. The credit has to be repaid within stipulated time period. Most of the times, the rate of interest is 2% per month. After six months of group formation, the commercial bank, DRDA officials and a representative of the panchayat will examine the performance of the group. If it is satisfactory, then that group will be qualified as Grade-1. After that, the group can get refundable financial help from DRDA and cash credit from commercial bank. The group has to repay the cash credit with interest but the contribution of DRDA is an interest free loan. Sum total of the two above mentioned fund is called revolving fund, which totally depends on accumulated group corpus prior to gradation test. So micro-credit under SGSY scheme is based on 'Progressive lending' which enables the lender to 'test' borrowers with small loans at the initial stage in order to screen out the worst prospects before expanding the loan scale. The revolving fund makes the financial condition of the group healthy and the group can then disburse larger amount of credit to it members so that more members can now invest the credit in different income generating activities. It is expected that higher investment means higher return and that can help the borrower to improve the well-beings as well as happiness of his (her) family. In both these types of microfinance system particularly in the second one, the loss of social recognition and self-esteem for non-repayment

of loan are two important instruments to avoid moral hazard problems. So we observe high repayment of loan in both those types of microfinance system.

Importance of National Rural Employment Guarantee Scheme (NREGS) in Village Economy:

Problem of unemployment is very acute in the under-developed countries particularly in the rural areas. This problem pushes the people towards poverty and ultimately keeps people less happy. To tackle this problem of rural unemployment, Government of India recently implemented NREGS. The basic objective of the scheme is to give a legal guarantee of employment to anyone who is willing to do casual manual labour at the government declared wage. Any adult who applies for work under the scheme is entitled to being employed on public works within 15 days of application. It is expected that the NREGS can protect the rural households from poverty and hunger. It can reduce rural to urban migration and can bring more empowerment of the rural women who gets job. Besides that this NREGS can create useful assets in rural areas. There is plenty of scope for building productive water-harvesting structure, roads etc. through labour intensive method. We have already mentioned that unemployment reduces happiness of an economic agent. It is expected that the problem of unemployment among the rural poor mainly the marginalized class can be reduced if NREGS is properly implemented in the rural areas.

Happiness or Life satisfaction Studies in the Developing Countries:

Not very much empirical study has been done to investigate the impact of any developmental project not just as an economic indicator but also on broader concept of well-being and life satisfaction. Life satisfaction indicators may help to measure shadow values of non-market goods for the affected population and the real distribution of benefits for a given policy programme among different stakeholders. Chiason *et.al* (1996) in their study investigated people's perception about what contributes to happiness. Findings from their study revealed that factors contributing to happiness were perceived similarly across all groups. Such factors include the importance of family relationship and positive attitude towards self. Their findings also revealed social-political conditions and personal sources of power can contribute positively to happiness. Health is an important issue of life. Without it, an individual can not feel happy or become satisfied with life. Health is actually a complete state of physical, mental and social well-being.

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The state of well-being has been found to be related with life satisfaction (Berkman, 1971). A typical finding of life satisfaction studies in developing countries is the confirmation of the concave life satisfaction – income hypothesis (Sugden, 2004). Herrera et.al. (2006) compare Madagoskar and Peru and document that the correlation between the well-being and income is stronger in poorer environment. Becchetti and Castriota (2010) illustrate how exogenous shocks on income change the life satisfaction of the borrowers hit by the catastrophe. Within the literature we aim to extend the use of life satisfaction measures of the impact of development project to initiatives explicitly designed to promote inclusion and credit access such as microfinance.

Research questions:

Now the research questions are (i) whether the enhanced financial capacity due to accessibility of microfinance and getting job through NREGS brings more happiness among the rural poor and (ii) the type of microfinance system which can bring more happiness among the participants compared to the another system and non-participants.

Data and Methodology:

To investigate the above mentioned research problem we have chosen Patharpratima block of South 24 Parganas district of West Bengal randomly. The district itself is a backward district and the block we have chosen is a remote block and very near to Sunderban. Besides that in that block we have observed the simultaneous presence of both types of microfinance system i.e. VSSU and SGSY. In that block we have chosen four out of ten gram panchayets randomly and those are Digambarpur, Dakhin Raipur, Sridharnagar and Ramganga. We know the presence of more than one village under each Gram panchayat and the randomly chosen sample villages are, Digambarpur, Madhabnagar of Digambarpur Gram Panchayet, Dakhin Raipur and Piprekhali in Dakhin Raipur Gram Panchayet, Sridharnagar and Rakhalpur in Sridharnagar Gram Panchayet and Ramganga and Debichak of Ramganga Gram Panchayet. From each village we have to draw samples of three different types of individuals: (i) the member of VSSU, (ii) the member of any Self-Help Group under SGSY scheme and (iii) the non-member sample respondents who are not a member of VSSU or any SHG under SGSY scheme or any other type of microfinance system but from almost homogeneous economic background and have the eligibility criterion to join any

of two microfinance system. Our objective is to do impact study through improvement of happiness among the participants of two separate types of microfinance system. Initially we have to draw sample of the rural household from the voter's list randomly. After that each representative of the sample household is asked whether he(she) is a member of VSSU or Self-Help Group under SGSY scheme. If 'yes' then he (she) is asked whether he (she) is joined in any of the two microfinance system between November 2006 to January 2007 (because that time period is here considered the base year). If still 'yes' then we have chosen that respondent as sample belongs to treatment group. During the time of drawing sample belongs to control group we have initially identified the respondents who have said 'no' initially. After that we have to investigate whether that respondent belongs to the household almost identical economic condition that of treatment group. If that is 'yes' then we have chosen that sample respondent belongs to control group. The selection of control group members according to the eligibility criterion allows us to reduce the potential heterogeneity between the participants of any of the two microfinance systems and the non-participant individuals. In this way we want to moderate the impact of the selection bias in our quasi-experimental framework. Total final sample size in our paper is 344 out of which total respondents who had joined VSSU is 107, total respondents who had joined under SGSY scheme is 126 and total respondents belong to control group is 111.

In order to investigate the enhancement of happiness of the sample respondents after joining microfinance programme and availability of job under NREGS we have to convert the attribute into variable form and that can be done through calculating happiness index[1]. At the time of calculating 'Happiness Index' of a respondent we have to consider relative income position of the household and non-economic variables such as social network, and association membership and perception of the respondent about availability of health and education facilities in that locality. Happiness surveys are based on questions in which the individual is asked 'how satisfied are you with your life' with possible answers on a certain point scale. Actually happiness and life satisfaction are closely correlated. The correlation coefficient between two based on research on British data for 1975-92 and Latin American data 2000-01 in which it was between .50 to .56 (Blanchflower, Oswald, 2004, Graham and Pettinato, 2002). During the time of investigating the role of microfinance participation of the rural households to make them

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[1] Method of calculating 'Happiness Index' of the respondent is shown in Appendix-1.

happier we have to depend on longitudinal data of two periods: (i) just before joining any of the two microfinance system which is here represented as t^{th} period and (ii) what will happen two and half years after joining the system which is here represented as $(t+1)^{th}$ period[2]. This approach can minimize the problem of selection bias and unobserved personality traits.

The impact study can be analyzed on the basis of simplest kind of panel data of two periods collected directly from field survey. So we have taken the cross section data of a group of households both belonging to control group and treatment group of two separate periods. Here t = 1 is for base line period and t = 2 for $(t+1)^{th}$ period. To remove the unobserved heterogeneity we assume that the omitted variables do not change over time and we have to use the fixed effect on first-differencing method. We can write a model with a single observed explanatory variable as

$$Y_{it} = \beta_0 + \delta_0 d2t + \beta_1 X_{it} + a_i + u_{it} \text{ when } t = 1 \text{ and } 2 \dots\dots\dots\dots\dots\dots. (1)$$

In this model d2t is the dummy variable which equals to zero when t = 1 and one when t =2. Therefore the intercept at t = 1 is β_0 and at t =2 is $\beta_0 + \delta_0$. The explanatory variable a_i is generally called unobserved effect. In this application the main reason for colleting panel data is to allow for the unobserved effect a_i to be correlated with the explanatory variables. To remove the unobserved effect we can difference the data across the two years. If we subtract the second equation i.e. the situation when t =2 from the first equation when t = 1 we have the following equation

$$(Y_{i2} - Y_{i1}) = \delta_0 + \beta_1 (X_{i2} - X_{i1}) + (u_{i2} - u_{i1})$$

Or
$$\Delta Y_i = \delta_0 + \beta_1 \Delta X_i + \Delta u_i \dots\dots\dots\dots\dots\dots\dots\dots\dots. (1)$$

Here 'Δ' denotes the changes from t = 1 to t = 2. The above equation is called the first differenced equation. It is just a single cross section equation. The most important is that Δu_i is un-correlated with ΔX_i.

The equation (1) can be expanded in the following form.

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[2] The $(t+1)^{th}$ time period of our paper is between May 2009 to July 2009.

$$\Delta HI_i = \delta_0 + \delta_1 dT_1 + \delta_2 dT_2 + \delta_3 \Delta DRatio_i + \delta_4 \Delta MCredit_i + \delta_5 \Delta NREGA_i + \Delta u_i \ldots (2)$$

Here $\boldsymbol{\Delta}HI_i$ => The change of the value of Happiness Index of the ith respondent (either belongs to the treatment group or belongs to the control group) between the tth and $(t+1)^{th}$ period. Happiness is based on self-reported evaluations on the basis of questionnaires. The main method that psychologists have used to measure human wellbeing has been to conduct surveys in which they ask people whether they are (a) very happy; (b) fairly happy; or (c) not happy. Most respondents are willing to answer the questions but not all of them respond 'very happy', rather many people describe themselves 'happy' and few confess to being not happy. Our happiness survey consists of 10 questions (questions are shown in the appendix) and the respondent (either belongs to treatment group or belongs to control group) is requested to answer the questions and the point is between 4 to 0 i.e. on the basis of 4 point scale. Sum total of the score indicates the value of 'happiness index' (HI). Higher point indicates higher degree of happiness. Here the sample respondents belong to treatment group enjoys the benefit of microcredit. But in case of NREGS the beneficiaries are belong to both treatment group as well as control group. Now during the time of calculating happiness index each respondent both belongs to treatment group as well as control group is asked same set of questions for t^{th} as well as $(t+1)^{th}$ period. Then we took the difference between $HI_{(t+1)}$ and HI_t and that is represented by ΔHI. The positive sign of $\boldsymbol{\Delta}HI_i$ indicates the ith respondent becomes happier between the concerned time periods.

$dT_1 = 1$ if the ith respondent had joined VSSU in the tth period and still continues his (her) membership and = 0 otherwise.

$dT_2 = 1$ if the ith respondent had joined SHG under SGSY scheme in the tth period and still continues her membership even at $(t+1)^{th}$ period and = 0 otherwise[3].

$\boldsymbol{\Delta}DRatio_i$ => The change of adult equivalent[4] dependency ratio of the ith household between the tth period and $(t+1)^{th}$ period. We know that unemployment reduces happiness (Clark and Oswald,

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[3] We can use dT_1 and dT_2 as dummy variable because at the tth period all the sample respondents were non-members of any type of microfinance system.

[4] Following Townsend (1994) to get adult equivalent family members we have considered 1 for any adult member (both male and female), 0.25 for any member of that household up to six years of age and 0.5 for any member of the household between six and fourteen years of age and 0.75

1994). So this variable is considered because it is expected that after getting access of credit from the microfinance system a non-earning member of the respondent household can become an earning member and at almost unchanged family structure the dependency ratio of the respondent household will decrease. The member can take microcredit either for himself (herself) or for any other family member for initiating an income generating activity. It is expected that this action can bring few satisfaction among the respondent member particularly if s(he) her(him)self contributes in his(her) own family financially. It is expected that if the dependency ratio of the household decreases then the respondent will be happier.

ΔMCredit$_i$ => The size of microcredit taken by the respondent between the tth period and $(t+1)^{th}$ period. This explanatory variable is taken in order to reduce heterogeneity between the treatment and control group and to use it as a proxy to detect the microloan (credit) effect on change of happiness. The credit taken might be for consumption purposes or for investment in income generating activity. Whatever be the cause, the credit was taken by the respondent for economic upliftment of his (her) family. Now we have to investigate whether this microcredit brings more happiness among the participants of microcredit programme in compare to the non-participants.

ΔNREGA$_i$ => Change of total number of man days each sample respondent and other member of that household get job under NREGA annually[5]. Actually due lack of proper implantation of NREG Scheme the total number of man-days each respondent got employment in those sample garm-panchayets were almost zero in the tth period. But after that mainly from 2008 the scheme was properly implemented. It came out from field survey that a male job card holder on an average has got 30-35 man-days of employment and a female job card holder has got around 30 man-days of employment in the last reference year[6]. Though there is no gender discrimination between the male and female wage rate still the intensity of work of the female job card holder is

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between fourteen and eighteen years of age. During the time of calculating Dependency Ratio we have calculated that in terms of adult equivalence

[5] The basic objective of the NREGS is to arrange total 100 man-days of employment of all the job card holders of each household. So in this model we consider total number of man-days each respondent household get job under NREGS.

[6] In this paper the last reference year implies between June- August 2008 to May- July 2009. The information was collected on the basis of the answer of the respondents which we think is more authentic.

comparatively less than the male job-card holder[7]. It came out from our field survey that only thirty-one member households of VSSU took the opportunity to work under NREGS. But most of the sample households who have formed Self-Help Group under SGSY scheme enjoyed the opportunity to work under NREGS. Even most of the non-member households have also worked under NREGS. This is happening because, most of the sample households whose female member had joined microfinance programme under SGSY scheme and the non-member households are either involved in farm or non-farm activities as a labourer or they are totally unemployed. Hence they want to utilize the opportunity through working under NREGS. More number of days of getting employment under NREGS reduces the problem of unemployment of the respondent and his (her) other adult family members and can bring more happiness. So the relation between this explanatory variable and the explained variable should be positive.

Before moving towards Impact study through first differenced method we initially look at Table-1 which gives the summary statistics of our sample survey.

Table-1: Summary statistics of the information collected from field survey:

Item	VSSU			SGSY			Non Member		
	Mean	Median	S.D.	Mean	Median	S.D.	Mean	Median	S.D.
HI_t	17.57	17	2.05	14.65	14	14.57	16.28	17	3.52
$HI_{(t+1)}$	22.61	22	2.3	22.98	24	23.27	18.67	18	3.98
$EMPINDEX_t$	9.11	9	1.91	4.36	5	4.18	8.05	8	2.34
$EMPINDEX_{(t+1)}$	11.24	10	2.08	10.16	10	10.44	10.04	10	2.04
M.Credit	4598.13	5000	2870.99	3632.8	3000	4259.82	0	0	0
$TNREGS_t$	2.05	2	1.54	2.5	2	6.26	2.82	2	2.9
$TNREGS_{(t+1)}$	6.6	6	5.21	24.6	25	13.08	10.02	10	8.09
M.Income$_t$	4119.16	4000	1708.06	1998.4	1450	1892.71	1187.5	1500	2321.79
M.Income$_{(t+1)}$	4836.47	4500	2101.06	2624.04	2000	2580.66	1455.5	1400	2623.72
MPCE$_t$	1164.32	1090	461.53	585.63	333.3	580.07	972.34	800	473.56
MPCE$_{(t+1)}$	1476.49	1455	578.57	728.98	411	728.86	1022.7	1050	589.86
D.Ratio$_t$	2.88	2.75	0.82	2.59	2.5	2.55	2.69	2.5	2.13
D.Ratio$_{(t+1)}$	2.65	2.75	0.71	4.08	2.5	4.25	2.02	2	1.15

Source: Calculated by the author on the basis of data collected through field survey

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[7] A male job card holder in a particular man-day has to dig 88 cubic foot solid but a female job card holder has to dig 75 cubic foot in a single man-day.

The Table-1 shows that average value of monthly income and monthly per-capita consumption expenditure (adult equivalent) is more for the prospective members of VSSU than the members of SHG and of the respondents belong to control group in the tth period. Following Kundu (2009) we can say that wealthier among the not so affluent rural household prefers to join microfinance system operating on the basis of individual liability loan contract, comparatively less wealthy prefers to join microfinance system operating on the basis of joint liability loan contract and ultra poor is less likely to join any type of microfinance system. The size of microcredit is comparatively more in VSSU than under SGSY scheme. Again the average number of days the respondent household gets job under NREGS is more among member households of SGSY than non-member households and the households who had joined VSSU. This is because the member households under SGSY scheme are comparatively more connected with local panchayat than the non-member households. The large numbers of sample households under VSSU belong to economically solvent class and not so much interested to work under NREGS scheme.

In the traditional literature there is a significant impact of income on happiness. But in this framework we cannot incorporate income or monthly per-capita consumption expenditure as an explanatory variable mainly to avoid the problem of multi-co linearity because number of man-days getting employment through NREGS and size of microcredit is strongly correlated with income and monthly per capita consumption expenditure of the respondent households.

The result of the above regression equation (2) is expressed in the following table (Table-2)

Table-2: Dependent Variable ΔHI

The Parameters	Estimated Values of the Parameters and Level of Significance
δ_0	3.952*
δ_1	2.218*
δ_2	3.974*
δ_3	.136
δ_4	.002506*
δ_5	.0675*

*=> Significant at 1% level. Here $\overline{R^2} = .845$, n =344

Source: Author's calculation.

So from the above table it is clear that participation in microcredit programme (both under individual liability loan contract and under joint liability loan contract), the size of microcredit and total availability of job of all the job card holders of the respondent household in number of man-days under NREGS make the participants happier in compare to the households belong to control group. Only the change of adult equivalent dependency ratio of the household does not make any impact on ΔHI. The results of the above econometric analysis is explained in details below, when the combined sample is of both belong to treatment group as well as control group.

(a) If we look at the estimated values of the parameter, the respondents belong to self-help group under SGSY scheme become much happier than the members of VSSU with in the concerned time period. The basic reason is that following Table-1 at the tth period, the average economic condition of the sample respondents who had joined SGSY scheme was worse than the average economic condition of the sample households who had joined VSSU. Most of the member households who had joined Self-Help Group under SGSY scheme belong to the family lying below the poverty line or just above the poverty line. Besides that the prospective participants were mainly women who were almost confined in their house before joining microfinance programme under joint liability and enjoyed very little intra-household decision making power. But after joining group they could come out from their home and can participate in different social and economic activities. Besides that few of them have become earning member of the family after starting a small business after taking credit from the group and can contribute some amount for their family income. But the participants of VSSU were mainly men and comparatively economically solvent. They have also used the microcredit mainly to expand their family business which also enhances their life satisfaction as well as happiness but not so much.

We can consider the following ANOVA equation:

$$\Delta EMP_i = \alpha_0 + \delta_1 dT_1 + \delta_2 dT_2 + u_i \ldots \ldots \ldots \ldots \ldots \ldots \ldots (2)$$

In the above equation ΔEMP_i => Change of empowerment index of the respondent (if she is female) or the wife of the sample respondents. The method of calculating the empowerment index is shown in the Appendix-2.

The result of the above ANOVA model is shown in the following table (Table-3)

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Table-3 : The Dependent Variable is ΔEMP_i

The Parameter	Estimated Value of the Parameter and the Level of Significance
α_0	1.991*
δ_1	.140
δ_2	3.809*

*=> Significant at 1% level. The value of $\overline{R^2} = .421$, n=344

Source: Author's calculation.

The above table shows the intra-household decision making power of the sample respondents who had joined group under SGSY scheme has improved much with in the concerned time period but that is not happening for the wives of the members of VSSU. This is because most of the sample respondents of VSSU are male (86 out of 107) but that of under SGSY scheme are female (123 out of 125). So empowerment of the main female member of the household under SGSY scheme has improved much with in the concerned time period. We know that 'empowerment' is the expansion of people's capacities that involves an enlargement of choices. Empowered women now can take or participate different decision making process with in her own family and in the society she belongs. This automatically makes them happier. Hence we can say that at unchanged value of ΔNREGS and ΔMCredit the sample respondents belong to Self-Help Group members under SGSY scheme who are mainly rural married women have become much happier in compare to the respondents of VSSU or the non-participants.

(b) Table-2 shows that more number of man-days the sample household get job under NREGS, more will the respondent be happy. Actually employment through National Rural Employment Guarantee Scheme helps the rural household to get more non-farm employment particularly in the agricultural slack season. So it reduces the problem of unemployment. As we know that reduction of unemployment improves happiness, so we can say that availability of job under NREGS brings more happiness in the rural

households. This will happen for all rural households both belong to the treatment group as well as control group. Expansion of NREGS in the locality can also play an important role to improve flood control and protection system and rural connectivity in all weathers. This local infrastructure development also makes the rural people much happy.

(c) Table-2 also shows that the size of microcredit makes the participants of microfinance system much happier. Actually microcredit helps the rural households to protect themselves from the crunches of professional money lenders where rate of interest charged against credit is also very high. Microcredit helps the participants of microfinance system to utilize it either as working capital for income generating activity or for consumption purposes mainly for house repairing or health. Actually enhancement of financial capacity through microfinance system makes people happier. Credit taken for health expenses help the rural households immensely during the time of their distress because in India out of pocket medical expenses are quite high and instant credit is required for the needy rural household during the time of emergency. Credit is available with in a short duration during the time of emergency need from microfinance system at comparatively cheap rate. It is now not required for the needy household to depend on professional money lender. This non-dependency and availability of credit with in a short duration at comparatively low rate of interest makes them much happier compared to the non-participants.

Conclusions:

We here try to investigate the joint impact of microfinance program and NREGS on a broader concept of well-being such as life satisfaction or happiness which is actually an independent effect not absorbed by the change in income generated by loan. Actually microfinance opens the door of opportunity for the poor, providing dignity and satisfaction that comes from working to support one's family. Microfinance is about much more than just credit. It help to create financial stability at home, teaches individuals how to save and foster self-respect and community well-being. The availability of microloan during the time of emergency through microcredit programme under SGSY scheme or from VSSU and non-farm job during the time of slack period under NREGS brings more happiness to the village poor and the marginalized households. The enhancement of happiness is observed more among the poor village women who have joined Self-Help Group under SGSY scheme compare to the participants of VSSU and

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non-members who had the eligibility criterion but did not join any type of microfinance programme in the base period. This is because SGSY scheme increases credit availability, self-esteem, social recognition and over all intra-household decision making power of the poor village women mostly of whom were confined in room before joining Self-Help Group. Availability of job under NREGS also helps them to earn some amount to supplement their respective family income which also brings more happiness in their life.

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Appendix-1 : Method of Calculation of Happiness Index of the respondent:

1. The intensity of happiness of the sample respondent before and after joining microfinance programme: Very Happy => 3, Happy=>2, Unhappy=> 1, Very Unhappy=>0

2. Are you satisfied with the service of microfinance institution? (VSSU/SGSY)[8]
   Very much => 2, Average=>1, No => 0.

3. Degree of Economic Prosperity enjoyed by the respondent family in last 2 and half years?[9]
   Very good=> 3, Good => 2, Medium=> 1, Unchanged => 0,

4. Are you satisfied with the economic activity of you and your other family members?
   Very Happy => 3, Happy=>2, Unhappy=> 1, Very Unhappy=>0

5. Financial condition of your family with respect to your neighbors particularly the non-member households with identical economic background[10].
   Very Good => 3, Good=>2, Not so Good => 1, Identical =>0

6. Are you confident on future economic stability of your family?
   Very Confident => 3, Confident => 2, Uncertain=>1 Very Uncertain=>0

7. Are you satisfied with the availability of health service in your locality?
   Very Satisfied=>2, Satisfied =>1, Not Satisfied=> 0

8. Are you satisfied with the availability of primary and secondary school in your locality?[11]
   Very Satisfied=>2, Satisfied =>1, Not Satisfied=> 0

9. Are you satisfied with the activities going on under NREGA in your locality?
   Very Satisfied=>2, Satisfied =>1, Not Satisfied=> 0

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[8] The respondent is asked this question only for (t+1)[th] period.
[9] The respondent is asked this question only for (t+1)[th] period.
[10] Respondent is asked to compare his (her) household income with that of other households whose economic condition is almost homogeneous in nature but no member of that household have joined any microfinance system. Actually intra- village comparisons particularly in terms of income is very common among rural households.
[11] After joining microfinance programme the participants become much aware about health, family welfare and importance of child education. Improved income sometimes encourages them to send their child in school. In this situation they demand school and health facilities in their locality.

10. Are you and your other family members are enjoying the benefit of positive externality after implementation of NREGA in your locality? Yes=>2, Not So much=> 1, Not at all =>0.

Maximum point is 25. Higher the value of the index implies the respondent is much happier.

Appendix-2: Calculation of Women's Empowerment Index: (Asked either the member or wife of the member or the non-member respondent)[12].

Name of the Variable	Points
1. Decision about utilization of Micro-credit	Female:-2, Both:-1, Male:-0
2. Decision on purchase of daily food items	Female:-2, Both:-1, Male:-0
3. Decision on purchase of live stock	Female:-2, Both:-1, Male:-0
4. Decision on purchase of utensils and other household items	Female:-2, Both:-1, Male:-0
5. Decision on child education, child vaccination and other health related matters	Female:-2, Both:-1, Male:-0
6. Does she earn regularly and contribute in her family?	Yes:- 2, No:-0
7. Can she participate in different gram sabhas according to her will?	Yes: -1, No:-0
8. Can she spend for consumable goods (cosmetics) according to her will?	Yes: -1, No:-0
9. Can she go outside without taking permission from her husband or elder son?	Yes: -1, No:-0
10. Can she cast her vote according to her will?	Yes: -2, No:-0
11. Can she protect herself against domestic violence?	Yes: -1, No:-0
12. Decision on Family Planning	Female:-2, Both:-1, Male:-0

Maximum point is 20 and more point indicates more Empowerment of Woman or more intra-household decision making power of the main woman of the sample household.

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[12] All the respondents of VSSU and Control group categories are married.