

Amit K Bhandari · Ashok Kundu *Editors*

Microfinance, Risk-taking Behaviour and Rural Livelihood

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Introduction

Nearly 60 % of India's mammoth 1.2 billion population lives in rural areas. Unfortunately, India's rural population contributes only 8 % of the gross domestic product. India's formal financial services sector is yet to meet the growing need of the rural population. The testimony is India's booming informal lending market. To create stability in the society, a well organized and inclusive financial system should be built for the deprived class and the small enterprises to thrive on. It assists them to be a part of the growing economy along with the reduction in inequality and poverty. Access to easy and affordable credit for the backward class by creating equal and fair opportunity enables them to integrate better into the economy and actively contribute to development. It even helps them to be prepared at times of financial turmoil, as they can maintain their expenditure by accumulating their savings during those hard times. Despite the importance of access to finance as a crucial weapon to alleviate poverty, globally around 2 billion people are excluded from basic financial services. In most developing countries, a large segment of the society, particularly those who have to make ends meet, have no reach to finance. Rural societies in India have suffered a continuous erosion of their standard of living due to inadequate access to productive assets and financial resources. They have to depend on their informal source of income and on the resources they are supplied at reasonably high price. This situation is even worse in smaller least developed countries, where 90 % of the population is deprived of this access. This indirectly damages the growth of society, when an individual with brilliant entrepreneurial skill cannot implement the same due to lack of financial facilities. Rural people are hindered by limited access to finance, thus stagnating the progress of the country to a prosperous future.

The access to finance in developing countries is considered as a necessity of life just like food and water. Inadequate access to financial services is considered one of the main reasons behind inadequate economic opportunity and poverty situation in developing countries. In most South Asian countries, the rural population comprises two-thirds of the total population, where economic development is skewed toward urban areas, which drive inequality in income distribution. Poverty is a persistent and widespread problem with the majority of the poor people living in rural areas. Rural financial services have been considered as an important tool

for poverty reduction for a long period of time. Financial services available to the rural population are costly and rigid. Despite the phenomenal growth of the microfinance sector during the past couple of decades, most parts of the country are starving for adequate financial services.

In rural areas, financial services primarily include credit, saving, insurance, and remittance services. However, rural credit is a small amount of credit, which is tied in income generation activities, while saving and insurance is used to protect and stabilize the families and livelihood of the people. Domestic migrant labor remittances play a crucial role in rural household incomes in most South Asian countries. Rural people demand access to payment and money transfer services. When it comes to remittances, a majority of foreign remittances come through informal channels, even among households with a bank account. Remittance transfers can promote access to financial services for the recipient. The success of Western Union is a significant progression toward financial inclusion. In 1993, Western Union remitted money to India from 41 countries, which increased to 190 countries and the services stem down to the village level. Currently, the company has over 90,000 agent locations in India.

Financial inclusion has become as the thrust area for policymakers around the world, particularly in developing countries. Less than 5 % of Indian villages have bank branches. Around 60 % of the adult population has bank accounts, while 40 % of the population is unbanked. In rural areas, 60 % of the population is unbanked. The solutions are not easy. However, financial inclusion seems to end with ensuring everyone with a bank account. In reality, financial inclusion indicates something more than that. Since 2005, the Reserve Bank of India (RBI) initiated a drive toward financial inclusion to accommodate a wider section of population under banking services with savings accounts to all 'unbanked' households. A wider penetration of banking services helps to bring more saving into the economy, which transforms into higher growth. Currently, the government uses banking networks to route payments to the beneficiaries of poverty alleviation schemes.

Microfinance is a financial service for poor people and enhances their welfare. As poverty eradication strategy, many developing countries have been providing credit to the rural poor through microfinance programs. Microcredit programs typically lend to customers through community organizations. In India, these organizations are known as 'Self help group' (SHGs). Apart from banks, post offices and moneylenders, SHGs are the major financial service providers in rural areas, which are permitted as informal entities to receive bank loans and the whole group is responsible for loan repayment. In recent years, the dominance of microcredit as an alternative has questioned the fundamentals of the rural credit system in developing countries for channeling credit to the poor. The NGO-led microcredit programs have been more successful in reaching their target groups of poor more effectively than state-led programs and institutions. Several studies have led to the conclusion that microcredit programs have generated a positive change in the income of the beneficiaries, but the change is just minuscule. Regarding

other aspects of performance, microcredit programs have positive impact on the number of days of family employment.

Based on common beliefs, it is argued that the popularity of microfinance lies in its high repayment records. Microfinance programs generally target rural women, because women honor their loan contracts more than men. The basic argument behind targeting women borrower is high repayment rates, less likely to misuse loans, and they are more likely to share benefits with their other family members, particularly children. Based on the available evidence, it is observed that repayment rate of women borrower is higher than male due to the fact that women are more conservative in investment matters. The other techniques to reduce repayment default used by various MFIs are group lending, targeted credit, community-based credit, etc. However, lending to women and repayment performance has not been rigorously studied yet. A number of recent studies have found no significant relationship between gender and repayment. Normally, it is observed that women involved in business have quick turnover, which in turn lead to regular repayments, while the male borrower generally involved in risky activities such as agriculture, which have a long history of debt forgiveness. Apart from gender, other personal characteristics of borrowers like education, occupation, and social groups are equally important. It is important to identify the factors affecting repayment of loans by rural borrowers.

The recent crisis of microfinance in Andhra Pradesh has attracted widespread attention. Andhra Pradesh is the hub of the microfinance sector in India. The state itself contributes a quarter of the total microlending business. It is alleged that the coercive technique used by microfinance lenders is linked to a spate of suicides in the states. As a result of this the Andhra Pradesh Government passed a law in October 2010, imposing restrictions on their business practices to arrest suicides by farmers who are unable to repay loans. The law requires mandatory disclosure of interest rates, area of operation, recovery methods, and others. This resulted in the sudden drop of recovery rates from 95 % to mere 10 %. The dark side of the microfinance sector has been exposed for the first time in its history. The Indian microfinance sector faced serious crises in its lifetime when the government of Andhra Pradesh imposed restrictions on microlenders. Without any delay, banks stopped providing credit to microlenders across the country. Instead, banks increasingly preferred to provide credit directly to SHGs to meet their obligations on priority sector lending. At the same time, borrowers also stopped repaying loans with high repayment rates. The impact of this crisis is reflected on the results of the stock market listed Microfinance Company, SKS Microfinance, which reported five consecutive quarters of losses, prompting the company to cut jobs, shut branches, shifting headquarters to outside Andhra Pradesh.

India is a country with a deep-rooted and well-developed financial system. Despite this impressive infrastructure, banking used to be concentrated in the urban areas, and thus an overwhelming majority of the poor, residing in the rural areas, were deprived from the facilities. The early 1950s started the development of a vast network of co-operative banking, facilitating the poor. Success on the part

of financial improvement in the country which in turn affected the global system positively, led to the nationalization of commercial banks by 1969. A number of banks were built in distant areas. Their main purpose was to free the poor from the unfair grip of unscrupulous moneylenders by availing loans at low rates. They even had to respect the policies which made it mandatory to lend money to the rural population at subsidiary rates. During the 1990s, a healthy competition arose in the banking sector, with a partial deregulation of the interest rates. A nationwide attempt was made to harmonize the commercial banks, NGOs and the informal local groups or SHGs. This effort was pioneered by the NGOs and is now getting support from the government. This microbanking system, or “SHG Bank Linkage” as it is popularly known, has grown manifold in the past decade, so far it retained its effectiveness toward the rural households. Many believe that this system is destined to be the country’s leading banking plan, extending its outreach to the backward people. However, even with these far-fetched plans, the informal moneylenders continue to be a dominant power in rural India, forcing the poor, who are devoid of microbanking in any and every way, with their high rates.

Microfinance has become a significant part of the economic landscape in South Asia. Policy measures too were crafted with this in mind. Studies suggest that microfinance programs not only help poor but also contribute to economic growth. There are, however, several aspects of rural finance that remain outside the purview of the extent paradigm of financial inclusion. In Bangladesh, despite the widespread presence of Micro Finance Institutions (MFIs), their share in the total money management is relatively small. There are self-selection problems associated with involvement in microfinance programs, which imply that individual with similar characteristics behave differently regarding their participation in schemes. Therefore, there is a need for microfinance institutions to focus on heterogeneity of demand structure for financial services for the poor. The present volume sets out to address the issues of social and behavioural aspects of the rural population on rural financial systems. Issues on intensification and diversification of rural financial instruments have also been considered at this juncture. Given that there have been often reported discrepancies between macro level analysis and field level data, it is crucial to take account of the emergent forms and characteristics of rural finance at micro level. This has become especially necessary with increasing decentralization of economic and political processes. Such micro level analysis must take note of the regional and sectoral characteristics. It is at this level that we become aware of the need to go beyond the traditional forms of analysis of the demand for financial services in rural areas. Issues such as household strategies, gender, structures of community organizations, etc., are of critical salience. All the above issues have direct bearing on policy formulation as well as on the all round development of rural society. Rural finance in the current context of financial inclusion drive requires adequate policy responses. A key concern appears to be the development of a comprehensive information based on all aspects of rural finance.

Financial Need of Rural People

Agriculture forms the basis of the primary source of income for the rural population of India, mainly comprising small to even smaller farmers and sometimes the homeless poor. The people tend to have multiple sources of income, the income which is irregular, volatile and fluctuating, forcing them to spend in an unorthodox, and infrequent manner. Although wage labor forms the primary source of income for the agricultural people, irregular employment by land owners make it an unreliable form, dependence on it being inversely proportional to the size of land owned. They have to depend on the sale of agricultural income as the most important secondary source. This ranges from farm produce and dairy products to even some waste products of commercial and economical value. The expenditure incurred by these poor farmers also changes drastically depending on the income. Moreover, it is reported that they have to face steep expenditure, at least once a year, for which they are left with no choice than to finance whatever they are left with at home, or most notably to take loans from relatives, or even worse from moneylenders at a high rate. The farmers understand the importance of a steady income, so that they can spend at one time, what they have earned at some other time. The Rural banks, nowadays, have understood the demands of the farmers and are trying to reach a larger population to meet their needs. Their services include agricultural lending, lending to farm households for nonagricultural production and consumption purposes, loans made to non-farm rural firms, rural savings deposit services, and other financial services such as insurance.

Access to Financial Services for Rural People

India's vast network of financial institutions, which spread in the farthest of the rural areas, contributed to the growth of financial and economic depth. Driven by Indira Gandhi's bank nationalisation service launched in 1969, the commercial banks were required to expand their network of branches in the rural sectors. The following years saw a rapid growth in rural branches. Between 1973 and 1985, bank branches in the rural areas grew at an average of 15.2 % each year, which is about double the rate of growth of branches in semi-urban (6.4 %), urban (7.8 %), and metropolitan areas (7.5 %). In 1969, there were only about 1,833 branches in the rural areas. But the picture completely changed in 1985, when about 30,186 rural branches became existent. There was an increase of 1,547 % of rural branches, which was an encouraging result in comparison to the semi-urban, urban, and metropolitan branch growth of about 220 %. This success story continued in the 1980s. Figures show around 35,000 branches in 1991, but declined slightly to 32,400 in 2001. In 2007, there were 30,639 rural branches.

Today, India is the proud home of over 32,000 rural branches of commercial banks and RRBs, 14,000 co-operative bank branches, 98,000 Primary Agricultural Cooperative Societies, thousands of mutual fund sellers, several Non Bank Finance Companies and last but not the least, a large post office network, spreading their Web of financial activities through 154,000 outlets, with primary concern being deposit mobilization and money transfer. This extensive distribution of financial services and the average area coverage of a branch can be compared to that present in the developing countries. In 2002, each commercial bank branch in India served around 15,000 persons on an average, including 12,800 by the rural branches, coming close to levels in Indonesia and Mexico. The improvements in rural finance also seem to be biased against the rural population. On average, a rural bank branch attends to thrice the number of people served by the non-rural branches. Statistics show that per capita deposits in the rural branches contribute to around 10 % of the national per capita GDP (Rs 2,150), whereas credit per person accounted for 4 % (Rs 900). The same values for the urban areas are 160 % (Rs 33,780) and 100 % (Rs 20,600) of national per capita GDP, respectively. The number of credit accounts is also low in rural areas, amounting to only 3.4 % there, in comparison to nearly three times the count in the urban areas.

Bank Lending to Rural Poor

Based on the unparalleled characteristic rendered by the directed priority sector, the formal banking sector has established its importance in Indian microfinance. India has built a rare network of rural banks, with 196 RRBs having 14,000 branches in 375 districts nationwide, in 1999, and covering approximately three villages per branch. Together, the RRBs, the nationalized commercial banks and the credit cooperatives—consisting of Primary Agricultural Credit Societies (PACS) and Primary/State Land Development Banks (PSLDS) have one branch for every 4,000 rural residents. Despite this far-reaching coverage, the formal banking sector failed to deliver prominent impact on microfinance or lending to the poor. In fact, the RRBs were established in the mid-1970s with the sole motive of making credit available to the poor, as they were unable to get any help from the cooperative banks due to dominance by the rural wealthy, and even from commercial banks having an air of urban priority. Thus over the decade, the formal banking system in India fought hard enough to synchronize both the financial performance as well as its outreach to the rural poor. The focus has now shifted from the later objective, and in turn assisting the financial flow, a feature also highlighted by the commercial banks. Statistics show that in 2002, 45 % of borrowers of scheduled commercial banks were from rural areas, but they accounted for only 13.4 % of their outstanding loans. The banks now turned their attention to low cost segments. The only hindrance they face is related to regulatory policy and operational norms, which

forces them to refrain from opening more branches even in profitable locations, due to the fixed number of branches and extension counters one can open. The interest rates are not suitable for microfinance operations. In a way the organization structures, methods and norms are unsuitable for microfinance, and reverting them to our usefulness is both time consuming and expensive. Sometimes, cultural barrier causes damage to banks involvement in microfinance; sometimes the staff of the Indian banks think the poor to be inferior to borrow money.

SHG-based Financing

SHGs form the basic building block of microfinance's forwarded in the Indian economy. An SHG is usually formed by a group of individuals, usually poor and most notably women, who collect their savings into a fund, so that they can borrow money in times of need. It is linked with a bank—rural, cooperative or commercial—and maintains a group account. The bank also sees it fit to lend money to the group as a unit, keeping faith on self-monitoring and peer pressure for repayment of the loan.

An SHG normally consists of 5–20 individuals, with a leader and a deputy leader chosen by the group members. They decide among themselves the amount of monthly deposit each has to shoulder. At the beginning it is usually low, about Rs 10–20 each, thus amounting to Rs 100–200 monthly for a group of 10 members. The local bank manager opens a savings bank account, keeping in view the resolution adopted and signed by the group. The individual savings are usually collected on or before a stipulated date (normally 10th of every month) and deposited in the bank. Joining an SHG is somewhat monetarily cumbersome on the part of the enthusiastic villager, as he has to deposit the cumulative savings and the interest to maintain parity with the other members. Thus, it is easier for him to start a new SHG than joining one. Loans can be obtained by application of the same and subsequent approval in the group meeting. The bank also permits withdrawal from the group account on the basis of such resolutions. These types of loans, which are funded out of the own group savings, are called “inter loans”. The repayment period is short—3 to 6 months, after which the bank considers making a bank loan to the SHG, the maximum amount being a multiple of the net savings in their account. The main advantage of the SHG lies in their peer monitoring of the member borrowers. In association with the NGOs, they tend to reduce pressure and monitoring cost of the banks for small loans and can reach the poor with easy availability of credit. Thus, it has earned widespread attention in the rural banking sector as well as from the government in recent years.

India has many SHGs run by poor women which are sources of microfinancial help to the micro entrepreneurs. Programs like NABARD's Bank Linkage Program, pilot-tested in 1991 and brought into effect from 1996 onwards, has

played a major role in connecting many SHGs with the banking system. A handsome amount of about Rs 1,026 crores was paid out by 2002 due to the successful linkage of half a million SHGs with a banking system. Other organizations, for example SIDBI, are enhancing the efforts of NABARD's by their own planned programs. SIDBI has been able to disburse about Rs 30 crore by March 2001 through 140 MFI-NGOs to the SHGs. The concept of SHG-banking linking first emerged and was brought into practice in the Asia and Pacific Regional Agricultural Credit Association. Eventually, RBI decided to include the program to its 'priority sector landing' following which it was recognized in the government budget in the year 1999. On the 10th anniversary of the launching of NABARD, an assessment was carried out and the statistics showed that the program evolved to be the largest microfinance network in the world. By March 2002, the total lending turned out to be Rs 1,026 crores, savings exceeded 875 crores, and 461,478 SHGs were covered. The program progressed with the help of 121 RRBs, 209 co-operative banks, 27 public sector, and 17 private sector banks having 17,085 branches altogether, disbursing finance to 7.8 million people in 488 districts. Loans of approximately Rs 22,240 per SHG and 1,300 per member are sanctioned. Today, the program has reached over 8 million houses covering 5 lakh SHGs and loans disbursed over 1,200 crore. Linking of SHGs being state wise, the share of each SHG when considered cumulatively is disproportionate. Andhra Pradesh has a share of 42 %, Tamil Nadu has 12 %, Uttar Pradesh comprises 11 %, and Karnataka has 9 %, whereas the rest of country comprises only a quarter of the total SHGs combined. Thus, it can be said that the real access of SHG-bank linkage is limited to the south rather than to the whole of India. Although there has been a major rise in microfinance institutions, still further efforts in this sector would be welcome as eradication of poverty in India is a formidable task. NABARD aims to reach 100 million of the total 350 million poor, which is about 35 % of India's population, by 2008. The present poverty situation of India requires a huge leap in microfinance activities along with other necessary progressive plans. It has been seen that only people who are comfortably above or at par with the poverty-line are able to derive the benefits of microfinance institutions in India and in the rest of the world, thus again ignoring the needs of the major poor section of the society.

Innovations in Microfinance

The financial services to the poor have seen a revolution with the introduction of microfinance. The changed pattern of decision making, which is not centralized anymore and representation of proper governance is initiating modernization rapidly. MFIs are now more concentrated on ways of promoting assets among the poor by social intervention instead of limiting to only financial security. Networks are being created between NGOs and local government resulting in social and

financial linkage, which again has helped in low-cost marketing, trouble-free access of medications, and spread of knowledge. For better use of money, increase in savings, enhancing the ability of gaining credits of the rural people, and social intermediation along with capacity build up is necessary. The success and idea of MFIs is to provide collateral free lending to the poor. MFIs though considered as self-finance units, are mostly funded by NGOs, and thus their enforcement capacity is also limited. MFIs are inventing social collateral substitutes for financing the poorer section, which is also considered to be the best substitute. Joint liability, better known as group lending, is such an example through which MFIs provide security to reduce risk. They dislike the fact that MFIs can prove to be a threat by denying money in future. MFIs appoint representatives who weekly visit a group of 20 to 30 individuals, those having jointly received finance for their microenterprises, to collect weekly payments, providing training on money management, encouraging microentrepreneurs, and increase financial responsibility by making use of group pressure. Individual loans account for more, i.e. 55.5 %, as compared to 44 % of group loans according to Mersland and Strom's (2009) study. It is being believed that lending money to women entrepreneurs, who have a record of 95 % loan bearing in the year 2000 from Grameen Bank, will provide more focused microenterprises, proper usage of money lent in productive purposes, development of children, and higher repayment rate. According to the reports of Cull et al. (2009), 156 of 346 microfinance institutions are NGOs having nonprofit status, which had 95 % women as borrowers. Banks, non-bank financial institutions and other credit unions comprise the other 190 institutions. Women, who are the main target customers of many microfinance providers, have been seen to account for 37 % of borrowings. Studies by Mersland and Strom (2009) showed that women CEOs of MFIs resulted in better returns on credits and savings on operational costs.

Crisis in Microfinance

Throughout the geographical diversities, the MFIs continued their unusual growth for a long time. However, the growth of the borrowers was normal. Due to increased competition, MFIs are concentrated in the same locations, thus providing the client with multiple choices. Clients also try to get much of the financial help and turn their faces away from the very truth of adverse usage of credit. The institutions, though eager to supply this credit, are not patient enough to cope with the client on the question of returning money. With high levels of debt, poor households are left with even higher obligations to repay them. Thus, they fail to shoulder the pressure of the borrowers and end by committing suicide. The current deluge of suicides in Andhra Pradesh may be the result of MFI loans and successive pressures, though declined by the state government. The microfinance institutions have also been collectively found irresponsible.

The recent turn of adverse effects due to microfinance in Andhra Pradesh fetched mixed reviews. The critics adjudged it to be a much-needed respite from the unhealthy and aggressive market growth of profit-oriented microfinance nonbanking financial companies (NBFCs) without coordinating with the state government. The enthusiasts blamed the government intervention due to a spate of borrower suicides during the last few months of 2010, when the MFIs failed to deliver their promises. The Andhra Pradesh Microfinance Ordinance curbed the freedom of the MFIs in the state. The ordinance made registration of the MFIs compulsory and prevents lending of outstanding loans. It also ruled in favor of monthly repayments and displaying the interest rates charged clearly. This ordinance was sanctioned by the Andhra Pradesh assembly on 15th December. However, following the new law, the future of MFIs has become uncertain, coupled with sharp drop in repayment, reported to be 15–20 % across the state.

The non-governmental organizations community in Andhra Pradesh was an wearily developer of model in the late 1970s and early 1980s, which ran almost parallel to the ardent efforts of Bangladeshi Nobel laureate Mohammad Yunus. The Andhra Pradesh Government took up this successful initiation of microcredit in mid 1990s by developing in bulk, small disempowered SHG comprising 10–15 women, by chopping off each group, all under the Development of Women and Children in Rural Areas (DWACRA). The group members have no further knowledge than to borrow and repay money, but the government pays no heed as disbursement of “new money” covers up any default of “old money” and besides, the model proved a major tool in earning votes. This encouraged the private entrepreneurs to build government-recognized MFIs. Though a near 100 % recovery rate may not be possible for an organization due to non-immunity of a household or economy to shock, the commercial models have been able to control the cause of default. However, this default may also be the effect of inability of repayment.

Against this backdrop, this volume tries to investigate the behavioural aspects of microfinance, risk-taking behaviour of rural people and their livelihood. The first contribution by Sreelata Biswas and Anup Saha addresses the structural transformation of rural finance in India since independence. They divide the period of transformation into four phases, (i) dominance of cooperatives, (ii) bank nationalization and dominance of commercial banks, (c) establishment of National Bank for Agriculture and Rural Development (NABARD) and bank SHG linkage, and (d) introduction of microfinance.

In the [Chap. 2](#), Amit K. Bhandari and Ashok Kundu investigate the factors influencing the financial risk-taking behaviour of rural people. A total of nine individual and household level factors are identified as determinants of an individual’s attitude toward financial risk, which is investigated by using an experimental survey in some selected villages of West Bengal, India. Respondents were asked to play a risk game where they may earn more or loose money depending on the results of die. Almost all respondents were interested to play the game. Results of the study indicated that individual age, number of dependent family member, number of earning member and household debt affects negatively on willingness to

take risk, while education, income, and number of shocks have positive effect. This empirical research is a valuable input for fund management industry to design financial products and delivery of services for rural markets.

In their contribution, Nina Takashino, Keshav L. Maharjan, and Seiichi Fukui investigate the determinants of household's borrowing behaviour in rural India. The study focused on the impact of caste, risk-taking behaviour, and discount rate. The result highlights some important findings. For example, upper caste households are more likely to get lower interest loan from formal financial institutions or relatives and friend while it may be difficult for the lower caste households to have access to such lower interest loan. Second, if households borrow money to cope with shocks, they tend to get zero interest loans from relatives and friends. Third, the households who belong to the upper caste can borrow the larger amount of money. These findings suggest that the upper caste households accumulate the larger social capital. Fourth, the estimation results indicate that higher the discount rate, smaller the amount of zero interest loans from relatives and friends. They also suggest that caste and time preference play important roles to determine borrowing behaviour in West Bengal, India.

In the [Chap. 4](#), Amit K. Bhandari and Sudipto Ghosh examine the role of credit from Microfinance Institutions (MFIs) in promoting micro-entrepreneurs in rural areas. The data were collected from Howrah district of West Bengal which contain information on 200 rural micro-entrepreneurs. The study investigates the difference in earning between rural micro-entrepreneurs running business from MFI and informal source of finance. The result indicated that borrowing from MFIs has income enhancing properties of micro-entrepreneurs compared to those running business informal sources of finance. Socio-economic characteristics play an important role in reducing and earning difference between them. MFI borrowers and borrowing form informal sources. Surprisingly, business know-how plays a miniscule role in enhancing income.

In their contribution, Kochi Fujita and Keiko Sato attempt to clarifying the actual functions and meanings of the SHGs under such a rapidly changing rural scenario, based on a recent case study in a village of Tamil Nadu state. In the regime of higher interest rates charged by moneylenders, SHG programs have contributed to poverty alleviation by lowering the interest rate and help poor people to receive subsidized bank loans. The participation rate to SHGs was substantially higher among the 'upper-middle' and the 'middle' class people than their counterpart from the 'upper', the 'lower-middle' and the 'lower' class. However, the major purpose to join SHGs seems to be money saving, especially for non-poor women. Unfortunately, the SHG program was largely ineffective in financing the rural households for higher education of children, which was the real route for the rural people in India to escape from poverty, which is perceived as escape route for people for the rural people to escape from poverty.

Toshihiko Suda and M. C. S. Bantilan investigated the achievements and the challenges of SHG-Bank Linkage Program initiated by National Bank for Agriculture and Rural Development (NABARD) based on household level survey. The study was conducted in two villages, one in Andhra Pradesh State and the other in

Maharashtra State which is chosen as a control village. The authors examine how and to what extent the SHG Program can change the life of villagers and what measures are required to develop the SHG program further. The result indicated that this program not only provides cheap loan but also other various services like savings facility, pension scheme, subsidized gas, and scholarship for children's education. However, the amount and frequency of SHG loans are far less than their credit need, which even now drives majority of villagers go for other loan sources including unsecured money lenders etc. Moreover, many poor households are still excluded from the SHG program due to extreme poverty (lack of saving capacity). In Maharashtra State, SHG program is much less active than Andhra Pradesh. Lack of support system for the management of SHGs seems to be the essential cause of inactivity and unpopularity of this program in the state. Overall, the SHG program can be a more effective tool for delivering various financial services to the rural poor and effective poverty alleviation. In order to strengthen the function of SHGs, they need to be more sufficient and strongly supported by banks/NGOs/ government institutions especially with respect to capacity building of their management.

In the [Chap. 7](#), Sharmistha Banerjee and Arijita Dutta attempted to study the grass root reality in the functioning of microfinance mechanism through SHGs in West Bengal and their developmental influences on the health and primary education. Group-based microfinance, through the mechanism of SHGs, provides a good opportunity to generate awareness about the need for primary education and basic health care, through their meetings and peer consultations. The paper's first section provides a brief description of microfinance and highlights the positive impacts on client, their families and the community at large. Then it discusses the issue of positive externalities (health and education), resulting from microfinance interventions. The discussion revolves around the success of SHGs in implementing microfinance strategies to accomplish better health and education. The case study of microfinance initiatives by the way of grade improvement in SHGs in West Bengal, and their impact on basic parameters of health and primary education is deliberated upon. The analysis in this chapter is meant to provide policy-making bodies a better understanding of client needs and how to (re)structure programs to increase their impact in addressing multiple needs.

In [Chap. 8](#), Avijit Brahmachary attempted to develop index to measure the overall security of members to assess the effectiveness of the microfinance program in enhancing the security status of the group members. To achieve a satisfactory level of human development, it is imperative for all individuals to enjoy a sense of security. This sense of security must prevail for each individual, not only within oneself, but also within the family, the workplace and the community. Lack of security raises uncertainty and vulnerability, and makes people opportunistic as well as irresponsible. It is universally acknowledged that 'basic security', with economic, social and representational connotations, should be a matter of human rights and must be seen as a necessary condition for advancing real freedom. It starts from the assertion that every person has a right to basic security everywhere. Insofar, as most of the SHG members in microfinance program belong to the least

advantaged section of the society, surviving on the knife-edge of stability, the possibility of improved security for them should assume significant importance. However, the sense of security is much wider and for a quantitative study/assessment we must have to narrow down the broader theme of security according to relevant issues which we would like to analyze. Here, we have considered three main dimensions of security (related with livelihood/basic security) namely, (a) Income Security, (b) Social Security, and (c) Voice-Representation Security, to construct a *Livelihood Security Index (LSI)* for the sample households.

In [Chap. 9](#), Komol Singha and Parmod Kumar investigated the National Rural Employment Guarantee Act 2005 (NREGA) was brought into force by the Congress-led United Progressive Alliance government in February 2006. The primary aim of *NREGA* was to enhance the livelihood security of people in rural areas by guaranteeing 100 days of wage employment in a financial year to a rural household who volunteer to do unskilled manual work. The study explored that though there were some issues of non-payment of wage on time, poor facilities at the work site, and so on, the program has proved that the states having better funding or higher per capita of fund performed well.

The [Chap. 10](#), written by Chinmoy Jana, investigates the enactment of Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA), which intend addresses the challenges of unemployment and poverty in rural India. The program has been very effective to deliver the social safety net to the households suffering from joblessness in major part of the year and also it helps to create village assets that can stimulate the natural resource base for rural livelihood. But the scope of implementation of the Schemes in the Districts cannot be similar due to Block level spatial differences in terms of level of development, resource potentials, physiographic set-up, infrastructure and demography. However, the schemes suffered from poor management with lack of innovative ideas. In this chapter a Multi-criteria Decision Making Optimization Model is structured to maximize the use of Job card holders subject to minimum required fund with maximum Asset creation and tested its viability in 'Jhargram' Community Development Block of Paschim Medinipur District in West Bengal. The state of the art planning tools with Fuzzy logic can be incorporated in the model to consider the social barrier, tolerance on seasonal variance, spatial change of cost of materials used, and so on. The results indicated that the schemes are using only three times more fund and five times more assets could have generated in a year if the implementation follows the schemes referred in the output of the model. The result also indicated that average engagement of Job card holders and fulfillment of the existing potential are also significantly increased.

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Amit Bhandari and Ashok Kundu

Structural Transformation of Rural Finance in India: A Critical Review

Sreelata Biswas and Anup Kumar Saha

The Indian peasant is born in debt, lives in debt and dies in debt.

Sir Malcolm Darling (1925).

1 Introduction

Over the past two decades the Indian economy has been experiencing service-led growth. However, more than half the Indians still depend on agriculture for their livelihood. The agricultural sector still occupies the center stage of rural economy. The rural population is an important contributor to the growth of the Indian economy. The primary sources of rural finance are nationalized banks, private banks, credit societies, cooperative banks, and moneylenders. As far as penetration of these institutions in rural markets are concerned, regional rural bank and credit societies contribute a major portion (66 %) in terms of number of branches, whereas in terms of volume their contribution is just 5.6 %. Nationalized banks are contributing a major portion of their business (72 %) in the rural financial market. The largest branch expansion in rural areas was undertaken between bank nationalization (1969) and financial liberalization (1990).

Despite government initiatives to institutionalize rural finance, the term “Financial inclusion” is an important issue and has caught the attention of all countries. Financial inclusion can be defined as the process of ensuring access to financial services and timely and adequate credit for vulnerable groups such as weaker and low income groups at an affordable cost. In India, financial inclusion has gained momentum as it has helped to uplift the unprivileged section of society. A plethora of facilities are extended to them for the salvation of exploitation, deprivation, and the like. More and more banks have been nationalized. These

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banks are now playing a vital role in the low income groups of society. To bring a large segment of the society under the umbrella of “financial inclusion,” banks are setting up their branches in remote corners of the country. The rules and regulations, which were previously very complicated, are now being simplified keeping in view the interests of the burgeoning population.

Since independence, successive governments have emphasized the link between improving access to finance and reducing poverty, a stance that has had global influence. The development of India’s financial sector inevitably resulted in substantial achievements in enhancing access to credit in rural areas; indeed, rural access was also an important metric in assessing the growth of the financial sector in the country. Financial sector policies in India have long been driven by the objective of increasing financial inclusion, but the goal of universal inclusion is still a distant dream. The Indian State put stress on providing financial services to the poor and underprivileged since independence. Commercial banks were nationalized in 1969 and were directed to lend 40 % of their loanable funds, at a concessional rate, to the priority sector. The priority sector includes agriculture and other rural activities and the weaker strata of society in general. The aim was to provide resources to help the poor to attain self-sufficiency. They had neither resources nor employment opportunities to be financially independent, let alone meet the minimal consumption needs.

In the twenty-first century, the wave of globalization and consequent liberalization did have significant impact almost everywhere. The concept of globalization has emerged from the air-conditioned desks of multinationals; the numbers of Indian billionaires are increasing; foreign institutional investors are chasing the Indian stock market. All are true. But it is also true that farmers are committing suicide in Maharashtra, West Bengal, and in many other places in India. The President of India’s foreign tour has cost the public exchequer a whopping Rs. 205 crore for 12 trips in 22 countries only for 79 days. But the Planning Commission has set the poverty line at Rs. 22.42 in rural areas. Hence, inequality is expanding even if we are positioned now among the fastest growing emerging economies.

Here lies the urgent need to think about rural finance, the finance of the marginalized people; the finance of ‘Bharat’ in relation to the problems with which the greater part of our nation is still living. India has emerged out of the new economic reform. Growth has picked up to the tune of 7–8 %. But the rural economy has missed the much required people-oriented reform. The agricultural sector, rural industrial development, and rural entrepreneurship are all not at par with other emerging economies with similar levels of growth. Thus the rural economy requires a huge push to make the growth more robust and inclusive. Investments in rural economy have to pick up with greater vigor to bring about the overall development of rural India. A sound financial infrastructure is the prerequisite in this regard. A lot has changed during the last three decades. Rural economic activity has gradually become multidimensional with the development of finance. Rural finance has undergone an overall structural shift with the development of finance and evolving new dimensions of rural economic activities.

This study intends to analyze the gradual structural transformation of rural finance in India starting from pre-independence to the present. We have provided the salient features of rural finance in India in [Sect. 2](#). In [Sect. 3](#), we touch upon the development of rural finance during the colonial period. [Section 4](#) critically reviews the structural transformation of rural finance in India. Finally, we conclude in [Sect. 5](#).

2 Salient Characteristics of Rural Finance in India

The basic nature of rural finance is guided by the very nature of rural economic activities. In India, we understand rural economic activity as nothing but agriculture from the pre-independence period. Of late, informal manufacturing and service activities which are commonly known as non-farm activity in the literature are gaining importance in rural economy. The government, NGOs, and commercial banks are encouraging in this respect. For example, a backward region in a relatively backward district of Malappuram in Northern Kerala, known as Manjeri, has emerged as a booming hosiery manufacturing center due to successful collaboration among the government, banks, and NGOs. Thus, on the basis of sectoral disbursement, finance for productive purposes in rural India can be classified into two broad categories: finance to agricultural sector and finance to non-agricultural or non-farm sector.

Demand for credit arises primarily because of investment demand and consumption demand. Both the demands critically depend on the success of agricultural and other economic activities in the rural economy. Agricultural success depends on the positive outcome of the monsoons. Thus, credit demand and the loan repayment rate, both become uncertain with unpredictability of the monsoon. As a result of this consumption, credit demand also becomes uncertain. This uncertainty and lack of collateral have made the institutionalization of rural finance a difficult job to handle. Various social factors like caste, illiteracy, etc., have also impacted the issue indirectly. The scheduled caste and scheduled tribe dominated rural areas are largely outside the arena of formal banking. Illiteracy is indirectly responsible for financial illiteracy. Literacy rate and financial inclusion rate are found to be highly positively correlated in several states in India. This lack of institutionalization has made easy the proliferation of noninstitutional finance dominated by local moneylenders in rural India from the colonial period or even earlier. However, the picture has changed a lot due to several policy actions, such as providing support to the cooperative movement, nationalization of commercial banks, setting up of special financial institutions solely for rural finance such as NABARD, innovation of new financial products such as Kisan Credit card, etc., regularization of rural development programs like Bharat Nirman, etc., introduction of group lending facility such as bank-NGO-Self-help Group (SHG) linkage programs, and finally the upcoming microfinance innovation. Thus institutionalization of rural finance is now an important outcome, though not in full strength, but strongly emerging.

3 Rural Finance During Colonial Period

Major traces of unorganized rural finance during the colonial period can be found in various official documents, such as the Central Banking Enquiry Committee (CBEC) Report (1929), Report on Agricultural Indebtedness (1935), etc. These reports were prepared and patronized by the British Government. Hence, unbiased estimation from these reports is not possible. Historical evidence clearly reveals that the exploitative land tenure system during the early phase of colonialism had created prolonged rural indebtedness. The Zamindar-turned moneylenders class had facilitated the development of usurious capital to support the commercialization of agriculture. More than 25 % of rate of interest in case of cash loan and 50 % in case of grain loan were common in many parts of India during the British rule. “To a large extent on the vulnerability and weak bargaining position of the borrower, it is likely that the lender would develop a sort of vested interest in the poverty of the borrower, that is in keeping the latter sufficiently poor to be vulnerable” (Bhaduri 2006). This enormous amount of exploitation compelled the British to think about institutionalization of rural credit. With the passage of the Cooperative Societies Act in 1904, cooperatives were recognized as the premier institutes for agricultural credit disbursement (Mohan 2006). The most important development came into force with the establishment of the Reserve Bank of India in 1935. There was special provision for agricultural credit in the Reserve Bank of India Act (1935). Section 54 of that Act provided the setting up of a separate department for agricultural credit, whereas Section 17 mentioned state cooperative banks and any other banks engaged in agricultural finance. The RBI played the most active role till independence for credit disbursement in rural area. But the effort was very insignificant. Only 3.3 % of the total number of cultivators had access to credit from cooperatives and 0.9 % from commercial banks by 1951 (Mohan 2006). Hence structurally, rural finance was dominated by local moneylenders with very high exploitative rate of interest during the British administration.

4 Structural Transformation of Rural Finance in Independent India

In 1947, the first survey of rural indebtedness (All India Rural Credit Survey, or AIRCS) prepared by the Reserve Bank of India, documented that moneylenders and other informal lenders met more than 90 % of the rural credit needs. The share of banks in particular was only about 1 % of the total rural household debt. Here, we have tried to justify the increasing amount of institutionalization of rural finance as the process behind the structural transformation. It started since the inception of Planning in India. The major emphasis was given during the Fourth Five-Year Plan (1969–1974) following bank nationalization and introduction of

the concept of priority sector in 1969. Further robust impetus in this regard was given with the setting up of NABARD in 1982. The most recent innovations in this regard are the formation of Self-Help Group (SHG)—bank linkage and the setting up of MicroFinance Institutions (MFIs). Basu and Srivastava (2005) briefly outlined rural access to finance in India after surveying 6,000 households. They empirically analyze the reach of the most dominant microfinance initiative, the SHG-bank linkage model, which delineates innovative microfinance approaches combining the safety and reliability of formal finance with the convenience and flexibility of informal finance to serve the financial needs of the rural poor. The following subsections will provide the gradual development of rural finance in independent India considering the progress or regress of all the stakeholders along with the government policies backing all such developments.

Fisher and Sriram (2006) classified the entire phase of rural credit provisioning in independent India into three phases. First from the 1950s up to the mid-1960s when cooperatives were the main institutional setups; second, the 1970s and 1980s when commercial banks and RRBs played the dominating role in institutional credit disbursement; and the final phase starting from the reform period in the early 1990s to the present which observes the restructuring of the banking system, the emergence of SHGs, and a growing number of MFIs. Following this standardized convention, we have divided the entire structural transformation process into the following five phases:

- a. Cooperative Movements: Increasing dominance of cooperatives;
- b. Subsidized Social Banking: Bank nationalization and dominance of commercial banks;
- c. SHG-Bank Linkage Program: Establishment of NABARD and Bank—SHG linkage;
- d. Introduction of Micro finance
- e. Commercialization of Microfinance.

a. Increasing Dominance of Cooperatives

The introduction of cooperatives is the earliest attempt at institutionalization of rural finance. The cooperative credit movement in India started with the passing of the Cooperative Societies Act in 1904. However, the contribution of cooperatives was too timid to be mentioned till independence. According to the All India Rural Credit Survey (AIRCS 1954), cooperatives disbursed <5 % of the total rural credit during its first phase of 50 years' tenure. Moneylenders were the dominant players with more than two-thirds of the market share. This insignificant participation of cooperatives continued even after independence for two decades. It came into force with vigor following the Fourth Five-year Plan (1969–1974) with the aim of providing a national minimum to the poor people. The share of cooperative credits in total rural credit crossed the 20 % mark in 1971. Although the share of cooperative credit in total rural credit had increased, the share of cooperative credit in total institutional credit started to fall from 1971 to 1987. This share with respect to total institutional credit has remained more or less constant at the 50 % level of

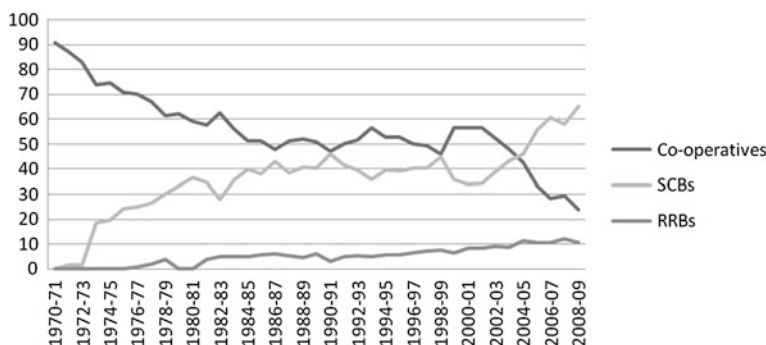


Chart 1 Proportional Shift of Institutional Credit to Agriculture (*source* Handbook of Statistics 2010–2011, RBI)

the total institutional credit till 2004. After that it fell drastically and it continues to fall at present. Cooperatives provide only one-fifth of the institutional rural credit today (Chart 1).

The rural cooperative credit structure can be categorized into two broad categories; Short-term Cooperative Credit Structure (STCCS) providing mainly short- and medium-term credit and Long-term Cooperative Credit Structure (LTCCS) catering the long-term credit needs to rural households. STCCS consists of Primary Agricultural Credit Societies (PACS), District Central Cooperative Banks (DCCB), and State Cooperative Banks (SCB). LTCCS consists of State Cooperative Agriculture and Rural Development Banks (SCARDB), and Primary Cooperative Agriculture and Rural Development Banks (PCARDB).

PACS are the grassroot-level societies and the most responsible agent for decentralization of rural credit. Perhaps, these are the most informed societies with respect to the credit need of the marginalized people. The number of PACS was 20 million in 1980 and it increased threefold by the year 2002. This number has been gradually falling since 2003–2004. The amount of outstanding credit was approximately Rs. 3,000 crore during 1981–1982 and increased by 24 times in 2009–2010. According to the National Federation of State Cooperative Banks (NAFSCOB) database, small and marginal farmers constitute nearly 70 % of the total membership of PACS at the national level. STCCS has 50 % more accounts than commercial banks and regional rural banks (RRBs) together. These organizations fulfill nearly half of India's total population (NABARD 2005). Hence, it has made a successful dent against the moneylenders of rural India.

b. Bank Nationalization and Dominance of Commercial Banks

The share of scheduled commercial banks (SCBs) in total institutional credit has gradually increased since the nationalization of banks in 1969 (Chart 1). After bank nationalization, RBI made it mandatory for commercial banks to cover the unbanked rural and semiurban areas. According to the RBI directive, for every new branch in an already banked area (with one or more branches), each bank

would have to open at least three branches in unbanked rural or semiurban areas. It further directed that all semiurban locations would have to be covered by the end of 1970. The banked–unbanked license ratio was raised to its highest point at 1:4 by a further RBI directive in 1977 (Table 1).

The share of commercial banks in the total rural credit was just 2.4 % in 1971, despite the RBI's earlier direction to increase the share after independence. The bank nationalization program made it possible to engage commercial banks in rural space with their full potential. The share crossed the 40 % level of the total

Table 1 Scheduled commercial banks' direct finance to farmers according to size of land holdings (disbursements)—short-term and long-term loans (number of accounts in thousands; amount in rupees crore)

Year (End-June)	Up to 2.5 Acres		Above 2.5 acres to 5 Acres		Above 5 acres		Total	
	Number of accounts	Amount	Number of accounts	Amount	Number of accounts	Amount	Number of accounts	Amount
1980–1981	1,587	252	693	168	790	594	3,070	1,014
1981–1982	682	134	332	100	335	249	1,349	484
1982–1983	1,304	290	652	211	616	476	2,571	977
1983–1984	1,831	404	1,072	372	835	743	3,738	1,519
1984–1985	1,829	506	1,241	482	903	950	3,972	1,938
1985–1986	1,950	617	1,232	589	988	1,037	4,170	2,243
1986–1987	2,045	758	1,386	708	1,044	1,278	4,475	2,744
1987–1988	2,236	824	1,442	760	1,038	1,360	4,716	2,945
1988–1989	2,191	881	1,453	835	990	1,471	4,634	3,187
1989–1990	2,057	1,033	1,337	890	947	1,607	4,341	3,530
1990–1991	1,960	1,181	1,219	952	899	1,782	4,078	3,915
1991–1992	1,862	1,172	1,289	1,013	949	1,887	4,100	4,072
1992–1993	1,871	1,171	1,336	1,033	1,000	2,003	4,206	4,206
1993–1994	1,886	1,312	1,341	1,176	1,192	2,070	4,419	4,558
1994–1995	2,032	1,692	1,518	1,474	1,261	2,970	4,812	6,137
1995–1996	2,024	2,001	1,689	1,952	1,703	3,703	5,416	7,657
1996–1997	2,076	2,176	1,676	2,289	1,745	4,511	5,496	8,976
1997–1998	2,104	2,288	1,811	2,413	1,420	4,827	5,336	9,528
1998–1999	2,308	2,787	1,878	3,181	1,659	5,862	5,845	11,829
1999–2000	2,342	3,338	1,871	3,467	1,581	7,209	5,794	14,014
2000–2001	2,382	3,740	1,860	3,642	1,599	7,135	5,841	14,516
2001–2002	2,679	4,352	1,933	4,371	2,359	7,578	6,970	16,300
2002–2003	2,494	4,834	1,934	5,578	1,983	11,445	6,411	21,857
2003–2004	3,711	7,953	2,695	7,340	2,259	16,592	8,665	31,885
2004–2005	4,478	10,833	3,172	10,550	2,535	19,735	10,185	41,119
2005–2006	5,004	16,823	3,670	17,619	3,670	32,682	12,344	67,124
2006–2007	5,963	23,246	4,008	21,588	4,379	49,335	14,350	94,169
2007–2008	6,605	25,352	4,463	23,215	4,932	48,140	16,000	96,707
2008–2009	8,544	34,267	6,641	33,280	6,811	72,753	21,996	1,40,300

Note Data for 1982–1983 are as at end March

Source: Handbook of Statistics, 2010–2011, Reserve Bank of India, Mumbai

institutional credit within 20 years of the nationalization program. The share remained within the range of 40–45 % till 1999. After that it fell up to 2001. Since 2001 the share of SCBs increased gradually and at present it is the largest player.

Although SCBs have achieved the dominant player status in terms of volume of credit, they have perhaps missed the desired goal of financial inclusion in rural India as is evident from its area wise loan disbursement pattern (Chart 2). More than 60 % of farmers in India own <2 ha of agricultural land. But this section of farmers gets <25 % of the total loan issued by SCBs at present. The total absolute amount of loan to the large farmholder is more than double that of the small farmer (Chart 3).

The government of India has tried to address the problem of exclusion of small and marginal farmers by setting up *Regional Rural Banks* (RRBs) in 1976. RRBs have the heart of cooperatives and the brain of commercial banks. In a multiagency system of credit disbursement, it has a notable position till today. It lends to small and marginal farmers, rural artisans and agricultural laborers, and others of small means for productive purposes in a limited geographical distribution comprising one or more districts of a state. RRBs have successfully provided credit to the weaker sections (RBI 1989–1990). At present RRBs' share of rural credit in total institutional credit is more than 10 % (Chart 1).

c. Establishment of NABARD and Bank—Self-Help Groups (SHGs) Linkage

The rural credit scenario has undergone a dramatic change with the establishment of National Bank for Agriculture and Rural Development (NABARD) in July 1982. With this establishment the government has widened its role in rural credit from “agricultural development” to “rural development.” NABARD was empowered to play the dual role: first to act as the apex institution of rural credit in place of RBI and second, to perform as a refinance institution. It approves short-, medium-, and long-term credits State Cooperative banks, RRBs, Land Development Banks, and other financial institutions approved by the RBI or the government.

One of the most important events toward financial inclusion program by NABARD is to facilitate the development of bank–SHGs linkage. NABARD provides refinance support to banks at very low interest rates for financing SHGs. The bank

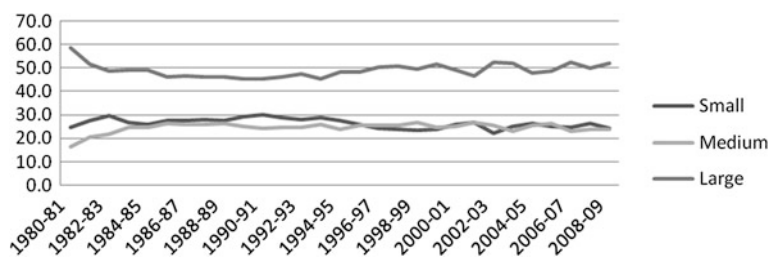


Chart 2 Proportional Distribution of Areawise SCBs Loan to Farmers (Source Handbook of Statistics 2010–2011, RBI)

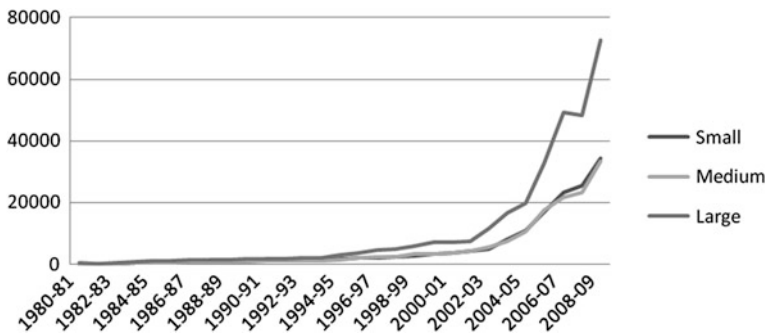


Chart 3 Areawise SCBs Loan to Farmers (Rs. Crore) (*source* Handbook of Statistics 2010–2011, RBI)

promoted SHGs lending program has attained another important goal to bring rural women under institutional credit as most of the SHGs comprise women members. Hence, empowerment of rural women through economic empowerment was achieved with this innovation.

There is a phenomenal growth in SHGs–bank linkage program during the last two decades. 255 SHGs were financed by banks during 1992–1993, whereas the number increased to 15,86,822 during the year 2009–2010 (NABARD 2010). The total number of SHGs under the linkage program crossed 75 lacs in 2010. The amount of bank loans increased from <1 crore to more than 50,000 crores during the time period. There are some critiques of SHGs charging high rates of interest to their members (Chavan and Ramakumar 2006). According to the report of NABARD 2003–2004 on SHG–bank linkage the recovery rate was more than 95 %. In spite of the optimism generated by the expansion of SHG credit and the high recovery rate there is a gap between actual per capita credit provided to the poor and the demand. The outstandings of the SHG program in March 2003 were around Rs. 10 billion which met only 2.2–6.6 % of the projected demand (Mahajan 2005). The total disbursement of bank loans to SHGs was Rs. 2,049 crore as on March 31, 2003 with an average loan of Rs. 28,559 per SHG and Rs. 1,766 per family (RBI 2003: Report on Trend and Progress of Banking in India).

The government has introduced Rural Infrastructure Development Fund (RIDF) in 1995–1996 in NABARD to make up the shortfall in the net rural bank credit of commercial banks. The fund is created to finance various rural infrastructure projects such as irrigation, road, bridges, watershed, cold storage, fisheries, inland waterways development, etc. NABARD has mobilized Rs. 35,720 crores from all commercial banks under RIDF between 1996 and 2007.

d. Introduction of Microfinance

The most recent innovation toward institutionalization of the rural credit system is the introduction of microfinance. It has evolved as a successful means of financial inclusion in some states in India, though macroeconomic and

demographic factors are yet to be found significant in microfinance development in India (Sriram and Kumar 2007). NABARD and RBI define microfinance as the “provision of thrift, credit and other financial services and products of very small amounts to the poor enabling them to raise their income levels and improve living standards” (NABARD 2000; RBI 1999). There are two broad approaches that characterize the microfinance sector in India—SHG–bank linkage (SBL) and MicroFinance Institutions (MFIs). SBL is a larger model than MFIs in India, contrary to the global practices of other MFIs. We have already discussed the SBL model.

The main problem with the SBL model is similar to that of the rural branches of commercial banks. It is primarily collateral based and very limited in its distribution. Loan to the SHG is issued mainly for productive purposes. The consumption needs of rural households are completely ignored in this model. Further, bank officials do not have sufficient interest to go beyond their routine job, so that the aggressive drive for financial inclusion is attained. These problems are overcome in the microfinance institutions model. It has evolved as an attractive and cost-effective mechanism to reach financial services to the actual poor and has eliminated the basic problems of incorrect client identification and mitigate repayment risks to a great extent (Sriram 2002). Repayment rate in case of microlending institutions is higher compared to banks. Default rate for microlending institutions is a maximum of 10 % only, whereas for banks it is as high as 40 % (Khandelwal 2007). For example, the Grameen bank, Bangladesh has maintained 98 % repayment rate; Swashrayi Mahila Sewa Sahakari Bank or Self-Employed Women’s Association Bank or SEWA bank, the one and only cooperative bank of its kind, operated and maintained by self-employed women in India, has successfully reached the 92 % loan repayment rate which is highest across all the financial intermediaries in India. SEWA bank has created a history in women empowerment through economic empowerment, not only in India but in the global perspective. Chandaben, an old clothes seller, is a founder member of SEWA bank. The bank was established in 1974 with 4,000 members each contributing Rs. 10 as share capital. It has 93,000 active depositors today. It has made poor women free from the clutches of moneylenders and traders and has empowered them to plan for their children’s education, health, etc.

e. Commercialization of Microfinance

MFIs in India have nonprofit motivation on one hand and profit maximization for long-term viability for credit disbursement on the other hand. Microfinance institutions in India can be broadly classified into three categories: (i) NGO MFIs (registered under the Societies registration Act 1860), (ii) Cooperative MFIs (registered under the State Cooperative Societies Act), and (iii) nonbanking finance companies (NBFCs) MFIs (incorporated under the Companies Act 1956). NGO MFIs are established on the basis of nonprofit, while NBFC MFIs are set up on sound business model. India’s largest NBFC MFI known as SKS Microfinance was listed in the stock exchanges recently to widen their capital base. MFIs are more aggressive and innovative to reach the rural poor than the formal banking system

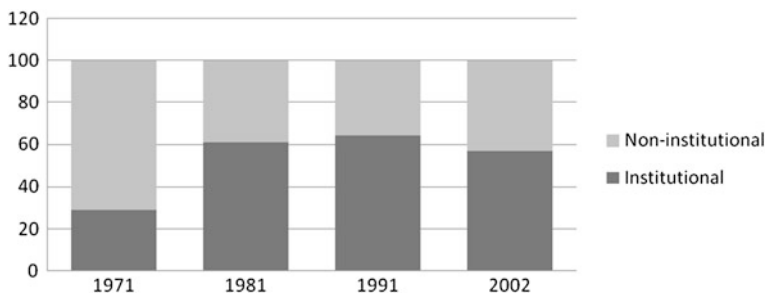


Chart 4 Shift in Share of total Rural Credit (*source* Handbook of Statistics 2010–2011, RBI)

(NABARD 2010–2011). They not only provide loan for productive purposes but also for consumption purposes. However, the NBFCs are under the vigil of a regulatory authority recently, because of their exploitative business practices such as charging very high interest rates commonly known as “deceptive” interest rates in the literature and coercive measures of recovery (Ghate 2007). In advancing credit by MFIs, there is a lack of transparency (Ghate 2007). Poor people are deliberately excluded from accessing credit as they are unable to bear the pressure of recovery (Ciravegna 2005; Scully 2004; Marr 2004; Simanowitz 2002). Several states, notably Andhra Pradesh and Orissa have imposed a number of restrictions on these MFIs. As a result, the volume of funds mobilized by these MFIs has reduced remarkably during the recent period.

5 Conclusion

The study has tried to establish the structural changes in the rural credit space in independent India. We have seen that modern banking has penetrated in the rural areas significantly. Other than banking, cooperatives, specialized agencies, and microfinance institutions have also approached the rural poor. Institutional finance is providing more than two-thirds of the present credit demand in the rural areas. In this respect we can infer that rural India is largely included within the domain of the institutional finance.

This is perhaps looking at the problem from the surface. Rural credit is always treated from welfare perspective in India. It is more like a social responsibility than a viable business model. The other end of the problem is the estimation problem, estimation of the actual demand of rural credit. So far our analysis is based on the observed demand for rural credit. The actual demand is far larger than the observed demand. A greater part of smaller marginal farmers are yet outside the purview of institutional credit. The motive behind institutional credit is skewed toward the productive purpose only. Rural credit is still equivalent to agricultural credit.

Thus it can be concluded that, we need a viable business model of institutional credit where poverty should be considered as an opportunity to enlarge the boundary of the credit market. Moneylenders and other informal agencies' market share have reduced remarkably. Yet that share is too large in comparison to other developing nations. Product diversification, product innovations, direct field survey, capacity building of the rural poor, etc., are some of the important areas to be addressed with utmost care. Since the actual problem is the dearth of capital, introduction of private equity capital and foreign capital in this growing rural economy can change the scenario with greater vigor. Foreign capital has transformed the Indian service industry at par with the global standard during the last decade. But agriculture is far behind in this respect, and so is the rural economy. Microfinance practice with private capital has improved the rural economy of other developing countries but it is still in a rudimentary stage in India. Stringent government regulation such as regulation undertaken by the Andhra Pradesh government made it difficult to develop this sector in the recent period. As a result of this policy paralysis, SKS Microfinance, the largest only listed microfinance institution in India, has written off Rs. 1,491 crore loans in Andhra Pradesh during 2011–2012. Not only that, it had to shift its base from Andhra Pradesh to Maharashtra because of the new law. However, this is not desirable. A transparent, industry borrower friendly microfinance regulation can make revolutionary changes in the rural financial sector. The Union Cabinet has approved the Micro Financial Sector Development and Regulation Bill, 2011 to regulate the microfinance industry and bring the microlenders under the purview of the Reserve Bank. We hope the Bill will certainly turn into an Act for the sake of the common people.

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Risk-taking Behaviour in Financial Decision Making: A Village-Level Study

Amit K. Bhandari and Ashok Kundu

1 Introduction

Risk poses a predominant challenge to human society. Risk can be defined as an uncertainty in future outcome that plays an important role in economic decision making. As a result, a person's attitude toward risk is used to predict their economic behaviour. Understanding risk and mechanism to deal with risk is a popular issue in multidisciplinary research. A large body of the literature investigates individual risk behaviour that deals with determinates of individual heterogeneity in risk attitudes (Diaz-Serrano and O'Neill 2004; Bruhin et al. 2007). Assessing individual risk attitude is important in managerial and financial decision making. Financial risk is the risk associated with financial loss to the customer. The main thrust behind the research in risk behaviour is to understand the individual differences in risk attitudes. A number of studies use survey questions to measure risk behaviour and found mixed results about their determinants. The validity of survey questions in deriving individual's risk attitude remains a debate as there are no incentives attached. Thus, self reporting personal attitudes could cause respondents to distort their reported risk attitudes (Camerer and Hogarth 1999). In survey method, risk attitude of an individual is measured by asking questions about hypothetical gambling, while experiment methods involve real-world risk behaviour with real monetary payoff. Several studies compare individual's risk attitudes derived from survey and experiment methods (Anderson and Mellor 2009).

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Risk attitudes vary across methods of elicitation, where no significant association was noticed between survey and experiment methods (Berg et al. 2005).

There is a large number of empirical research focused on the use of demographic characteristics to predict investor risk tolerance (Grable and Lytton 1998; Grable and Joo 1997). However, risk-taking behaviour of rural consumers is not well researched in India. The diversity in decision making stems from the general psychology literature. The self-defeating behaviour of individual is one of the difficult behaviours to interpret. The risky behaviour of an individual can be perceived to be driven by a mechanism in which the individual thinks that potential gain outweighs potential loss, which can be explained by various social, personal, and situational factors. The present study uses experiment-based method, where we solicited the risk attitudes of rural people from a risk game. In this game, people were asked to participate with an opportunity to make real money. These apart from the demographic and socioeconomic characteristics of households were collected.

An interesting research question here is whether there are any differences in characteristics between risk lover and risk adverse individuals. If so, what characteristics of the individual influence the decision to take risk? When preparing financial product for rural customers, it is important to have a clear understanding of risk behaviour and their magnitudes. To our knowledge not a single study examines the risk-taking behaviour of rural customers. There exists little information about how these preferences related to socioeconomic environment and what effect have on outcomes. Our main objective in this study is to empirically look into the key factors that account for a person's attitude toward financial risk. What kinds of factors at personal and household level are likely to influence rural people's financial risk-taking behaviour in India? This study is the first of its kind which addresses factors influencing the risk-taking behaviour of rural people. This chapter also attempted to create a better understanding of the difference in risk-behaviour between socioeconomic groups. There exists substantial heterogeneity across different characteristics of households.

The remainder of this chapter is organized as follows. [Section 2](#) discusses the determinants of risk tolerance. [Section 3](#) describes the study area. [Section 4](#) discusses the experimental design while [Sect. 5](#) describes the methodology of the study. [Section 6](#) presents the results and discussion. [Section 7](#) concludes.

2 Determinants of Risk Tolerance

The amount of risk the consumer perceives is a function of many indicators. Grable (2000) defined risk tolerance by individuals on financial matters as the maximum amount of uncertainty that someone is willing to accept when making

financial decision reaches almost every part of economic and social life. Several studies support the demographic influence on risk-taking behaviour. Two of the most prominent factors that are found to impact on financial risk tolerance are age and income. Higher age is associated with lower risk tolerance of a person (Hira et al. 2007). The majority of the published research studies examining the relationship between age and risk tolerance have found that risk tolerance decreases with age (Wallach and Kogan 1961; McInish 1982; Morin and Suarez 1983; Palsson 1996), although some recent research fails to support or provides contrary evidence for this factor (Wang and Hanna 1997; Grable and Joo 1997; Grable and Lytton 1998; Grable 2000). Additionally, there are several studies that have found the relationship to be negative but nonlinear (Riley and Chow 1992; Bajtelsmit and Van Derhei 1997).

Gender has also been found to be an important differentiating factor in the classification of risk tolerance as females have consistently been shown to have a lower preference for risk than males (Bajtelsmit and Bernasek 1996; Powell and Ansic 1997; Grable 2000). Men are more risk tolerant than women (Grable et al. 2004; Weber et al. 2002). The research in this area is by no means uniform, however, as Grable and Joo (1997) found that gender was not significant in predicting financial risk tolerance.

Marital status has also been postulated to assess the impact on financial risk tolerance; however, the exact nature of the relationship is not clear. One view asserts that single people are more risk tolerant than married individuals because they have less responsibilities than married people, particularly in respect to dependents, and face less social risk (that is, potential loss of esteem) when undertaking risky investments (Roszkowski et al. 1993). On the other hand, it has also been suggested that married individuals have greater risk-taking propensities because of a greater capacity to absorb unfavorable outcomes. Hatrtog et al. (2002) have found that unmarried persons are more risk tolerant than married persons. Moreover, married men are more risk tolerant than married women, while unmarried men are more risk tolerant than unmarried women (Yao and Hanna 2005). The empirical research fails to provide any insights as to which of these competing theories may be valid. A number of studies have failed to identify any significant relationship between marital status and financial risk tolerance (McInish 1982; Masters 1989; Haliassos and Bertaut 1995). As such, the relationship between marital status and risk tolerance is an issue that remains unresolved.

Risk tolerance of a person increases with income. Grable (2004) found that people with higher income have higher risk tolerance than people with lower income. Research findings in relation to income also uniformly support a positive relationship. That is, higher levels of income and wealth have been found to be associated with higher levels of risk tolerance (Friedman 1974; Cohn et al. 1975; Blume 1978; Riley and Chow 1992; Grable and Lytton 1999; Schooley and Worden 1996; Shaw 1996).

The level of education is thought to impact on a person's ability to accept risk. Specifically, higher attained levels of education are felt to increase a person's ability to evaluate risk, and are therefore considered to be positively related to higher financial risk tolerance (Baker and Haslem 1974; Haliassos and Bertaut 1995; Sung and Hanna 1996). Educational qualification is found to influence the risk tolerance behaviour of an individual. Grable and Lytton (1998) found that higher education level is associated with higher risk tolerance. However, Hallahan et al. (2003) found that education and marital status have no significant influence on individual's risk-taking behaviour. Social influences have played an important role in influencing human behaviour (Ajzan 1988). Individuals discuss with their family members, friends, relatives, or colleagues before taking any financial decisions.

3 Study Area and Sample Selection

The study took place in three randomly selected villages of Nadia district of West Bengal. The district is bordered with Bangladesh in the east, Bardhaman district in the west, Murshidabad district in the north and Hooghly and North 24 Parganas districts to the south. A structured questionnaire was used to measure risk attitude along with other information of the respondents. Starting from the month of January, the study took over a period of 3 months. The villagers are mostly engaged in agriculture and non-farm self employment to supplement their income. A total of 203 respondents completed the questionnaire. We invited one household member to participate in this survey. The respondents may include male or female members from households. Respondents were asked for a wide range of personal and household-related questions. First question asks for attitude toward risk where respondents were asked to participate in a risk game. Demographic variables used in the study include: Age, gender, education, occupation, income level, number of dependents, asset holding, debt position of household, and number of shocks faced by household. Table 1 presents the definitions of variables used in the empirical analysis.

Table 1 Descriptions of variables used in the study

Variable name	Variable description
Age	Age of respondent in years
18–29	1 = Below 30, 0 = otherwise
30–39	1 = 31–40 years, 0 = otherwise
40–49	1 = 40–49 years, 0 = otherwise
≥50	Above 50 years, 0 = otherwise
Gender	Sex of respondent; 1 = male, 0 = female
Education	Education level of the respondents
Illiterate	No education; 1 = Yes, 0 = otherwise
Primary education	Primary education; 1 = Yes, 0 = otherwise
Basic education	Higher primary; 1 = Yes, 0 = otherwise
Secondary and above	Secondary and above; 1 = Yes, 0 = otherwise
Household income	Personal Income in Rupees per month
0–2,000	1 = less than Rs. 3,000, 0 = otherwise
2,001–4,000	1 = Rs. 3,001–6,000, 0 = otherwise
Above 4,000	1 = Above Rs. 6,000, 0 = otherwise
Dependent family members	Number of dependant family members in the family
One	1 = Single member family, 0 = otherwise
Two	1 = Two members family, 0 = otherwise
Three	1 = Three members family, 0 = otherwise
Four and above	1 = Four and above family members, 0 = otherwise
Earning members	Number of earning members in a household
Single earning member	1 = single earning member family, 0 = otherwise
Multiple income earner	1 = multi earning member family, 0 = otherwise
Occupation	
Agriculture	Household head involved in agriculture activities (1 = yes, 0 = otherwise)
Others	Household head involved in other than agriculture activities (1 = yes, 0 = otherwise)
Non worker	Household head who are not doing any jobs (1 = yes, 0 = otherwise)
Shock	Number of times a family faced shocks
No shock	No shocks in the family (1 = yes, 0 = otherwise)
One	One family shock (1 = yes, 0 = otherwise)
Two and above	Two and more family shocks (1 = yes, 0 = otherwise)
Debt	Debt position of the family
Debt	Have debt (1 = yes, 0 = otherwise)
No debt	No debt (1 = yes, 0 = otherwise)

US\$ 1 = Rs. 55.00



4 Experimental Design

A reliable and valid method of survey is important to measure individual's risk attitude. There are two principal ways of obtaining data on risk attitude, survey and experiment. In survey measures of risk there is no real monetary payoff, only self-reported personal attitudes and traits are recorded. Experiment studies use real money in order to elicit information regarding individual's risk preference (Dohmen et al. 2011). In this study, the risk-taking behaviour of individuals was investigated by using a risk game with payout in real money. Following Schechter (2007), the rule of the game was as follows: the player was given Rs 50 and was asked to bet from this money depending on the condition that he might receive more or lose money depending on the results from rolling six-sided dice. The amount bet the individual will be multiplied by a multipliers prescribed below (Table 2). The investigator then rolled a dice to decide the player's payoff. If the dice rolled has a result of one indicate the player lost his bet, two signifies he recovers half of his bet, four signifies he earned 1.5 times his bet, five signifies he doubled his bet, and six meant he earned 2.5 times his bet. We use this measure to understand the heterogeneity and determinants of risk-taking behaviour among the respondents (Table 2).

Table 2 Payout of risk game

Dice	Multiplier	Betting amounts					
		0	10	20	30	40	50
1	0	0	0	0	0	0	0
2	0.5	0	5	10	15	20	25
3	1	0	10	20	30	40	50
4	1.5	0	15	30	45	60	75
5	2	0	20	40	60	80	100
6	2.5	0	25	50	75	100	125

5 Methodology

To understand the effects of socioeconomic determinants of individual differences in willing to invest in the betting game, we regress the amount invested to play the game on exogenous variables and other controls. This helps us to estimate the coefficients that reflect the effect of the exogenous variables on amount invested in the risk game. A positive coefficient indicates higher willing to take risk, and therefore a higher probability to betting money in risky investment and vice versa. The information regarding amount of risk taken is available from the amount of money they would like to bet out of Rs 50 provided to them for playing the game. In our sample, all respondents were interested in betting. Thus, we can analyze the data in an ordinary least square framework, where the amount of money

the respondents are willing to bet is regressed on a vector of their socioeconomic characteristics. The model to be tested in this study hypothesizes that risk-taking propensity for individual in a function of socioeconomic characteristics. In order to perform the analysis, the following equation is defined as:

$$y_i = \alpha + \beta X_i + \varepsilon_i, \quad i = 1, 2, \dots, n$$

where y_i is the amount of money the respondents is willing to bet, X_i is an observed $1 \times k$ vector of explanatory variables, and ε_i normally distributed and is independent of X_i .

As a robustness analysis, we have alternatively used binomial logistic model for the dichotomous dependent variable. The decision to invest or not to invest in risky game takes the form of binary variables. The dichotomous dependent variable is identifying whether or not a person willing to take risks. An arbitrary cutoff point is selected for determination of risk attitude. The cutoff point was determined from the average amount of willing to take risk. A person is risk averse if the respondent bet below Rs 30 from Rs 50 provided to them, while the amount above that is considered risk seeker. A cumulative probability distribution function is used to solve the problem. Both logit and probit models use the normal and logistic distribution cumulative probability distribution functions, respectively. Despite the similarity, the logit model is simpler to interpret as it can be written as a linear model for log odds. In the following binomial logistic regression model, the probability of investing in mutual fund schemes is estimated with respect to the explanatory variables, which include both qualitative as well as quantitative information on investors. We construct a binary variable (y_i) and use it as a dependent variable where:

$$\begin{aligned} y_i &= 1 && \text{if the investor invests in mutual fund schemes} \\ &= 0 && \text{if the investor does not} \end{aligned}$$

In the logistic regression model we estimate the probability of the explanatory variables, which contain both qualitative as well as quantitative information. In the present study, the willingness to take risk is estimated with respect to the variables related to it. The cumulative logistic distribution function can be represented as:

$$P_i = E(Y = 1|X_i) = \frac{1}{1 + e^{-Z_i}}$$

where $Z_i = \alpha + \beta_i X_i$

P_i is the probability of respondent's decision to take risk, X_i contains attributes of respondent's characteristics and β is the corresponding regression coefficients. P_i ranges between 0 and 1 and is nonlinearly related to X_i .

If P_i is the probability of respondent's decision to take risk, then $(1 - P_i)$ is the probability of not being preferred.

$$1 - P_i = \frac{1}{1 + e^Z}$$

The odd's ratio is defined as:

$$\frac{P_i}{1 - P_i} = \frac{1 + e^z}{1 + e^{-z}} = e^z$$

The odd's ratio is the ratio of favorable to unfavorable cases of preference for risky investment. This preference depends on the values of the explanatory variables.

Taking the natural log of the above equation:

$$\begin{aligned} L_i &= \ln\left(\frac{P_i}{1 - P_i}\right) = Z_i \\ &= \alpha + \beta_i X_i \end{aligned}$$

where L is the log of the odd's ratio called the logit. The primary focus of the analysis is to identify whether the relationship between socioeconomic outcome and risk attitude differs among rural households. The regression coefficients represent the change in the logarithm of odds of choice due to one unit change in the respective independent variable. The maximum likelihood method is used to estimate the parameters. From the coefficients of logistic regression, it is possible to calculate the predicted probability of individual respondents' willingness to take risk. This helps in segmentation of the sample according to their willingness to take risk and their respective characteristics.

6 Results and Discussion

6.1 Socioeconomic Characteristics of the Respondents

The data provide information on socioeconomic conditions of households and also family details. The personal information of the respondents include: Age, education, occupation, and income. Around 31.0 % of the respondents belong to the 30–39 age groups, while 26.6 % of the respondents are below 30 years, 19.7 % belongs to 40–49 age group, and 22.7 % are more than 50. As far as the respondents' education level is concerned, around 35.5 % respondents have basic education level, 19.7 % have primary education, and 17.2 % have education level of secondary and above. However, a significant number (27.6 %) of respondents are illiterate. In rural India, still a significant number of populations are illiterate. Around 58.1 % respondents are involved in agriculture, 25 % are not involved in any occupation and the rest 16.7 % involved in other activities like petty trade and other nonfarm activities. We have considered household income for this study, because a respondent's willingness to take risk depends not only on his own income but also on the income of other family members. In the sample, 43.3 % of respondents' household income was below Rs 2,000, while 33.0 % fell into Rs 2,001–4,000 income brackets, and the remaining 23.6 % had an income level

Table 3 Summary statistics by demographics

Variable Name	Description	Percentage
Age (Years)	18–29	26.6
	30–39	31.0
	40–49	19.7
	≥50	22.7
Gender	Male	76.8
	Female	23.2
Education (Years)	Illiterate	27.6
	Primary education	19.7
	Basic education	35.5
	Secondary and above	17.2
Household income (Rs./month)	0–2,000	43.3
	2,001–4,000	33.0
	Above 4,000	23.6
Dependent family members	1	10.3
	2	25.1
	3	33.5
	4 and above	31.0
Earning members in a family	Single earning member	52.2
	Multiple income earner	47.8
Occupation	Agriculture	58.1
	Others	16.7
	Non worker	25.1
Shock (Number of times)	No shock	32.0
	One	51.7
	Two and above	16.3
Debt	Debt	72.4
	No debt	27.6

more than Rs 4,000. Other family details include number of dependent family members, number of earning members and dependent members, number of shocks faced by the household, and debt position of the household (Table 3).

6.2 Factors Affecting Risk Attitudes

As discussed earlier, the present study considered some selected socioeconomic characteristic to investigate the risk-taking behaviour of a member of household. The survey database contains information on age, gender, education, income, earning members, number of dependents, occupation, family shocks and debt. This section presents the distribution of risk-taking behaviour by demographic characteristics of the respondents based on the amount of money betting in the risk game. In the experimental design adopted in the study, out of Rs 50 given to play the game, the average amount used for risk game comes out to be Rs 30, which is used as an arbitrary cutoff amount to judge the participants risk attitudes. Higher

the amount used for playing betting game indicates higher risk tolerance. Participants who used more than Rs 30 are considered as risk seeker and below the number is considered as conservative in nature. Based on this methodology, around 47.8 % are willing to take risk and the rest are conservative. It is important to analyze the risk tolerance of the participants by their socioeconomic characteristics. These factors are elaborated below.

Age

Risk-taking propensity decreases with age as evident from the amount of money used for betting game by the respondent. Risk-taking peaks at younger age groups (19–29) and bottomed at above 50 age group respondents. Respondents belong to younger age groups (18–29) use Rs 32 out of Rs 50 given to pay the risk game. The average amount decreased to Rs 28.3 for 30–39 age groups, then a little up of Rs 29.3 for 40–49 age groups (Fig. 1).

Gender

With regard to risk-taking, it appears that female respondents are conservative than their counterpart male respondents. The average amount of money used in the betting game is around Rs 30 for male respondents, while for female respondents the average amount is Rs 24.7. In percentage term, 76.8 % male respondents are risk seeker (Fig. 2).

Fig. 1 Willingness to take risk by age

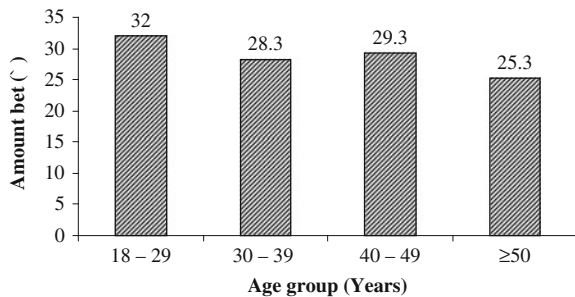
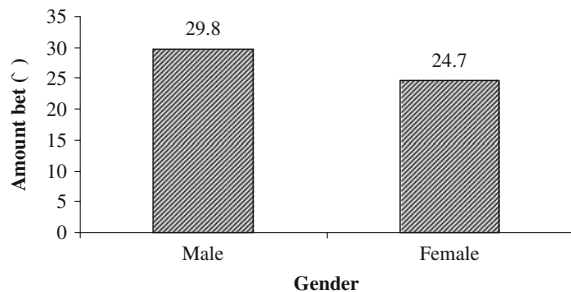


Fig. 2 Willingness to take risk by gender



Education

Education wise analysis shows that respondents with higher education are willing to bet highest amount (Rs 33.4) in betting game, while respondents who have no primary education bet the lowest amount (Rs 26.5) in the betting game. Education in this analysis shows that risk propensity increases with the increase in education level and vice versa (Fig. 3).

Income

The average betting amount is highest (Rs 29.9) for the income group of above Rs 4,000. Respondents belong to lowest income group used the lowest (Rs 28) to play the betting game. The propensity of risk taker increases with income level. Around 31 % respondents belong to Rs 0–2000 income groups are risk taker, which increases to 37.5 % for above Rs 4,000 income group (Fig. 4).

Fig. 3 Willingness to take risk by education

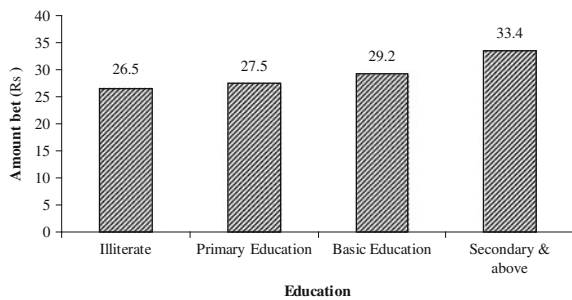
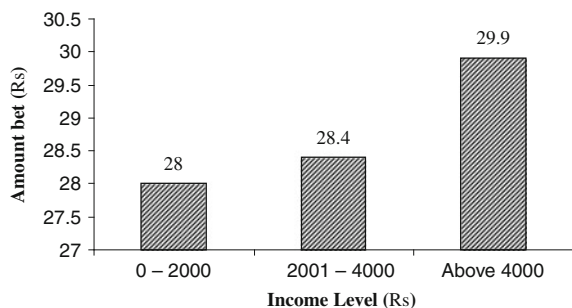


Fig. 4 Willingness to take risk by household income



Earning Members

More earning member in a family indicates more financial support to other members in a household. The single breadwinner of a family comes under pressure to maintain family financial status. The average betting amount is highest (Rs 29.3) for single earning member family, while Rs 27.8 for multi earning member family (Fig. 5).

Occupation

An individual’s propensity to take risk varies across occupations. Category wise not much difference is noticed in risk-taking behaviour among people involved in agriculture and other than agriculture. Propensity to take risk is substantially lower for nonworkers (Fig. 6).

Household Debt

Household debt affects negatively on an individual’s propensity to take risk. In the context of breadwinner of a family, household debt tends to made them behave

Fig. 5 Willingness to take risk by earning members in a family

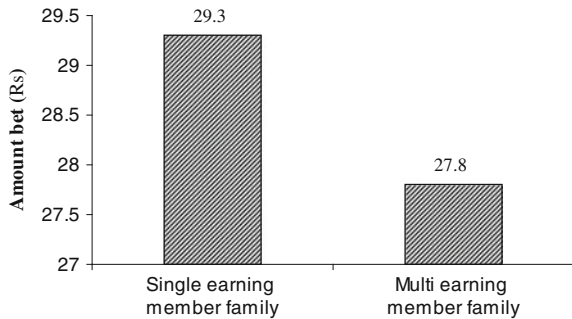
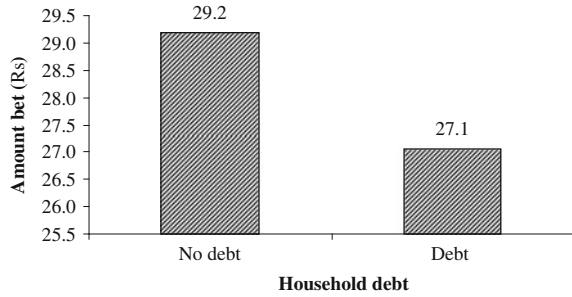


Fig. 6 Willingness to take risk by occupation



Fig. 7 Willingness to take risk by household debt

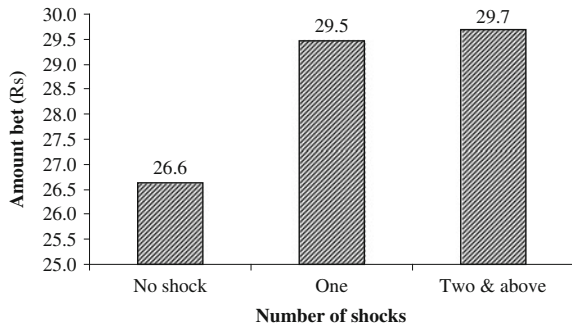


conservatively on financial matters. In this study, respondents with household debt would like to bet lesser amount in the betting game compared to the households where no debt is there (Fig. 7).

Family Shocks

Disruptions in households may influence an individual's risk-taking behaviour. The number of shocks faced by a household is considered as an indicator of an individual's risk-taking attitudes. The average amount of money used in betting game is lowest for the households that have never faced any shocks, which increases to Rs 29.5 for households that faced one shocks, and Rs 29.7 for two and above. This indicates that a person prefers to take more risk in order to protect their family from unforeseen financial requirements (Table 4), (Fig. 8).

Fig. 8 Willingness to take risk by number of shocks



6.3 Discussion of Results

We begin the analysis by estimating linear regression analysis, where the amount of money the respondents are willing to bet is regressed using their socioeconomic and household-related characteristics. The control variables used in the analysis display the expected signs and are statistically significant in most cases (Table 5).

Table 4 Distribution of variables by willingness to take risk

Variable Name	Description	Risk taker	Conservative
Age (Years)	18–29	40.9	59.1
	30–39	31.0	69.0
	40–49	34.0	66.0
	≥50	31.4	68.6
Gender	Male	35.3	64.7
	Female	29.8	70.2
Education (Years)	Illiterate	28.6	71.4
	Primary education	27.5	72.5
	Basic education	29.2	70.8
	Secondary and above	42.9	57.1
Household income (Rs./month)	0–2,000	31.8	68.2
	2,001–4,000	34.3	65.7
	Above 4,000	37.5	62.5
Dependent family members	1	28.6	71.4
	2	25.5	74.5
	3	35.3	64.7
	4 and above	41.3	58.7
Earning members in a family	Single earning member	35.8	64.2
	Multiple income earner	32.0	68.0
Occupation	Agriculture	33.9	66.1
	Others	35.3	64.7
	Non worker	33.3	66.7
Shock (Number of times)	No shock	26.2	73.8
	One	37.1	62.9
	Two and above	39.4	60.6
Debt	Debt	30.4	69.6
	No debt	35.4	64.6

Results of the linear regression analysis indicated that the estimated coefficient for gender is positive and significant; indicating that risk-taking propensity is greater for male compared to female. It also shows that the coefficient of age decreases with successive higher age group respondents. The education on dummy variables indicates that risk-taking propensity increases with higher education. Household income for above Rs 4,000 income bracket affects positively on risk-taking propensity. Number of household member affects negatively on risk-taking propensity. Numbers of dependent family member have negative result on the propensity to take risk. Respondents belong to other income group affect positively on risk-taking propensity compared to their counterpart (agriculture). The presence of debt in a household affects negatively on risk-taking behaviour. Respondent facing one family shock increases risk-taking propensity.

The likelihood ratio tests of regressions of propensity to take risk show that the explanatory variables are mostly significant and relevant and they should be incorporated in the specification of the model. The demographic variables like age, education, and income of the respondents have significant influence on respondent's

Table 5 Regression of financial risk tolerance on socioeconomic variables

Explanatory variable	Estimated coefficients	<i>t</i> -statistics
Constant	2.733	2.960
Gender (Female)	0.266**	2.407
Age	0.380	0.147
Age square	-0.102**	-2.289
Education (Illiterate)		
Primary education	0.130	0.957
Basic education	0.171*	1.695
Secondary and above	0.241**	2.044
Household income (0–2,000)		
2,001–4,000	0.061	0.573
Above 4,000	0.064*	1.564
Number of dependents	0.032*	1.903
Earning members in a family	-0.015*	-1.645
Occupation (Ref: Agriculture)	0.181*	1.778
Debt	-0.041*	-1.523
Family shock (Ref: No shock)	0.082*	1.422
Adjusted R^2	0.241	
<i>F</i> Statistics	1.789	

Notes ** and * show significance level of 5% and 10 % respectively

propensity to take risk. Contrary to general belief, as age increases, the “odds of propensity to risk” also increases, although the coefficient is insignificant. However, the coefficient for quadratic age variable is negative and significant, which implies that financial risk tolerance decreases with increasing rate. This implies that people behave conservatively with the increase in age. Older respondents are more aware of the future generations and take conservative decisions on financial matters compared to their counterparts. Education level of the respondents seems to have a dominant and significant impact on the risk-taking behaviour. Education plays an important role in generating awareness levels toward the environment. Compulsory financial literacy programs among the people should help people to take decision on financial matters. The odds of risk tolerance increase significantly with successive higher levels of education. Similarly, successive higher monthly household income leads to higher odds of willing to take risk. Higher income leads to higher probability to take risk by investing more money in higher return. The size of family members has a positive effect on risk tolerance. Participants involved in non agricultural activities increased the likelihood of being willingness to take risk by 25.6 %. Having family debt decreases the likelihood of risk-taking propensity by 32 %. Family shock increases the likelihood to take risk by 75 % (Table 6).

Table 6 Logistic analysis of financial risk tolerance on socioeconomic variables

Explanatory variable	Coefficients	Odds ratio
Gender (Ref: Female)	0.543	1.721
Age	0.026	1.042
Age square	-0.236	0.756
Education (Ref: Illiterate)		
Primary education	0.236	1.266
Basic education	0.378	1.685
Secondary and above	0.532	1.702
Household income (Ref: 0-2,000)		
2,001-4,000	0.031	1.031
Above 4,000	0.248	1.281
Number of dependents	0.026	1.122
Earning members in a family	-0.282	0.755
Occupation (Agriculture)	0.315	1.256
Debt	-0.277	0.680
Family shock	0.561	1.753
Constant	5.188	
-2 Log likelihood	262.576	

7 Summary and Conclusions

The present study attempts to estimate the impact of various demographic determinants of financial risk tolerance of rural people. The study was conducted in some selected villages of rural West Bengal. We employed an experiment-based method where we elicit the risk attitudes of rural people from a risk game. In this game, the participants were given a certain amount of money and were asked to bet from this money depending on the condition that he might receive more or lose money depending on the results from rolling six sided dice. Our analysis on the relationship between participants' demographic characteristics and financial risk tolerance reveals that age, number of dependents, number of earning member, and household debt affects negatively, while education, income, and number of shocks have positive effect on financial risk tolerance. In line with general belief, participants belong to higher age brackets have lower financial risk tolerance than younger age group participants. The study also established the widely held belief that women have lower risk tolerance than men, which is also true for rural population. Individual with higher education have a higher probability of financial risk tolerance. Individual income also has a significant impact on financial risk tolerance. The result of this study has an important implication for fund management industry targeting rural market in India. Investigating investor's risk-taking tolerance is a dominant factor in designing appropriate investment portfolio and prevent unnecessary losses from inappropriate portfolio allocation decision. There is a need to expand the scope of this study with heterogeneous market compositions and psychological determinants of individuals.

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Impacts of Caste, Risk, and Time Preference on Borrowing Behaviour: A Case Study in West Bengal, India

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1 Introduction

The recent development of microfinance institutions has enabled rural households to borrow money much easier than before. However, it is still difficult for the poorest households to have access loan from profit-seeking microfinance institutions and formal financial institutions due to the smallness of their demanded loan, and the higher possibility of default by poor borrower (Robert et al. 2009; Fujita and Sato 2011; Karlan and Gine 2011). Therefore, the poorest households tend to borrow money from relatives and friends who usually do not require interest and due date, or informal money lenders who usually require the higher interest rate than formal financial institutions. Particularly, when they need loan in the case that they face the exogenous shocks such as unpredictable crop failure, illness, injury and death of family members, marriage of family members, they often rely on 'quasi-credit' (Fafchamps 1999) that is mutually provided between relatives and friends (Chap. 8 in Bardhan and Udry 2001; Fafchamps and Lund 2003; Fafchamps and Gubert 2007; Foster and Rosenzweig 2001; Gine and Yang 2009; De Weerd and Dercon 2006).

The market situation where there co-exist formal markets where the poorer borrowers cannot have access and informal markets where even such borrowers can have access is called the fragmented credit market and has been investigated by substantial number of researchers (Bardhan and Udry op cit, Chap. 7). In order to investigate the determinants of borrowing behaviour in such a market situation, we need to distinguish the types of lenders, taking into consideration the

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characteristics of borrowers as well as the exogenous shocks that affect loan demand including not only economic characteristics but also social characteristics such as caste.

In West Bengal, that is our study area, caste system may affect the borrowing behaviour of rural households as mentioned below. However, the existing literature focusing rural financial market in India has not explicitly taken account of the impact of social restriction or caste network through caste system on borrowing behaviour, but has taken account of the impact of asset and income on borrowing behaviour except for Kumar et al. op cit. and Munshi and Rosenzweig (2009) (Kochar 1997; Bhattacharjee et al. 2010; Basu 2006). This is partly because of the assumption that asset and income have a close relationship with caste, and partly because of difficulty with collecting the data of caste network. However, the study which examines its own impact of caste as a social system on borrowing behaviour has significance of research in West Bengal where restriction of economic activities by caste system has been alleged to be weakening recently.

Furthermore, there exist only a few studies that examine the relationship between borrowing behaviour and time preference (Bauer et al. 2010), although the time preference is expected to have a strong impact on borrowing behaviour (Pender 1996; Ashraf et al. 2006; Bhattacharjee et al. 2010). One of the unique contribution of this study is to test the relationship between borrowing behaviour and time preference of rural household, using one of the experimental methodologies which have been developed in the recent years (Cardenas and Carpenter 2005; Tanaka et al. 2010).

The objectives of this article are to investigate the determinants of borrowing behaviour by lender type (formal financial institutions, informal private commercial lenders, and informal personal sources such as relatives and friends) in rural West Bengal. For that purpose, we take into consideration the impacts of caste, risk coping behaviour, and time preference on which a few existing literature (Bauer et al. 2010; Kumar et al. 2010) has taken notice so far as long as we know.

As long as we know, this study is the first one that investigates the borrowing behaviour of rural households in West Bengal, taking into consideration the impacts of unpredicted shocks, caste, and time preference on it, simultaneously.

The organization of this chapter is as follows: The second section describes the village and household characteristics, the borrowing behaviour of sample households, and the relationship between the borrowing behaviour and caste. In the third section, we explain the conceptual framework for analysis, methodology to measure the time preference of household, econometric model used, and the estimation results. The conclusion is mentioned in the final section.

1.1 Study Area and Sample Selection

The survey was conducted in October–November, 2010, in West Bengal, India. Two districts, North Dinajpur and Nadia, were purposively selected for the study. North Dinajpur and Nadia districts represent the northern and southern part of the

state, respectively. The study was carried in six villages, three from Nadia district and the rest from South Dinajpur. The villages are typical rural villages in India. Villages were selected on the basis of following criteria: (i) The villages must have a mix of different castes as our focus is to investigate the relationship between castes and repayment behaviour of borrowers. (ii) Dharampur and Rasna are the two villages from North Dinajpur district that have aired climate and flood free region to represent that feature of the state. (iii) Char Birpara is a village from Nadia district which is flood prone to capture the risk associated with natural calamity. (iii) Charsarati and Nikhargachi are two villages within the Nadia district which are moderately flood prone compared to Char Birpara. (iv) Village South Alipur is a relatively prosperous village adjoining urban center which is a fast developing village in the district. From these, we surveyed 203 households. For each village, 30–40 households were randomly selected for detailed interview. We invited one household member to participate in this survey. The respondents include both male and female members from households. Respondents were asked for a wide range of personal and household-related questions. First question asks for attitude toward risks where respondents were asked to participate in a risk game. Variables are broadly divided into two categories, namely: Demographic and Financial indicators. Demographic indicators include: age, gender, education, marital status, occupation, number of dependents etc. Financial indicators include: family income, asset holding, debt position etc.

2 Socioeconomic Characteristics of Sample Households

2.1 Village and Household Characteristics in the Sample Villages

We randomly selected 199 households from six villages (A–F) of West Bengal. A–D villages were selected from the South and E–F villages were selected from the North near by the border of Bangladesh. We made interview with the sample households and requested them to play the experimental game to measure time preference.

Table 1 shows the sample village and household characteristics. The average number of family members is 4.6 persons and the members of 15–60 years old accounts for 21.5 % of it. And 20 % of the households were engaged in agriculture of which main crops are paddy and jute. For the education level, the high school graduate accounts the largest share. As for the caste, the households who belong to schedule caste/tribe account for the largest share, although the share varied from village to village.

Table 1 Village and sample household characteristics

Village	A	B	C	D	E	F	Total
Region	South	South	South	South	North	North	–
Number of sample	44	35	30	31	36	23	199
Number of family members (person)	4.4	4.5	4.7	4.7	4.8	4.4	4.6
Composition of age group (%)							
Under 15 years old	62.9	72.6	67.9	74.7	79.9	72.5	71.5
15–60 years old (labor)	27.3	19.1	25.0	18.5	16.1	22.5	21.5
61 years old and above	9.8	8.3	7.1	6.8	4.0	4.9	7.0
Main occupation (%)							
Agriculture	35.8	7.5	10.1	16.7	18.3	35.1	20.4
Wage labor, self-employment	10.0	23.6	29.2	18.5	17.6	6.8	17.7
Non agricultural employment	4.2	14.2	6.7	6.5	9.2	2.7	7.5
Household chore	37.5	35.8	36.0	33.3	29.8	36.5	34.6
Student	3.3	11.3	12.4	24.1	21.4	14.9	14.6
Unemployment	9.2	7.5	5.6	0.9	3.8	4.1	5.3
Education level (%)							
Under primary school graduate	37.1	27.4	32.1	25.3	20.1	27.5	28.5
Junior high school graduate	10.8	17.8	10.0	17.1	19.5	20.6	15.7
Senior high school graduate	52.1	47.1	52.1	45.9	51.1	47.1	49.5
Above senior high school	0.0	7.6	5.7	11.6	9.2	4.9	6.4
Asset holding (1,000 Rs.)	49.3	256.0	121.5	208.7	140.9	152.5	154.8
Caste (%)							
Bramin/higher caste	0.0	5.7	6.7	16.1	19.4	30.4	11.6
Backward caste	0.0	14.3	0.0	35.5	22.2	0.0	12.1
Scheduled caste/tribe	100.0	77.1	93.3	48.4	58.3	69.6	75.9

Source The authors calculated from the 2010 survey data

2.2 Borrowing Behaviour

The villagers can obtain loan from private money lenders, and relatives and friends as well as formal financial institutions such as bank and microfinance institutions (Table 2).

When the villagers obtain loan from formal financial institutions, they are required to offer collateral and the written contract is a common contract form. The amount of loan per case is larger than those from the other types of lenders. On the other hand, the oral contract without collateral is a predominant form for loans from private money lenders, and relatives and friends. The former type of private lenders usually requires the interest higher than that of formal lenders while the latter type does not require interest. As for the purpose of loan, there does not exist any significant difference between the formal and informal lenders except for medical treatment and business investment. Zero interest loans from relatives and friends are characteristics of borrowing for medical treatment, while charging interest is a remarkable feature of loan for business investment.

Table 2 Borrowing behaviour of sample households 2007–2010

	Financial institution	Informal lenders	
		With interest	Without interest
Collateral	Required	Not required	Not required
Number of loan	57	60	83
Amount of loan (Rs/loan)	29,473	8,188	6,161
Interest rate (%/day)	0.057	0.226	0.0
Purpose of loan (%)			
Daily needs	17.5	33.3	26.5
Medical treatment	7.0	25.0	32.5
Funeral	0.0	6.7	4.8
Marriage	0.0	5.0	3.6
Business investment	38.6	23.3	8.4
Agricultural investment	33.3	15.0	16.9
Expenses for education	3.5	13.3	0.0
Construction and repayment of house	3.5	3.3	3.6
Purchase of land	5.3	0.0	1.2
Others	7.0	6.7	6.0

Source Authors calculated from 2010 survey

2.3 Caste System

Table 3 shows that the households belonging to upper castes tend to borrow money from formal financial institutions, while those belonging to lower castes tend to borrow money from individual lenders. Further, the table shows that 89.8 % of borrowings from informal lender with interest payment were done by scheduled caste/tribe households. This implies that the lower caste households tend to get loan by paying positive interest.

In addition, Table 3 shows that in the case of borrowing from private lenders at positive interest, 89.9 % of borrowers belonged to the lower caste, and 40.7 % of

Table 3 Borrowing behaviour and caste

	Financial institution	Informal lenders	
		With interest	Without interest
Caste of borrower (%)			
Bramin/higher caste	31.6	5.1	11.9
Backward caste	12.3	5.1	13.1
Scheduled caste/tribe	56.1	89.8	75.0
Caste of lender			
Higher caste	–	40.7	10.3
Same caste	–	53.7	79.5
Lower caste	–	5.6	10.3
Relatives (%)	–	8.3	45.8

Source Authors calculated from 2010 survey

Table 4 Averages of asset amount, educational level, and family labor endowment by caste

	Asset (Rs)	Educational level (years)	Family labor (person)
Higher caste	94,142	6.87**	3.83
Lower caste	50,783	4.63*	3.13

Note Higher caste includes Bramin/higher caste and backward caste while lowe caste includes schedule caste/tribe

** & * indicate significant levels at 5 % & 10 % respectively

lenders belong to higher caste. This suggests that lower caste borrowers are more likely to borrow from the upper caste lenders than the borrowers of other caste. On the other hand, in the case of borrowing from private lenders at zero interest, the borrowers are likely to borrow from the lenders who belong to the same caste. In this case, the majority of credit transactions are composed of loans between relatives and neighbors, according to the information we collected. And this is consistent with the findings of Munshi and Rosenzweig op cit.

Table 4 compares of three characteristics of upper caste with those of lower caste; the average values of asset holding, educational years of household heads, and family labor endowment, in order to examine the relationship between these household characteristics and caste. These figures imply that the higher the caste, the larger the asset holding, and longer the educational year. However, we cannot find any significant relationship between the family labor endowment and the caste.

These findings suggest that lower caste households face credit constraints when they try to borrow money from formal financial institutions or get loan from relatives and friends at zero interest and that caste has positive relationships with asset and income. We examine these findings with some more details in [Sect. 3](#).

2.4 Time Preference

This chapter aims at examining the impact of time preference on borrowing behaviours. For the purpose on obtaining the indicator (discount rate) of time preference of household, we requested the heads of sample households to play time preference games as follows:

In time preference game, we applied the same method as that of Kirby et al. (2002) to measure the discount rate of households. We explained the game protocol to the household heads before playing the game. We offered eight experiment sets and asked each household to make choices between a specific amount money to be received on the current date (option A) and an alternative amount to be received on a future date (option B) for each choice (Table 5).

For example, in Table 5, if a player selects option A for choice 1, he will receive Rs 40 on the date of the survey. On the other hand, if he selects option B, he will receive Rs 45 in the future (in 5 months). After the players made selections

Table 5 Time preference

Question	Option A		Option B		Results of experiments	
	(Rupee)	Days	(Rupee)	Days	Number of switching points	(%)
1	40	0	45	150	5	2.5
2	35	0	38	120	5	2.5
3	37	0	45	90	18	9.1
4	28	0	38	60	15	7.6
5	27	0	42	30	21	10.6
6	22	0	38	20	6	3.0
7	18	0	42	14	15	7.6
8	15	0	45	7	9	4.5
All option A					104	52.5
Total number of samples					199	100

Source Authors calculated from 2010 survey data

from among choices 1–8, we observed the switching point and calculated the discount rate using function $X = Y/(1 + kT)$, where X is the present value of the reward, Y is the reward at the delayed time T , and k is a discount rate parameter for the household (Kirby 2002). Moreover, we used the point to represent the household discount rate. We calculated the discount rate of each household as an average, which depends on the switching point—that is, if the switching point of a household is choice 4, then the household discount rate is an average between 0.002402 and 0.005952, so the household discount rate is 0.004187.

3 Theoretical Framework and Empirical Analyses

3.1 Theoretical Framework

In order to investigate the determinants of borrowing behaviour, we assume the following two period utility maximization models, in which households borrow money not only for investment but also for consumption.

$$\begin{aligned} & \text{Max}_{(c_1, l_1, A_2, B_1^I, B_2)} u(c_1, l_1) - C(B_2; A, T, \text{Caste}) \\ & - C(B_1^I; A, T, \text{Caste}) + \beta \cdot \text{Max}_{(c_2, l_2)} E\{u(c_2, l_2)\} \end{aligned}$$

$$s.t. \quad ; c_1 + A_2 = W(\bar{L} - l_1) + y_1 + \rho \cdot A_1 + \sum_j B_1^j + B_2$$

$$; c_2 + B_1^N + (1 + r_1)B_1^M + (1 + r_2) \cdot B_2 + \rho B_1^N = W(\bar{L} - l_2) + y_2 + \rho \cdot A_2$$

s.t is the budget constraint in the first period;

s.t is the budget constraint in the second period;

Here, $u(\bullet, \bullet)$ is a utility function. B_1^N is a zero interest loan from relatives and friends, and B_1^M is a positive interest loan from money lender. We assume that if household can borrow (lend) money, B_1^N , at zero interest from (to) some relative or friend, the household lend (borrow) money, B_1^N , to (from) the relative or friend at probability p in return for borrowing money (lending money).

c_i Consumption at period i .

l_i Leisure at the period i . We assume that the demand for family labor is constrained; $\bar{L} - l_i \leq \bar{l}$.

B_1^j Informal loan from relatives and friends (=N), informal loan from money lenders (=M). We assume that household has to pay a transaction cost, $c(B_1^j; A, T, \text{Caste})$ when he borrows money from informal lenders. We also assume that c is increasing and convex with respect to B_1^j , decreasing with respect to asset (A), land (T), and caste ranking ($\partial c / \partial A < 0$, $\partial c / \partial T < 0$).

p Probability that household get loan from or provide loan with the relatives and friends who have reciprocal relationship. (< 1) We assume p is a function of random variable, θ that represents state of nature of transaction.

r_1 Interest rate offered by money lenders.

B_2 The amount of loan from formal financial institutions (Bank, Microfinance institutions, etc.). We assume that household has to pay a transaction cost, $c(B_2; A, T, \text{Caste})$ when he borrows money from formal lenders. We also assume that c is a increasing and convex with respect to B_2 , decreasing with respect to asset (A), land (T), and caste ranking.

A_1 Initial household asset at the first period,

A_2 Initial household asset at the second period,

T Agricultural land area,

\bar{L} Family labor endowment,

W Market wage rate. We assume that the market wage rate is affected by educational level and age.

r_2 Interest rate offered by formal financial institutions.

y_1 Household income at the first period. We assume that the income is determined by family labor, educational level of family labor, age, gender, and exogenous shock (σ) that has already occurred. $y_1 = y_1(\text{Family labor, Education, Age, Gender, } A_1, T, \sigma)$.

y_2 Household income at the second period. We assume that the income is determined by family labor, educational level of family labor, age, gender, and random state of nature (θ) that has not yet occurred. $y_2 = y_2(\text{Family labor, Education, Age, Gender, } A_2, T, \theta)$.

ρ Rate of return on household asset.

θ Random variable that represents state of nature.

β Discount rate.

3.2 Data and Empirical Model

Assuming that we can derive the interior solutions of two period's household utility maximization model, the endogenous variables can be shown as induced form functions of exogenous variables. We assume the function system is formalized as follows:

$$\begin{aligned} \sum_k (A_1 - A_2^*) = & \alpha_0 + \alpha_1 \cdot A_1 + \alpha_2 \cdot \text{ASSET} + \alpha_3 \cdot \text{EDUC} + \alpha_4 \cdot \text{AGE} + \alpha_5 \cdot \text{GEND} \\ & + \alpha_6 \cdot \text{DEPEND} + \alpha_7 \cdot \text{DISCOUNT} + \alpha_8 \cdot \text{CASTE} \\ & + \alpha_9 \text{REMIT} + \alpha_{10} \sigma + \alpha_{11} \text{REGIONDUMMY} + \varepsilon \end{aligned} \quad (1)$$

$$\begin{aligned} \sum_k B_1^N = & \beta_0 + \beta_1 \cdot A_1 + \beta_2 \cdot \text{ASSET} + \beta_3 \cdot \text{EDUC} \\ & + \beta_4 \cdot \text{AGE} + \beta_5 \cdot \text{GEND} + \beta_6 \cdot \text{DEPEND} \\ & + \beta_7 \cdot \text{DISCOUNT} + \beta_8 \cdot \text{CASTE} + \beta_9 \cdot \text{REMIT} \\ & + \beta_{10} \cdot \sigma + \beta_{11} \cdot \text{REGIONDUMMY} + \xi \end{aligned} \quad (2)$$

$$\begin{aligned} \sum_k B_1^M = & \beta'_0 + \beta'_1 \cdot A_1 + \beta'_2 \cdot \text{ASSET} + \beta'_3 \cdot \text{EDUC} \\ & + \beta'_4 \cdot \text{AGE} + \beta'_5 \cdot \text{GEND} + \beta'_6 \cdot \text{DEPEND} \\ & + \beta'_7 \cdot \text{DISCOUNT} + \beta'_8 \cdot \text{CASTE} + \beta'_9 \cdot \text{REMIT} \\ & + \beta'_{10} \cdot \sigma + \beta_{11} \cdot \text{INTEREST} + \beta'_{12} \times \text{REGIONDUMMY} + \xi' \end{aligned} \quad (3)$$

$$\begin{aligned} \sum_k B_2 = & \gamma_0 + \gamma_1 \cdot A_1 + \gamma_2 \cdot \text{ASSET} + \gamma_3 \cdot \text{EDUC} \\ & + \gamma_4 \cdot \text{AGE} + \gamma_5 \cdot \text{GEND} + \gamma_6 \cdot \text{DEPEND} \\ & + \gamma_7 \cdot \text{DISCOUNT} + \gamma_8 \cdot \text{CASTE} + \gamma_9 \cdot \text{REMIT} \\ & + \gamma_{10} \cdot \sigma + \gamma_{11} \cdot \text{REGIONDUMMY} + \eta \end{aligned} \quad (4)$$

We run three loan equations excluding asset sales Eq. (1), on the exogenous variables, by Tobit modeling analysis, separately.

Here, $\alpha_0 \sim \alpha_{11}$, $\beta_0 \sim \beta_{11}$, and $\gamma_0 \sim \gamma_{11}$ indicate the parameters and ε , ξ , and η indicate disturbance terms.

Asset indicates asset excluding land, EDUC indicates educational level, AGE indicates age, GEND indicates sex, DEPEND indicates ratio of dependent household members, DISCOUNT indicates discount rate, CASTE indicates caste dummy, REMIT indicates remittance, REGIONDUMY indicates regional dummy, respectively. Definition of all these explanatory variables is shown in Table 6.

As for shock variables σ s that are assumed to affect demand for loan, we take into consideration three types of shocks including 'crop failure and stolen livestock' (σ_{crop}), 'illness and injury and death' (σ_{ill}), and 'marriage' (σ_{mar}).

Table 6 Definition of independent variables

Independent variable	Definition	Mean	Standard error
GEND	If household head is female, =1	0.23	0.42
AGE	Age of household head	41.50	13.61
EDUC	Educational years of household head	5.09	4.39
REMIT	Amount of remittance from family member	681.08	5047.27
DEPEND	Number of children below 15 years old	0.98	1.05
ASSET	Amount of asset holding, excluding land	61.13	254.64
CASTE	If respondent belongs to upper caste (Bramin/higher caste or backward Caste), =1	0.23	0.43
INTEREST	Interest rate offered by personal money lender (%/day)	0.068	0.322
DISCOUNT	Discount rate (%/day)	0.36	0.31
REGIONDUMMY	If village is located in the South, =1	0.7	0.5
σ			
σ_{crop}	If household faced crop failure or stolen livestock, =1	0.02	0.14
σ_{ill}	If household faced illness, injury or death of family member, =1	0.37	0.48
σ_{mar}	If household faced marriage of family member, =1	0.04	0.20

Source Authors calculated from the data collected in 2010 survey

***, ** & * indicate significant levels at 1 %, 5 % & 10 % respectively

These shock variables are also shown in Table 6, taking the value of 1 if some households faced one of these shocks in the past 1 year.

The estimation results are shown in Table 7.

For the caste, the estimated coefficients of caste are significantly positive for borrowing from formal institutions and personal lenders with zero interest rate while the coefficient of caste is negative for informal private lenders with positive interest rate, although it is not significant. These results imply that the lower caste households are less likely to get loan from formal financial institutions and to get personal zero interest loan. On the other hand, they are more likely to borrow money with high interest rate from private money lenders.

Taking into consideration that the estimation results are controlled by asset, education, and labor that are proxies of household income, these findings suggest that social status itself to which households belong may cause the credit constraint which households face.

As for the relationship between borrowing behaviour and shocks, households tend to borrow money with zero interest from relatives and friends when they face crop failure or stolen livestock, and illness, injury or death of family member. And households are more likely to borrow money at positive interest rate if they face marriage of family member and need relatively large amount of money.

For the discount rate, the results also imply that as the discount rate is higher, the amount of loan is smaller, only if households get loan with zero interest from relatives and friends.

We also obtained interesting results on the other variables.

Table 7 Estimation results

	(1) Formal financial institutions		(2) Personal lenders with positive interest rate		(3) Personal lenders with zero interest rate	
	Coefficient	<i>t</i> -value	Coefficient	<i>t</i> -value	Coefficient	<i>t</i> -value
Constant	-218102.2	0.00**	-7974.1	-0.78	2073.1	0.38
GENDER	-11.7	-0.00	1913.6	0.42	-2018.2	-0.79
AGE	951.0	1.37	-231.0	-1.37	-54.0	0.60
EDUC	4735.7	2.16**	249.7	0.48	-499.6	-1.55
REMIT	0.765	0.53	-0.022	-0.05	-149.1	-1.08
DEPEND	16650.6	2.05**	-302.4	-0.16	679.5	0.38
ASSET	0.065	2.73***	0.009	1.49	-0.080	-2.38***
CASTE	55598.34	2.93***	-9094.4	-1.64	10405.3	3.68***
DISCOUNT	17684.57	0.63	-8564.3	-1.30	-7587.9	-2.03**
REGIONDUMMY	62833.5	2.94***	1074.8	0.24	-4638.7	1.97*
Shock Dummy						
Σcrop	41267.5	0.83	6673.4	0.59	21473.0	2.90***
Σill	-24693.1	-1.36	3644.9	0.88	6.84.4	2.62***
Σmar	-11455.1	-0.25	23609.2	2.91***	-5139.0	-0.79
INTEREST			1669766	3.39***		
SIGMA	76618.0	(9121.7)***	19431.5	(2248.4)***	11903.7	(1125.1)***
Number of sample	197		197		197	
Log likelihood	-553.0		-591.9		-776.5	
Prob > chi2	0.0001		0.0051		0.0000	

Source Authors calculated from the data collected in 2010 survey

We cannot find any evidence that gender, age, or remittance has a significant effect on borrowing from any type of lender.

Among the demographic determinants, education has a positive effect on borrowing from financial institution. This implies that well-educated borrower can have access from financial institution. The number of dependent family members also has a positive impact on borrowing from financial institution. This can be explained by investment for child education, because a large number of households reported that the objective of borrowing from financial institution was child education.

The sign of asset variable in column (1) is significantly positive, while that in column (3) is significantly negative. The results imply that the poorer households were more likely to borrow money from relatives and friends without interest while the richer households were more likely to do it from financial institutions.

4 Conclusion

The objectives of this chapter are to investigate the determinants of households' borrowing behaviour in rural India, focusing on the impacts of caste, risk coping behaviour, and discount rate.

We can summarize the main fact findings as follows:

First, the results of estimation suggest that the upper caste households are more likely to get lower interest loan from formal financial institutions or relatives and friend while it may be difficult for the lower caste households to have access to such lower interest loan. This finding is consistent with that of Kumar op cit. On the other hand, as a number of empirical studies of credit market pointed out that the richer people borrow more and pay lower rates of interest (Banerjee 2007). We also found that the households who have the larger amount of asset and the higher level of education, tend to get the lower interest loan and they borrow less money from relatives and friends. These findings indicate that the effects of income level on borrowing behaviour differ from the effects of caste on borrowing behaviour. This implies that the effects of caste and income should be analyzed separately (this is interesting and such analysis can be done in the near future).

Second, the results imply that if households borrow money to cope with shocks, they tend to get zero interest loans from relatives and friends. These findings are consistent with Munshi and Rosenzweig op cit.

Third, the households who belong to the upper caste can borrow the larger amount of money. These findings suggest that the upper caste households accumulate larger social capital (Vanneman et al. 2006).

Fourth, the estimation results indicate that higher the discount rate, smaller the amount of zero interest loans from relatives and friends. This is consistent with a theory which explains the reason why we can observe interpersonal transaction of quasi credit, applying repeated game theory (Fafchamps 1999).

Thus, this chapter has found the evidences which have not been shown in the existing literature or consistent with it.

Some policy implications can be derived from these evidences.

Indian Government is promoting the spread of self help group (SHG), as a measure of microfinance for the poor. However, as Fujita and Sato op cit. pointed out, the lowest class households have difficulties with becoming members. The evidences which we found, support their findings and suggest that the lower caste households face credit constraints when they try to borrow money from formal financial institutions such as microfinance institutions. Therefore, from our findings, we can draw an implication that the government must take into consideration the flexible measures depending on borrowers' social status in promoting the spread of SHG.

In addition, the findings of this chapter indicate that rural households do not borrow money from formal financial institutions including microfinance institutions when they face shocks.

In order to support the rural poor who are vulnerable to shock, a type of microinsurance program for the poor should be simultaneously implemented (Vellakkal 2007).

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Microfinance and Rural Entrepreneurship: An Assessment

Sudipto Ghosh and Amit K. Bhandari

1 Introduction

In India, agriculture remains still the dominant source of livelihood. However, the role of agriculture in both employment and income generation has been steadily coming down over the last two decades. In order to overcome this situation, rural entrepreneurship has emerged as an effective instrument for employment generation and alleviation of poverty. In addition to that rural entrepreneurship is a necessary instrument to cope with the low productivity in farm sector. The rural entrepreneurs are facing a number of challenges like lack of infrastructure facilities, financial problems, lack of adequate knowledge and information, inadequate technical knowledge and raw material problem, and so on. Among them, the inadequate knowledge and information is the major problem before rural entrepreneurs (Saxena, 2012).

Lack of credit accessibility has been the major obstruction in promoting microenterprises in rural areas. Microfinance plays a crucial role in reaching out to the microenterprises as they lack access to the services of formal financial institutions; furthermore, they are reluctant to finance rural microenterprises because of underlying risk of repayment (Sapovadia 2006). In India, the Self-Help Group (SHG)-Bank linkage program is the dominant microfinance program that connects between banks and poorer sections of population. Microfinance programs bring the power of credit by way of loans to the poor, without requirement of collateral or previous credit record, which in turn lead to the development of microenterprises, especially involving rural women. So far, microfinance program is pretty

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successful in Bangladesh, Indonesia, and other Asian countries. In India, a successful business model has been developed, overcoming traditional challenges of serving low income group population. The business of microfinancing is generating above 20 % return on investment. The resiliency of microfinance industry during the time of economic meltdown has proved its self sufficiency and long-term potential of the sector. Most importantly, major portion of investment in microfinance sector comes from domestic sources, indicating the confidence in its business model.

Regarding the impact of microfinance program on poor, it is established that microfinance program has the ability to increase income of poor people, build viable businesses, and reduce their vulnerability to external shocks. Increased income transforms into household asset creation which actually facilitates in alleviating poverty. Rural women play a significant role in the domestic and socioeconomic life of the society. In rural areas, employment opportunities for women are worse because of lack of land for farming, lack of alternative opportunities and cultural constraints prevent them to work in urban areas for better income. Microentrepreneurship is an agenda for empowering women, which helps to increase decision making within a family. In almost all countries in the world, majority of the business owners are male. However, empirical evidence suggests that more and more women are showing interest in small business ownership and many have been running business successfully (Sangeetha, 2013). In general terms, female-led microenterprises tend to be associated with activities that provide part-time employment. They are small in size and have loose informal structures, which require very little start-up capital, and little or no formal education. However, many women entrepreneurs in the developing world remain illiterate and live in poor rural communities.

One of the most essential factors contributing to success in microentrepreneurship is access to capital and financial services (Sapovadia 2007). The direct access to institutional credit to rural women is very limited and there is sex bias in extending the credit to them. Women from the non-farm sector have better access to banks than the women working in the farm sector. Male members of a family have greater influence on women borrowers on accessibility to credit utilization and its repayment. In this context, credit for microenterprise development has been a crucial issue over the past two decades. Empirical evidence recognizes that investments in women large dividends. It offers the most effective means to improve health, nutrition, hygiene, and educational standards for families and consequently for the whole of society. Therefore, a special support for women in both financial and nonfinancial services is essential.

Regarding access to financial services, women depend largely on their own limited cash resources or, in some cases, loans from extended family members for investment capital. Smaller amounts of investment capital effectively limit women to a narrow range of low-return activities, which require minimal capital outlays, few tools and equipment, and rely on farm produce or inexpensive raw materials. In general, women need access to small loans (especially for working capital), innovative forms of collateral, frequent repayment schedules more appropriate to

the cash flows of their enterprises, simpler application procedures, and improved access to saving accounts. Women owned businesses are one of the fastest growing sectors of microenterprises. Economic growth, stability, and equity can be achieved significantly through microenterprises (Sridhar Krishna 2007).

Enhancing the income of microentrepreneurs essentially requires management skills and education. Orientation of technical knowledge to informal sector is also necessary. MFIs are primarily working with rural entrepreneurs which provide small loans, fine tuning technical and entrepreneurship skills (Ramji and Tripathi 2009). Recent research has revealed the extent to which individuals around the poverty line are vulnerable to shocks such as illness of a wage earner, weather, theft, or other such events. These shocks produce a huge claim on the limited financial resources of the family unit, and, absent effective financial services, can drive a family so much deeper into poverty that it can take years to recover (Imai et al. 2010).

It is thus important to investigate superiority of credit provided to microentrepreneurs by investigating the determinants of income earned from their business. In the present study, we have considered some selected socioeconomic and business-related indicators of microentrepreneurs, especially among women. Does access to MFI finance has a measurable impact on earnings of microentrepreneurs compared to other means of finance used to run business? The present study attempts to offer an insight on the issue. We draw data from a field survey conducted in Howrah district, southern part of West Bengal in eastern part of India. The survey was conducted with the help of voluntary organization in the district. There are several such organizations have been involved in rural community people and has implemented various government-sponsored programs covering: Educational, self-employment, health, microfinance, and other income generation activities in the districts of Howrah, Hooghly, and Purulia of West Bengal. The remainder of this chapter is organized as follows. In the next section, we present the literature review. The basic model of the empirical analysis is discussed in the next section. This is followed by the description of data and empirical results in the subsequent sections, respectively. The major findings of the study are summarized in the concluding section.

2 MFIs in Rural Financial System

India's formal financial sector consists of a vast network of commercial banks, regional rural banks, and cooperative banks. Banking sector has been evolved through a series of policy interventions. The main emphasis is to provide financial services to the poorer sections of society. Unfortunately, despite such a huge network of banking infrastructure, a large section of rural populations continued to remain outside horizon of formal banking systems. As an alternative policy measure, a new delivery mechanism was introduced for saving and loan products. This led to the emergence of SHG-Bank linkage program that enables banks to

reach poorest of the poor. The program was launched by NABARD as a pilot project in 1992. Currently, the SHG-Bank linkage program contributing around 60 % of the loan portfolio. However, this mechanism of directing credit has suffered from the mismatch between what the poor people needed and what conventional financial institutions could offer.

MFIs play an important role in bridging the gap between formal financial institutions and rural poor. Lending money to rural poor is costly activity which affects the financial sustainability of MFIs. In several countries, completions among MFIs have increased rapidly that led to lower interest rates, more efficiency, and introduction of new financial services. MFIs in India are heterogeneous in nature and only a few of them have managed to reach among poor with substantial volume of credit. For others, operating in a limited geographic boundary and with little amount of credit. The activities of MFIs are basically concentrated in southern states compared to other parts of the country. The top 10 MFIs have been able to reach 2 million poor customers. Interests charged by the MFIs are exorbitantly high, which vary from 20 to 30 % range. There are many activities like petty trade in which interest charged by MFIs to microenterprises run by poor exceed 20 % per day. In livestock rearing activities they charge 10 % per month. For agriculture activities, interest rate comes down to 40–50 % per annum. The rate of interest seems to come down as capital investment goes up. In our study, none of the microentrepreneur managed to earn Rs 30,000 per annum with an average income of below Rs 2,000. This income is not sufficient enough to run their families single handedly. Thus, the families remain poor, while they are paying higher rate of interest.

In India, majority of the MFIs are operating as nonprofit organizations, which is registered as nonbank financial companies (NBFCs), section 25 companies, societies, and trusts. Indian microfinance industry witnessed a spectacular growth in the last decades with an average portfolio size doubling in a year-on-year basis, which is likely would cross Rs 1.4 crore or \$30 billion in 2014. Andhra Pradesh ranks at the top in terms of MFI penetration at state level, followed by Orissa, Karnataka, Tamil Nadu, and West Bengal. The three states from south India namely, Andhra Pradesh, Karnataka, and Tamil Nadu, are contributing around 60 % of loan portfolio of MFIs. Easy availability of loans from banks, both public and private, helps Indian MFIs to grow at such lightening speed. Banks have to oblige the priority sector lending requirements set by the RBI, which promote banks to lend to MFIs for financial deepening in rural areas. India's prominent MFI are Bandhan, Share, Spandana, Basix, and SKS Microfinance.

The biggest problem facing by the borrowers from MFIs is that they have to pay periodic interest payment even if they fail to do so. As a result, a young entrepreneur fails to focus on innovation and expansion of his business as monthly interest payment looms unavoidably large. This has ignored the result oriented task of increasing profits. Unfortunately, MFIs serve upper half of the poor living below the poverty line and only half of the loans are used for business purposes. The cooperative-based microfinance could provide requisite institutional structures to solve the existing problems facing by microfinance industry.

Regarding credit delivery of MFIs to SHGs, it is noticed that the group members have to save a minimum of Rs 10 for the period of 6 months. After that SHGs get the eligibility to apply for loans from MFIs. The loan amount is four times the amount saved. It is mandatory that the SHGs must maintain an up-to-date resolution (copy) of their meetings and a regular group meeting should be held every month. There exist two systems of repayment of loan, daily and weekly. This is a collateral free loan in which cashier or secretary should act as the guarantee. The processing of loans takes around 1 month.

3 Lending to Women

Commercial banks in India have traditionally been focussed on men clients for lending who control most of the formal businesses. Women control a large segment of informal business both in rural and urban areas. They often fail to sustain their business due to the shortage of funds. Microfinance intends to bridge the gap between demand and supply of credit for women borrowers. MFIs consider women as their trustworthy clients. Most of the clients of MFIs represent women because of better utilization of funds, enabling them to do better business, which in turn resulted in higher repayments rates. When women work as groups lends are not at all worried about defaulters. Lending to women has been found to have positive impact on social protection. Research has shown that a woman contributes a significant portion of their income for household consumption compared to the income of male counterparts. Income of women microentrepreneurs used in supporting childrens' education, health, and nutrition (Littlefield et al. 2003). MFIs prefer women not only because they are secure and utilize their loans properly, but they are easily handled or managed. Women spent most of their time at home and prefer to work as a group. Credit to microenterprises has become an important issue over the past two decades. Women largely depend on their own capital, in some cases they are taking loan from their family members for investment. Smaller amount of investment limit women to involve in low return activities using fewer equipments and low quality raw materials. Women need access to small amount of loan for working capital, frequent repayment schedule, simpler application process, and improved access to saving account. They need awareness, motivation, technical skill and most importantly support from their family members, government, and other agencies.

4 Micro Enterprises in India

The microenterprises which play a vital role in Indian economy comprise a wide variety, ranging from artisan-based cottage industries and household enterprise to small-scale manufacturing firms. These enterprises which have been mobilizing

skills, capital, growth, and products or services, especially in the rural areas have a vast diversity when it comes to ownership, organizational structure, financial status, and technologies. These enterprises are generally independent in decision making and have little market share in financial terms. Microenterprises which are next to agriculture in providing employment use skills that are carried on from one generation to other, with minimum modification. From 1967 onwards, Indian Government reserved certain items exclusively to be manufactured by small enterprises, considering the employment generation. Starting with 47 reserved items, the numbers have increased to 800 which comprise over half of India's industrial production and almost one-third of export revenue. The government policy concentrated on catering employment and demands of growing population, through these enterprises, rather than to make an effort to modernize their units and make them capable of a healthy competition with medium and large industries in India and outside. The outdated technologies, poor management, and declining labor productivity are nullifying their profits. Liberalization has increased problem for microenterprises. The new market paradigm which favors the strong large and medium industries is gradually eating away profits of microenterprises. The small enterprises are also facing problems in terms of imports. In today's market, the microenterprises need to develop both quality and productivity and also take care of the changing demands, that is, they need to be competitive to thrive in the market.

5 Rural Women Entrepreneurship

The basic objective behind motivating women to enter into entrepreneurship is to provide better family support (Bharathi and Indira 2005). In developed countries, women entrepreneurs have significant contribution in economic development. Increase in work participation helps women to contribute to their family income and empower economically. Women entrepreneurship is perceived as an important tool for empowerment, effectively increases women participation in intra-household decision making, and allows them to access information. The ownership and control over various assets enabling her to take decisions that makes a women entrepreneur more powerful. Economic independence gives automatic women empowerment, enabling self-employed women to get better status, and take decision in family matters. The indicators of progress of society come into the form of plans, policies, legislatures, and laws, which are fructified only when women receive economic power in their hands. This resulted in upliftment of women status by providing economic independence. Empowerment process works in a chain system, where a beginning ends in a change, the change again leads to another beginning. This process also helps in indentifying areas to be targeted, planning strategies for action, and outcomes. Empowerment has to be tailor made to suite clients. Women are often keen to undertake income generating activities, particularly those who are not able to meet their basic needs and are unable to help

their family. However, several constraints restrain relative to those of men (Kantor, 2002). Hence, an integrated package beyond training in entrepreneurship, technical skills and provision of microcredit facilities must be provided. Entrepreneurship Development Programmes (EDPs) with women are conducted all over India. A number of institutions and NGOs are promoting EDPs. In spite of the above-mentioned efforts, the progress of encouraging women to entrepreneurial vocations has not been significant.

Rural areas characterized by fragile resources, low income, weak capital base, and low productivity, which led to situation of perpetual poverty. Rural women constitute a majority of total female population of the country. They are disadvantage on any given indicators of development compared to her counterpart. The proportion of women in small and microenterprises are very small. In general, women are active in the areas that are low in investment and are less risky. In every stage of their business, they are facing constraints like social and cultural barriers, educational barriers, infrastructural barriers, and so on (Kumbhar, 2013). Due to these constraints, women entrepreneurs do not constitute a homogeneous group. There is no single type of microentrepreneurs: they differ in social background, level of education, experience, and age. In spite of this, for women microenterprise ownership has emerged as a strategy of economic survival.

6 Methods

6.1 Study Area

The present study was conducted in Howrah district of West Bengal state of India. One part of the district is dominant in industry while other part is agriculture based. The rationale behind the selection of district is the presence of rural microentrepreneurs due to its proximity to industrial city Howrah. SHG- based microfinance programs are active in this district. This apart, Bandhan, one of the top microfinance institutions in the world commenced its operation in Howrah district. The district is bounded by Hooghly River in East and two districts, north 24 Parganas and south 24 Parganas on the west, Hooghly district in the north and Midnapur district in south. The district consists of 14 community development blocks. Among them one block (Udaynarayanpur) was selected for the study, which contains 11 gram panchayats. Udaynarayanpur's economy is predominantly rural based, and agriculture is the main source of livelihood for the people. The study was conducted in collaboration with a nongovernment organization named Agradut Polly Unnayan Samiti. The organization has its base in the village Gaza of Udaynarayanpur block and has started promoting SHGs in 1996 with an objective of microentrepreneurship development in rural area. Since then, it has been providing support in the area of skill upgradation programs in Zori embroidery work, sanitary napkin production, detergent making, and incense stick making to micro entrepreneurs.

6.2 Data Collection

Empirical research in rural sector generally tends to draw on household survey data. Household data are helpful to understand the determinants of credit led development and to identify constraints on the wellbeing of the people related to household characteristics. The current research draws on data collected from rural sector micro enterprises in Howrah districts in January and February 2011. Data were collected with a structured questionnaire. The questionnaire consists of three parts: The first part of the questionnaire addresses the sociodemographic condition of the respondents, the second part is designed to collect information on entrepreneurship characteristics and the third part consists of questions related to living conditions. In this way, the information on household characteristics, remuneration, financial performance etc., are provided by the microentrepreneur themselves, thereby generating better quality data on their personal characteristics.

The hypothesis of our study is that access to microfinance institutions (MFIs) have significant income effect on the microentrepreneurs compared to those who runs business by managing funds from own sources. The data were collected from 75 SHGs selected from 16 villages in the district of Howrah. The multistage random sampling technique was used, where in the first stage sample was purposively selected from seven villages from Udaynarayanpur block in Howrah district. In the second stage, sample was collected randomly from each group. Once the survey data had been processed, the database contained personal and occupational characteristics (sex, age, family member, education, experience, and nature of business) and employer characteristics (sales, profit, number of employee etc.) for a sample of 200 microentrepreneurs. One of the main limitations of the survey is the absence of a pure control group for comparison. Still attempts have been made to include microentrepreneurs who are running their business without borrowing money from microfinance lenders.

6.3 Variable Definitions

The first definition is used to investigate the effect of accessing MFI on earnings. Access to MFI is defined as whether microentrepreneurs have taken a loan from MFIs production purpose. The respondents provide information on their socio-economic characteristics and business-related characteristics. They were also asked about their credit position and their willingness to take credit in future. The socioeconomic characteristics include respondents' age, education, personal, and household income. Business-related questions are the type of business they are currently operating, training received for the business, knowledge in banking operation, and years in business operation.

Table 1 provides information on detailed list of variables used in this study. Two sets of independent variables are included in the regression analysis:

Table 1 Variables definitions

Variable Name	Definition
Age	Age of respondent in years
Below 30	1 = Below 30, 0 = otherwise
31–40	1 = 31–40 years, 0 = otherwise
41+	1 = Above 40 years, 0 = otherwise
MFI borrowing	1 = Borrowed from MFI, 0 = otherwise
Gender	Sex of respondent; 1 = male, 0 = female
Household	Household size (in numbers)
Education	Education level of the respondents
Illiterate	No education; 1 = Yes, 0 = otherwise
Primary	Primary education; 1 = Yes, 0 = otherwise
Higher primary	Higher primary; 1 = Yes, 0 = otherwise
High school and above	Secondary and above; 1 = Yes, 0 = otherwise
Personal income	Personal income in Rupees per month
Below 3,000	1 = less than Rs 3,000, 0 = otherwise
3,001–6,000	1 = Rs. 3,001–Rs 6,000, 0 = otherwise
6,000+	1 = Above Rs 6,000, 0 = otherwise
Household income	Household income in Rupees per month
Below 3,000	1 = less than Rs 3,000, 0 = otherwise
3,001–6,000	1 = Rs. 3,001–Rs 6,000, 0 = otherwise
6,000+	1 = Above Rs 6,000, 0 = otherwise
Business operation	Number of years in business
Below 5 years	1 = Below 5 years experience, 0 = otherwise
6–10 years	1 = 6–10 years experience, 0 = otherwise
10+	1 = More than 10 years experience, 0 = otherwise
Enterprise type	Type of enterprise operating (1 = Trading, 0 = Manufacturing)
Asset holding	Asset owned by the respondent (1 = Yes, 0 = otherwise)
Training	Training before doing the business (1 = Yes, 0 = otherwise)
Banking operation	Knowledge in banking operation (1 = Yes, 0 = otherwise)

first set related to respondents socioeconomic characteristics and those related to business conditions of the respondents.

Findings of the Survey

This section presents the main findings of the survey, by socioeconomic characteristics, and factors affecting their earnings. Summary statistics of the variables including the percentage distribution of the respondents is presented in Table 2.

6.4 Socioeconomic Profile of Microentrepreneurs

In line with expectation, the majority of the microentrepreneurs in the sample in the survey are women. They constitute 87 % of the total sample, while the remaining 13 % are male microentrepreneurs. Respondents in our survey had average age of 34 years. The largest proportion of the sample entrepreneurs (42.5 %) was below 30 years, followed by the members in the age 31–40 years age bracket (39.5 %) and more than 41 years age group (18 %). Thus, it represents that with the advancing age older people tend to leave the SHGs. The decline in membership of SHGs is due to old age that could not save regularly and cannot take the risk of running business (Fig. 1).

Education

The importance of education for entrepreneurship has been widely acknowledged. Education pulls individuals out of agriculture too nonagriculture activities. However, the impact of education on the choices between wage work and starting businesses is ambiguous. Education helps to develop different dimensions of entrepreneurship, which in turn helps to generate higher profits. In our study, education of entrepreneurs is classified into four categories: illiterate, primary education, higher primary and high school, and above. The educational status of the respondents suggests that about 10.5 % are illiterate. A large section of the sample (8.5 %) studied up to primary level and 35 % members completed higher primary levels. Only 16 % members finished High School and above (Fig. 2).

Income

Majority of the households are living on subsistence income level. The average household income is around Rs 4,700.00 per month. The household of 40 % respondents earn below Rs 3,000 per month. In the next income level, 48.5 % entrepreneurs fall in 3,001–6,000 income brackets. Only 11 % entrepreneurs

Fig. 1 Classification of entrepreneurs on the basis of age

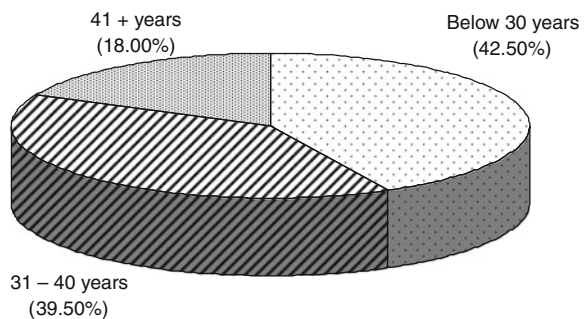
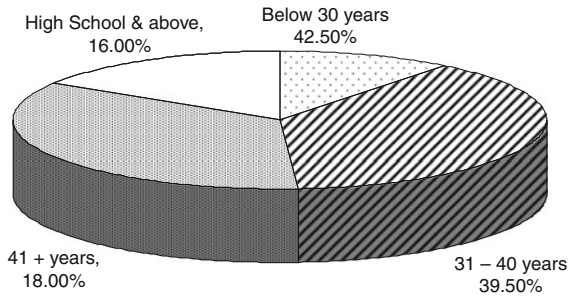


Fig. 2 Classification of entrepreneurs on the basis of education



managed to earn more than Rs 6,000 income per month. The level of personal income is abysmally low among the sample. Personal income of the entrepreneurs is equivalent to the income from their venture if the other sources are ignored. The average personal income is around Rs 2,000 per month. The maximum and minimum income varies between Rs 28,000 and Rs 300, respectively. And 54 % of entrepreneurs earn below Rs 1,000 income per month, 32 % earn between 2,001 and 2,000, while only 14 % earn above Rs 2,000 income per month (Fig. 3).

Family Size

The average size of the sample is four persons per households. Percentage distribution of data according to various categories shows 60 % of the total sample belong to the medium category where the family size in 4–5; and 6 % belongs to the highest category where the family members are above 5 and remaining 34 % of the total sample belong to the least category where the family members are 1–3 (Fig. 4).

7 Business-Related Issues

Business Operations: The 55.5 % members are involved in business and they have an experience of below 5 years; 31.5 % of the total entrepreneurs have an experience of 6–10 years and the remaining 13 % have experience in business more than 10 years (Table 3).

Type of enterprise operating: Microentrepreneurs often unable to select type of business to get in and often they invest in wrong businesses (Sapovadia 2007). As a result in most of the cases they fail to grow their business as well as their livelihood. Majority of the members that are 68 % are involved in trading business, whereas the other 32 % members are involved in manufacturing trade (Table 4).

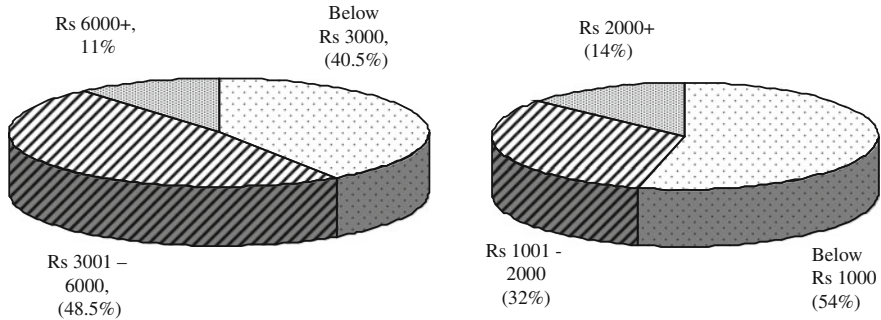


Fig. 3 Classification of entrepreneurs on the basis of household income

Fig. 4 Classification of entrepreneurs on the basis of family size

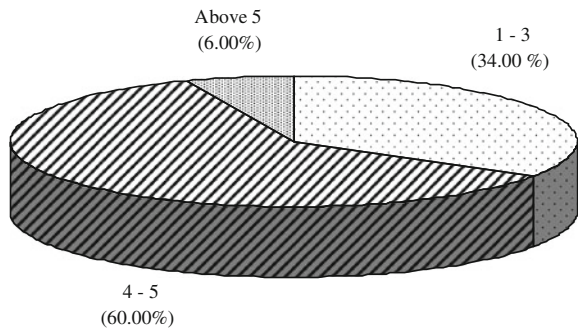


Table 2 Descriptive statistics of selected characteristics of microentrepreneurs

Variable name	Variable description	Mean	Standard deviation	Maximum	Minimum
Age	In years	33.7	8.9	62	19
Education	Years of schooling	2.6	0.9	4	1
Family size	Number of family members	3.9	1.0	9	2
Earning members	Number of earning members in a family	2	0.5	5	1
Personal income	Rupees per month	1884.6	2831.6	28,000	300
Household income	Rupees per month	4718.2	3557.4	30,000	450
Per capita household income	Rupees per month	1217.1	838.47	7,500	112.5
Business operation	Number of years involved in business	6.9	5.6	0.6	30

Note Exchange rate at the time of survey US\$ 1 = Rs 55.00

Banking operation: Rural people are facing severe obstacle in accessing financial services from formal sector. The 51.5 % of the sample size can access the banking services, whereas the other 48.5 % members could not operate the bank account (Table 5).

Table 3 Classification of entrepreneurs on the basis of previous experience

Business experience	Percentage of entrepreneurs
Below 5 years	55.50
6–10 years	31.50
10+	13.00

Table 4 Classification of entrepreneurs on the basis of type of enterprise operating

Type of enterprise operating	Percentage of entrepreneurs
Trading	68.00
Manufacturing	32.00

Training: Access to training plays an important role for rural entrepreneurs by opening more opportunities to survive into a competitive market. Over 52 % of the sample size can access the training, whereas 48 % are unable to avail the training (Table 6).

Asset Holding: As far as ownership of asset holding is concerned, 31.5 % of the samples have their own assets while 68.6 % do not have any asset at all (Table 7).

Types of Business

Economic activity of borrowers is presented in Table 8. There are two categories of microfinance loans, agriculture and non-agriculture loans. Majority of the members are involved in Petty trade (71 %), which includes vending or selling items in the locality or fair (mela). This is because of small working capital loans, high turnover as well as higher profit margin. All these parameters help borrowers to repay their loan regularly. Over 16.6 % borrowed money to run small-scale household industry, which includes artisan (zori work, detergent making, incense stick making, papad etc.), barber, local beverage production etc. Only 7 % respondents borrowed money for agriculture purpose. In the study area, agriculture includes the production of rice, wheat, potato, mustard seed etc. In agriculture sector, default rate for microfinance loans is higher. Other categories include

Table 5 Classification of entrepreneurs on the basis of knowledge in banking operation

Banking operation	Percentage of entrepreneurs
Yes	51.5
No	48.5

Table 6 Classification on the basis of training received

Training	Percentage of entrepreneurs
Yes	52.00
No	48.00

Table 7 Classification on the basis of asset holding

Asset holding	Percentage of entrepreneurs
Asset owned	31.5
No asset owned	68.6

animal husbandry, fishery, services and other activities, which contribute only a miniscule percentage.

7.1 Income Effect After Joining SHGs

Table 9 investigates appreciation in income after joining groups for various categories of trade. In general, there has been a significant jump in income after joining group for almost all categories of trade. This shows a positive relationship between income and microfinance linkage. Over all, every SHG members considered in the sample had been able to enhance their income level after joining groups. Higher mean monthly income by the SHG members after joining groups and microfinance linkage indicated the positive impact of the program as resource mobilization by MFI due to increased standard of living. From the following table, it reveals that the MFIs had extended loans to the SHG members for initiating various income generating activities like agriculture, animal husbandry, petty trade, services, and others. Loans were utilized for purchasing of inputs for agriculture, animal husbandry, selling items at different locations and bazaars etc. Highest appreciation in income seen for animal husbandry household industry (56.25 %), followed by pretty trade (52.58 %). Service business witnessed slowest growth in income after joining groups (27.58 %).

Table 8 Purpose of taking loan and income

Purpose of taking loan	Percentage of respondents
Agriculture	7.0
Animal husbandry	2.0
Fishery	0.5
Household industry	16.5
Petty trade	71.0
Services	1.0
Others	2.0
Total	200

Table 9 Purpose of loan and income effect

Purpose of taking loan	Monthly income before joining groups (Rs)	Monthly income after joining groups (Rs)	Percentage change in income
Agriculture	607.14	1239.29	48.99
Animal husbandry	450.00	800.00	56.25
Fishery	300.00	800.00	37.50
Household industry	1421.21	2684.85	52.93
Petty trade	954.88	1815.96	52.58
Services	250.00	900.00	27.78
Others	350.00	700.00	50.00
Total	975.07	1862.31	52.36

7.2 Profitability Analysis

Microentrepreneurs enjoy an encouraging profit margin from their business. The profitability calculated here as net profit divided by sales. Only 18.4 % entrepreneurs generate profit margin less than 20 %, while the highest 33.3 % entrepreneurs generated profit margin of more than 60 % (Table 10). Higher profitability is not reflected on their household income, because the capital use in business is tiny amount and if their own labor cost is considered the profitability rarely to beyond subsistence level. In many cases, it is found that microentrepreneurs rarely keep their accounts.

7.3 Business Constraints

When investigating the constraints in doing business, a large number of respondents (44.5 %) express concern about the shortage of funds in doing business (Table 11). The second constraint is the large number competitors. They often fail to compete with the large entrepreneurs. Nonavailability of raw materials, lower market demand, and inability in going far away markets are the other constraints which affect the business adversely.

Table 10 Distribution of profit margin from business

Profit margin (%)	Percentage distribution
Below 20	18.4
21–40	19.5
41–60	14.4
Above 60	33.3

Table 11 Constraints in doing business

Constraints	Percentage
Many competitors	25.5
Nonavailability of raw materials	15.0
Shortage of funds	44.5
Low market demand	2.5
Inability in going far away markets	2.5
Others	10.0
Total	100.0

8 What affects earnings of rural micro-entrepreneurs?

Model

In the next step, we analyze the data more formally in an ordinary least square regression framework, where the incomes of individual entrepreneurs are regressed on a vector of their characteristics (both socioeconomic and business). The strategy is to estimate the impact of access to credit from MFI on earnings of the microentrepreneurs. We divide rural microentrepreneurs into two groups, one consists of 159 microentrepreneurs, who are running business using MFIs fund, while the rest running business from own sources. The basic earning for individual i is estimated below.

$$Y_i = \beta_0 + \sum_{j=1}^J \beta_j X_{ij} + \epsilon_i, \quad \text{where } i = 1, \dots, N, J = 1, \dots, J$$

where Y is the natural logarithm of monthly earnings from business; X_{ij} is a $(n \times 1)$ vector of observations on each explanatory variable indexed by j and ϵ is a $(n \times 1)$ vector of random disturbance terms. The β coefficients give the estimated vector of determinants includes age, education, gender, training, MFI borrowings, business operation, types of business, asset holdings, and knowledge in banking operation. The estimated results are reported in the following section.

In Table 5, we represent the regression analysis to investigate the quantitative assessment of the impact of MFI loan on earnings of microentrepreneurs. Overall, the model fits the data well and most of the coefficients have expected signs and level of significance. The overall earning difference is 66 %¹ (Model 1 in Table 5). In order to investigate the impact of socioeconomic characteristics on earnings, the initial earnings equation is expanded with a range of socioeconomic characteristics. Controlling socioeconomic characteristics the gap is reduced to 38.6 % (Model 2 of Table 5). Thus, socioeconomic characteristics play an important role in reducing earnings of the microentrepreneurs. If one further control for business-related characteristics the gap marginally reduced to 37 % (Model 3 in Table 12).

¹ Conversion of log difference to percentage difference is conducted by using the formula $[\exp(.) - 1]$.

Table 12 Earning equation (Dependent variable: log monthly personal income)

Independent variable	Model 1	Model 2	Model 3
MFI borrowing	0.661* (5.018)	0.386* (4.184)	0.371* (4.052)
Age (Below 30 Years)			
31–40		0.142* (1.713)	0.110* (1.768)
41+		0.034 (0.280)	0.028 (0.225)
Gender		–1.626* (–11.843)	–1.661* (–12.292)
Education (Illiterate)			
Primary		0.141* (2.229)	0.204** (1.567)
Higher primary		0.184* (2.857)	0.206* (2.191)
High school and above		0.236* (1.674)	0.246* (1.875)
Business operation (Below 5 years)			
6–10 years			0.081** (1.943)
10+			0.137* (1.622)
Type of enterprise			–0.128 (–1.662)
Asset holding			0.073* (1.995)
Training			0.173* (2.238)
Banking operation			0.128* (0.966)
Constant	6.590* (56.117)	8.258* (45.012)	8.621* (41.287)
Number of observation	200	200	200
F stat	25.117	41.714	24.655
Adjusted R^2	0.408	0.603	0.607

Note *Statistically significant at the 0.01 level

**at the 0.05 level of significance

Industry and regional figures are included to preserve space
Omitted variables serving as reference are shown in the parentheses

Thus, business-related characteristics seem to play an insignificant role in reducing earning difference.

The basic model (Model 3) examines the combined effect of personal and business-related characteristics of the respondents. As regard socioeconomic characteristics, earning increases with successive higher age groups. The estimated coefficient for female variable is significantly negative, which indicated that

women entrepreneurs earn low income compared to male entrepreneurs. Generally, women entrepreneurs have lower expectation from business compared to male entrepreneurs. They are likely to set limits beyond which they do not want to expand their businesses to ensure that they do not adversely affect their personal lives (Cliff 1998). The success of entrepreneurship increases with education, as positive association is obtained between successive higher levels of education and earnings. Earnings of microentrepreneurs increase significantly with the successive higher experience level in business. Respondents involved in trading business earn significantly less than those involved in manufacturing business. The risk of doing manufacturing business is higher compared to trading business; hence, higher income can be expected if successfully operated. As expected, the prior training in doing business is associated with higher earnings. Lastly, respondents are better off if they have knowledge in banking operations. Knowledge in banking operations helps one to understand the benefits of financial opportunities. This analysis leads to the conclusion that the earning difference between MFI borrowers and non-borrowers results primarily from the impact to microfinance linkage on business and earning of the individuals. Aside from structural characteristics (socio-economic), the earning difference is primarily attributable to the advantage of microcredit on business operations.

9 Summary and Conclusions

Microfinance and microentrepreneurship follows a common objective of rural development, poverty alleviation, and employment generation. Poverty alleviation can be achieved through employment generation. Microfinance emphasizes the development of rural microentrepreneurs by strengthening the linkage between agriculture and industry. The form of microfinance practiced by the microfinance institutions involves small loans offered over short periods and at interest rates that are high relative to those in the formal banking sector. It is a clear example of second-generation microfinance institutions that aim for financial sustainability to avoid reliance on donor funding. The key policy question is how far this commercial orientation dilutes the poverty reducing and welfare improving goals that are associated with the microfinance movement. This study addresses this issue empirically by linking the bank's lending activity with progress on a range of indicators that are consistent with progress toward the welfare enhancement that form the centerpiece of the government's poverty reduction strategy. The empirical analysis here provides strong evidence that access to the microcredit program has had positive impacts on monetary measures of welfare on aggregate for rural households participating in the program. There is a positive impact on measures of income generating activities for microenterprises or agricultural activities. In relation to nonmonetary measures, access to loans does appear associated with a higher probability of social indicators. Traditional education does not affect significantly with successive higher education groups. Earning increases significantly

with successive higher experience in the existing business. Respondents involved in trading business earn significantly less than those involved in manufacturing business. The risk of doing manufacturing business is higher compared to trading business; hence, higher income can be expected if successfully operated. As expected, the prior training in doing business is associated with higher earnings. Lastly, respondents are better off if they have knowledge in banking operations. Knowledge in banking operations helps one to understand the benefits of financial opportunities. The result should provide information to policy makers to design strategies on financial inclusion. A microentrepreneur should be able to scale up production when offered larger amount of loans, by hiring inputs from relevant markets.

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SHGs for Poverty Alleviation: Insights from a Tamil Nadu Village Under Rapid Economic Development

Koichi Fujita and Keiko Sato

1 Introduction

The full-scale economic liberalization in India since 1991 has been largely successful in terms of accelerated economic growth,¹ but it should be emphasized that the broad-based agricultural development in the preceding 1980s in India paved the way to such a growth. The second wave of the Green Revolution, took place in India in the 1980s, covering most of the major crops and most of the rural area, did have a substantial impact on rural income.² Poverty reduction thus attained in rural India became an important prerequisite for the accelerated growth after 1991 since rural India provided a good market for products and services for the nonagricultural sectors (Fujita 2010).

Since the mid-1990s Indian economy entered a new stage of development. Agricultural sector growth decelerated to 2–2.5 % per annum, mainly due to the sluggish growth of demand for foodgrains. Rural–urban income disparity expanded rapidly, inducing accelerated internal labor migration. Such a phenomenon was typically observed in south India. In Tamil Nadu, for instance, the farm household income data collected since 1971 by the Cost and Cultivation of Principal Crops Scheme showed that a sharp increase was observed in nonfarm income vis-à-vis farm income for the sample farm households since the mid-1990s

¹ After the mid-1990s the overall economic growth rate in India jumped to 6–7 % per annum.

² Note that the Green Revolution benefitted not only landowners and owner-farmers but also rural households in general, including tenants and agricultural laborers, because various linkage effects of the Green Revolution worked, such as backward linkage, forward linkage, and most importantly the ‘final demand effect’ of the revolution.

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(Kajisa and Palanichamy 2006). After the mid-1990s, the development of nonfarm sectors started to affect rural areas more directly in Tamil Nadu.³

On the other hand, the Self-Help Groups (SHGs) became the most popular micro-finance scheme in India after the 1990s. An SHG is a village-based financial intermediary usually composed of between 10 and 20 local women. Members make small regular savings, which are lent back to the members for any purpose. Besides, members can get bank loans through the ‘SHG-Bank Linkage Program’ of the government if they show good performance for the first several months. The SHG is a mixed program for mutual-financing and delivery of bank loans.

As of March 2010 there were nearly 7 million SHGs in India, representing 97 million members who took loans from banks (NABARD 2010). This figure does not include SHGs that did not borrowed. The ‘SHG-Bank Linkage Program’ since its inception has been dominated by the south Indian states of Andhra Pradesh, Tamil Nadu, Kerala, and Karnataka. These states accounted for 76 % of the SHG-linked bank loans in 2009–2010. Tamil Nadu is one of the most active states for delivering bank loans through SHGs.

SHGs are usually organized by NGOs. In Tamil Nadu, for example, Dhan Foundation, a Madurai-based NGO, has a SHG project since 1990 called the ‘*Kalanjiam* Community Banking Programme (KCBP).’ According to its latest annual report (Dhan Foundation 2010), as of March 2010 KCBP was extended to 12 states and regions⁴ and 45 districts, and the number of SHG (*Kalanjiam*) and their members reached 28,488 and 4,85,867, respectively. The accumulated savings and reserves reached Rs. 1,928 million or Rs. 67,700 per group and Rs. 4,000 per member. In 2009–2010, a total of 17,542 loans were disbursed using their own savings (Rs. 2,238 per loan). In addition, 12,080 bank loans were disbursed to the groups, with an average amount of Rs. 1,07,120 per group.

Dhan Foundation conducted a study on the impact of KCBP, which was found significant in terms of members’ income, savings, freedom from usurious moneylenders, asset building, quality of life, food intake, and empowerment (Dhan Foundation 2004). The major purpose of SHGs is, needless to say, poverty alleviation, because poverty is still pervasive in rural India. However, since Indian economy entered a new developmental stage after the mid-1990s, the role of the SHGs may not be so straightforward. The SHGs may start to have important functions and meanings other than poverty alleviation.

The objective of this chapter is to investigate how the SHGs are actually functioning in contemporary rural India, based on a recent case study in a village in Tamil Nadu.

The composition of this chapter is as follows: In Sect. 1 outline of the study village is presented. The village households are categorized into five classes and

³ It should be noted that in Tamil Nadu as well, the Green Revolution in rice, diffused since the early 1980s until the late-1990s, raised rural income and thereby prepared for the successive nonagricultural development in the state (Fujita 2011).

⁴ Tamil Nadu, Pondicherry, Andhra Pradesh, Kerala, Karnataka, Orissa, Maharashtra, Madhya Pradesh, Rajasthan, Jharkand, Bihar, and Assam.

the job structure including migration to urban centers is analyzed. We show that getting white-collar jobs is a real route for the rural people to escape from poverty, but substantial amount of expenditure for higher education is indispensable for it. Then in Sect. 2 we analyze the role of the SHGs introduced to the village, with emphasis on who became members more, and how the policy of connecting goat rearing with SHG-linked bank loans were working in the village. Section 3 discusses the impact of SHGs by analyzing the borrowing behaviour of the villagers by class. Finally, we conclude.

2 Outline of the Study Village

The study village is located 34 km southwest (one and a half hours bus trip) from the city of Madurai, Tamil Nadu. It belongs to S *Gram Panchayat*, Thirumangalam *Taluk* of Madurai District. Nonagricultural sectors, including manufacturing industries, are well developed in Tamil Nadu. As of 31 March 2007, there were 27,385 units of ‘micro small medium enterprises (registered)’ in the Madurai District (GoTN 2009). In and around Thirumangalam Town and Madurai City,⁵ there has been a rapid growth of industries such as textile (especially hosiery and garments), food processing, paper and paper products, metal products and parts, which attracted many rural workers.

According to our survey in 2008, the study village had 134 households and 421 people, with 3.14 members per household on average. The village was basically a single caste village; 118 households (88.1 %) belonged to Telugu-speaking *Reddiyar* caste, followed by *Asari* (8 households), *Wannar* (5 households), and *Naidu*, *Chettiyar*, and *Ampattar* (each 1 household).

The total farmland owned by the villagers was 421 acres, comprising of 32 acres of tank-irrigated paddy field (*nañcai*) and 389 acres of dry land (*puñcai*). The number of landless (29 households) was not large. The average size of the land-owning 105 households was 4.0 acres, but the distribution of farmland was fairly skewed. Only 58 households owned paddy field and more than half of them (mostly owing <1 acre) rented it out to the neighboring villagers, as our study village was located a bit far from the paddy field. On the other hand, 103 households owned dry land,⁶ with large differences in their farm size (maximum 16 acres).

The climate is basically semi-arid, receiving only 900 mm of rainfall on average, which fluctuates greatly year by year. The major agricultural season is September–March, making use of rainfall brought by the northeast monsoon. Rice is the major crop in the paddy field, followed by minor crops such as millets,

⁵ The population in 2001 was 44 thousand and 929 thousand, respectively.

⁶ *Puñcai* is the land located outside the command area of tanks, part of which is irrigated by private wells.

pulses, and cotton (double cropping). Millets, pulses, and cotton are grown in the dry land as well. After harvesting crops by March, there is basically no agricultural works in the village until September.

The major income source of the villagers was therefore nonfarm, especially for young generations. Migration to urban centers has been accelerated in recent years. It resulted in an increased fallow land, which reached nearly 30 % of the total farmland in 2001 in *S Gram Panchayat* (GOI 2001). Table 1 summarized the occupational structure of the village, covering all the households. By using the wealth ranking method,⁷ we classified the households into five classes; 'upper' (15 households), 'upper middle' (17), 'middle' (37), 'lower middle,' (39) and 'lower' (26). The number of labor force was 290 (the labor force participation rate was 67 %), out of which 230 stayed in the village and the remaining 60 were migrants. The table shows that the share of agricultural workers (including farmers and agricultural laborers) among the 'in-village workers' was 79 %, whereas most of the migrants were engaged in nonfarm jobs, except one agricultural laborer. Figure 1 shows the population distribution according to decadal age group. It is evident that many young people in the 20 s and 30 s went out of the village as migrants (Sato 2011a).

In addition to the migrants shown in Table 1, we found 32 'independent migrants', who got married and formed new independent households in urban areas (Table 2).⁸ The white-collar workers accounted for 50 %, followed by blue-collar workers (37.5 %) and self-employed nonagricultural workers (12.5 %).

The differences in employment structure among the five classes can be summarized as follows. First, the 'upper' class people were engaged most in white-collar jobs, comprising of 3 in-village workers, 11 migrants, and 4 independent migrants. The majority of the in-village workers, however, were engaged in agriculture. Because they had a large farmland, they usually did only managerial work and hired agricultural laborers. Out of 18 farmers, 7 were retired persons from white-collar jobs in urban areas. After retire they returned to the village. Many of them received pension and they also played an important role as the informal leaders of the village.

Second, the 'upper middle' and the 'middle' class people were engaged mostly in agriculture (86 % of the total in-village workers for the two classes). They owned large farmland, albeit smaller than the 'upper' class, and were active in renting farmland. Goat rearing was also very popular. Many household members worked also as blue-collar workers (12 in-village workers, 12 migrants, and 2 independent migrants) and white-collar workers (1 in-village worker, 3 migrants, and 10 independent migrants). Compared to the 'upper' class, they were more actively involved in agriculture and more engaged in blue-collar jobs.

⁷ A method of classifying village households into economic classes by subjective judgment of a villager (or villagers) with good knowledge on the village matter (Gardin 1988).

⁸ They stayed in Thirumangalam Town (5 persons), Madurai City (3), other major cities in Tamil Nadu (2), small rural towns or villages in Tamil Nadu (10), and other states of India (4).

Table 1 Types of major jobs by economic class

Class	Number of house hold	Female headed-single income household	Number of workers per household	In-village workers (230 persons)				Migrants (60 persons)			
				Agriculture ^a		Nonagricultural		Daily laborers ^b		Daily laborers ^b	
				Daily laborers ^a	White collar-workers ^c	Nonagricultural self employment ^e	White collar-workers ^d	Daily laborers ^b	White collar-workers ^c	Daily laborers ^b	White collar-workers ^c
Upper	15	0	2.4	18	1	3	2	1	1	11	
U. Middle	17	3	2.35	26	6	1	2	5	5		
Middle	37	6	2.21	66	6			7	7	3	
L. Middle	39	12	2.23	42	6	11	3	18	18	7	
Lower	26	14	1.73	4	19	14		1	7		
Total	134	35	2.16	156	25	38	7	1	38	21	

Notes ^a Including livestock rearing

^b Including agricultural laborers, wood chopping laborers, construction laborers, and laborers hired by the NREGA program

^c Including workers at mill and match factories, sewing factories, restaurants, house cleaners, electricians, drivers of either track or autorickshaw, conductors, guards, quarry managers, third class civil engineers, midday meals cooks, metal workers, and washing workers

^d Including military officers, school teachers, nurses, accountants, office workers, company drivers, and second class public servants

^e Including shop owners and traders in the village

Source Fieldwork by the authors in 2007–2009



Fig. 1 Population distributions by age group in study village, *source* field work by the author in 2007–2009

Table 2 ‘Independent migrants’ from the study village

	Number of household	No. of HH having ‘independent migrants’	Type of job of ‘independent migrants’		
			White Collar Workers	Blue Collar Workers	Non-agricultural self-employment
Upper	15	5	4		1
U.Middle	17	6	5	1	
Middle	37	9	5	1	3
L.Middle	39	9	2	7	
Lower	26	3		3	
Total	134	32	16	12	4

Note ‘Independent migrants’ means migrated relatives who have independent households outside the village

Source Fieldwork by the author in 2007–2009

Third, the ‘lower middle’ class people were also engaged mainly in agriculture (68 % of the in-village workers). However, as their farm size was small they needed to find some other jobs to supplement income. Blue-collar jobs were dominant, although not-a-few people were engaged in daily labor and white-collar jobs as well. The blue-collar workers were comprised of 11 in-village workers, 18 migrants, and 7 independent migrants, and the white-collar workers were comprised of 7 migrants and 2 independent migrants, whereas 6 daily laborers were found only among the in-village workers.

Fourth, the ‘lower’ class people were working mainly as daily laborers, comprising of 19 in-village workers and 1 migrant. There were many blue-collar workers as well; 14 in-village workers, 7 migrants, and 3 independent migrants. Besides, 4 people were engaged in agriculture, although their farm size was minimal.

It should be pointed out here that many of the households in the ‘lower-middle’ (30.8 %) and the ‘lower’ (53.8 %) classes were the so-called female-headed households (Table 1). They were the poorest in the village, same as observed extensively in rural India.

Although the number of daily laborers in the study village was small, if we include workers whose main job was not daily labor but occasionally worked as daily laborers for supplementary income, nearly 100 such people were found. There were many such people engaging in agricultural labor only in the peak seasons, especially among the small farm households. Daily labor was still a very important source of income for the poorer households in the village.

Generally speaking, the type of job is the major determinant of income level. Monthly income was as follows: Rs. 10,000–50,000 for the white-collar workers, around Rs. 5,000 for the blue-collar workers and Rs. 1,200–2,500 for the daily laborers. Without doubt, the white-collar workers enjoyed extraordinary high and stable income, compared to other jobs. However, higher education is indispensable for getting remunerable white-collar jobs; at least HSC/ITI or even a college/university degree is required. By contrast, the average years of education for the workers in agriculture⁹ and daily laborers ranged between 5 and 6 years, indicating either primary school graduates or middle-school dropouts.¹⁰ It should also be noted that even the blue-collar workers, especially among younger generations working as migrants, had the title of SSLC or more.

Note here that the education system in Tamil Nadu is started from primary school (1st–5th) and middle school (6th–10th). After graduating 10th standard if students passed the official examination, the Secondary School Leaving Certificate (SSLC) is granted. Then, students can choose to proceed to the higher secondary education for another 2 years to obtain the Higher Secondary Certificate (HSC), or take a 1–3 year vocational course at Industrial Training Institutes (ITI).¹¹ HSC is necessary for applying to college/university, usually a 3–4 year degree program.

The cost of education has been surging in recent years in Tamil Nadu, especially if children go to private schools. For instance, a private English school in Thirumangalam Town, offering courses from the preschool (2 years before primary school) up to the higher secondary level, attracted many parents in wealthy households,¹² including the study village. At the time of our survey, 10 students went to that school, but all of them belonged to either ‘upper’ or ‘upper-middle’ class. The children commuted to the school from preschool or primary school level.

If children go to public schools, the cost of education was much lower; tuition fee for the primary education (1st–5th) was free, together with text books and lunch. But the education cost gradually rises after that. Parents had to pay tuition

⁹ One of the major reasons why the workers in self-employed agriculture were relatively uneducated was that they were usually aged people.

¹⁰ A primary-cum-middle school (up to 8th standard) was established in the village during the 1990s and almost all the children finished at least up to the middle school level by 2008 when we started survey.

¹¹ ITI is the government or private owned training organization that provides post-school technical training.

¹² The education cost was very high. The entrance fee and the annual tuition fee of the preschool, for instance, were Rs. 2,000 and Rs. 6,000, respectively.

fee, worth Rs. 500–650 for the 6th–8th standard and Rs. 700–900 for the 9th–10th standard. The cost for the higher secondary school education is much higher.

The entrance to college/university depends on the mark attained in the official examination (for HSC) but the condition for the placement differs depending upon the caste categories.¹³ The annual tuition fee at the college/university becomes very expensive, ranging from Rs. 60,000 (Bachelor of Science) to Rs. 2,60,000 (Bachelor of Information Technology) for 4 years. Expenditures other than tuition fee such as living expenses, however, are relatively small, since students usually stay in their relatives' house or in the university hostel.

Given that the monthly income of around Rs. 5,000 and Rs. 1,200–2,500 for the blue-collar workers and daily laborers, respectively, there was almost no room left for saving money to cover the cost of higher education. Even for the white-collar workers with monthly income exceeding Rs. 10,000, educational expenditure was a burden if children go to universities. Furthermore, after graduating from college/university, in order to get white-collar jobs, especially in the government sector, a recommendation from a person (generally a relative or friend of parents) with special connection is indispensable (a commission of roughly Rs. 50,000 was to be paid).

Table 2 shows the sources of financing the expenditure for higher education by economic class. Most of the 'upper' class people did not face serious problem because they could use their salaries as white-collar workers or draw their savings. However, for the 'upper-middle' class people, cases of financing by their own savings were limited and many had to borrow from relatives (most of them worked as blue-collar workers). For the 'middle' class people, bank loans or goat sales were the major sources.

In sum, in order to escape from poverty in real sense by obtaining white-collar jobs, higher education of at least 12th standard (escalated to university graduation for another 4 years recently) was necessary with a huge amount of expenditure. It was almost impossible for the 'lower-middle' and the 'lower' classes to bear the cost. Even the 'upper-middle' and the 'middle' classes were suffered from financing it.

3 Functioning of SHGs in the Study Village

At the time of the survey in January 2010, there were 7 SHGs in the village, organized and monitored by the two NGOs and one governmental organization; 5 groups (79 women) by the People's Association of Rural Development (PARD),¹⁴ 1 group (18 women) by the Association for *Sarvo Seva* Farms

¹³ The Tamil Nadu reservation policy determines the minimum score for placement at state universities: 60 % for students of Forward Caste (FC), 55 % Backward Caste (BC), 50 % for Most Backward Caste (MBC), and 'Pass' (regardless of marks) for Scheduled Caste/Scheduled Tribe (SC/ST).

¹⁴ PARD is a Madurai-based NGO for rural development. Micro-finance is one of their activities and they supported 263 SHGs. They have a training center for promoting women's livelihood (Squido 2010).

(ASSEFA),¹⁵ and 1 group (15 women) by the Tamil Nadu Corporation for Development of Women Ltd. (TNCDW).¹⁶ ASSEFA was the first NGO to organize 2 SHGs in 1992 in the village. Then, PARD organized 6 SHGs by 2004. Finally, TNCDW organized an SHG in February 2006. In 2007, however, one SHG under ASSEFA and PARD each stopped their activities due to some internal troubles. Moreover, as PARD announced withdrawal from the SHG program in 2009, the remaining 5 SHGs, after consulting with a SHG federation, changed the NGO from PARD to the Dhan Foundation.

The SHGs in the village have been working as follows. Monthly saving per member was Rs. 50–60. The savings were lent back to members at 2 % per month interest. When they received a bank loan from various national banks such as State Bank of India, Canara Bank, and Indian Bank, the interest was 1 % per month. In fact, all the members of the 7 SHGs received bank loan at least once (usually several times). The SHG is instructed to terminate itself after 5 years (the accumulated savings and interest are then distributed equally among the members), but if the members want to continue, they can start a new SHG.

Table 3 shows the distribution of SHG members (all were women) among the five classes. First, it can be pointed out that despite the government's intention, the SHG members were not mainly from the poor households. On the contrary, the percentage of households with SHG members was the highest among the 'upper middle' and the 'middle' (more than 70 %) classes. By contrast, the case of the rest three classes was only between 40 and 55 %. Second, there were 22 women who participated in 2 SHGs and 9 women who participated in 3 SHGs.

The Indian government has been promoting livestock rearing among the rural poor through micro-finance programs, including the Integrated Rural Development Program (IRDP) since 1978 until the end of the 1990s.^{17,18} Such an idea was succeeded to the SHG program. In fact, the SHG members of the study village were instructed to purchase goats at least when they got the first loan. For the purpose of monitoring, a veterinary doctor visited the village and tagged the ear of each goat to certify that the goat had been purchased through the SHG loans.¹⁹

Table 4 shows the combination of goat rearing and SHG participation. The households that neither reared goats nor participated in SHGs had the highest share

¹⁵ ASSEFA was established in 1969 by a disciple of Gandhi as an executive body of land distribution program for outcaste people (called the 'Bhoodan Movement'). Since the 1980 s, it focused on saving group activities in rural areas (GDRC 2010). But it was restructured in 2000 and an institution called the *Sarvadaya* Mutual Benefit Trust (SMBT) became independent, and started to promote SHGs by getting financial assistance from the Small Industries Development Bank of India (SIDBI).

¹⁶ TNCDW had a SHG program called *Mahalir Thittam* (TNCDW 2010).

¹⁷ The IRDP was replaced by the *Swarnajayanthi Gram Swarozgar Yojna* (SGSY) in the late 1990s mainly because of the low repayment problem.

¹⁸ Some villagers in the study village were also benefitted from IRDP since 1980, and dairy farms were promoted through the program (Fujita and Sato (2011)).

¹⁹ Some SHG members showed the goats they had already reared.

Table 3 Distribution of SHG members to five economic classes in the study village

Class	Number of household	Number of household participating in 1 SHG	Number of household participating in 2 SHGs	Number of household participating in 3 SHGs	Total	Percentage	PAR/D/Dhan foundation				TNCDW	
							ASSEFA	East	Roja	Anjugam		Kanaki
Upper	15	4	2 ^a	1 ^b	7	46.7	1	2	4	1	0	1
Upper middle	17	6	6 ^c	1 ^d	13	76.5	2	1	4	2	2	5
Middle	37	16	5 ^e	6 ^f	27	73.0	8	8	5	9	5	3
Lower middle	39	15	5 ^g	1 ^h	21	53.8	2	4	6	3	4	7
Lower	26	7	4 ⁱ	0	11	42.3	4	2	3	1	3	2
Total	134	48	22	9	79	59.0	18	16	20	19	15	17

Note ^a East/Anjugam; Roja/Omsakti

^b East/Kanaki/TNCDW

^c East/Roja; Anjugam/Athiparasakti; Anjugam/TNCDW (2); Kanaki/TNCDW; Anthiparasakti/TACDW

^d East/Omsakti/TNCDW

^e East/Anjugam; East/Kanaki; Roja/Omsakti; Kanaki/Omsakti; Roja/TNCDW

^f East/Roja/Kanaki; East/Roja/TNCDW; East/Kanaki/TNCDW (2); East/Anjugam/TNCDW; Anjugam/Kanaki/TNCDW

^g East/Roja; East/Anjugam; Roja/Athiparasakti; Anjugam/Athiparasakti; Roja/TNCDW

^h Roja/Omsakti/TNCDW

ⁱ East/Roja; East/Anjugam; East/Omsakti; Roja/Omsakti

Table 4 Matrix of Households with Goat Rearing and SHG Participation

Class	Number of households	Reared goats and participated in SHG	SHG Reared goats but not participated in SHG	SHG Not reared goats but participated in SHG	SHG Not reared goats and not participated in SHG
Upper	15	4 (27 %)	3 (20 %)	3 (20 %)	5 (33 %)
U. Middle	17	10 (59 %)	2 (12 %)	3 (18 %)	2 (12 %)
Middle	37	25 (68 %)	8 (22 %)	2 (5 %)	2 (5 %)
L. Middle	39	13 (33 %)	8 (21 %)	8 (21 %)	10 (26 %)
Lower	26	7 (27 %)	4 (15 %)	4 (15 %)	11 (42 %)
Total	134	59 (44 %)	25 (19 %)	20 (15 %)	30 (22 %)

Source Fieldwork by the author in 2007–2009

among the ‘lower’ class (42 %), followed by the ‘upper’ (33 %) and the ‘lower middle’ (26 %). The households which participated in SHGs but did not rear goats were also common among the ‘lower-middle’ (21 %) and the ‘upper’ (20 %). Therefore, the major question here is why the poor households were relatively reluctant to rear goats. Table 3 indicates that the lower participation rate in SHGs by the poor households can only partly explain it. There must be some other strong reasons.

It was concluded that the major reason why many of the poor do not rear goats is, paradoxically, a lack of labor. Apparently, goat rearing does not require a full-time workforce, but it does require several (fragmented) hours of work every day, especially for pasturing goats in the field twice a day (Sato 2011b). This characteristic of goat rearing is suited to part-time work in combination with self-employed agriculture. The rural poor allocated their limited amount of family labor to full-time hired labor or full-time nonfarm jobs in order to get higher income, and thereby they were obliged to sacrifice goat rearing.²⁰

We found some households that once reared goats but had already stopped it by the time of our survey. Actually, 67 % of the ‘lower-middle’ and 33 % of the ‘lower’ class households who did not rear goats were such households. The major reason for stopping goat rearing was that they lost their workforces for various reasons. Especially notable is that when they became female-headed households by losing husband, many stopped goat rearing.

On the other hand, however, it should be reminded that there were many poor households that reared goats: 54 % of the ‘lower-middle’ and 42 % of the ‘lower’ class. The practice of the ‘group pasturing’ in the village should be paid attention here. Goats are jointly grazed by a group of 3–5 poor households. Goats are taken to the fields in turn by someone from the group. Supported by such a system, some poor households managed to reduce their disadvantage in labor availability.

²⁰ Another reason for the poor to prefer hired labor than goat rearing was their immediate cash needs.

4 Impact of SHGs in the Study Village

Let us now analyze the structure of financial market in the study village and the impact of the SHGs. Table 5 summarized the outstanding loans borrowed by villagers from informal sources, including relatives, neighbors, moneylenders, land mortgage (*otti*), and the SHG revolving fund.

Relatives were categorized into three in the table: (1) parents to children (in the case of separated households formed), (2) relatives who already migrated from the village, and (3) other relatives of both husband side and wife side. The latter two sometimes play an important role in providing fund for higher education. All the credits extended by relatives were free of interest and sometimes even the principal was written off. Neighbors usually provide only a small amount of money (but interest free), which is locally called a system of '*kaimathu*'.²¹

There were 10 village moneylenders (from 8 households), 7 from the 'upper,' 2 from the 'upper-middle,' and one from the 'middle' classes. At the time of our survey, households borrowing from the moneylenders were as follows: 7 'middle,' 4 'lower middle,' and 7 'lower' class households. The interest was usually 3 % per month, but sometimes 1–2 % per month, depending upon the relationship between both parties. Our survey revealed that the interest charged by moneylenders was 5–10 % per month until the late-1980s but it declined to 1–3 % after the introduction of SHGs. This is one of the most notable impacts of SHGs in the village.

However, at the same time, it should be noted that not-a-few households, especially poor households, still had to depend on moneylenders. Furthermore, the amount of money borrowed from moneylenders was relatively large; all the cases exceeded Rs. 5,000 with maximum amount of Rs. 45,000. The limitation of SHGs is apparent, because the amount which can be borrowed from the SHG's revolving fund was much lower than Rs. 5,000.

Borrowing through land mortgage (*otti*) was observed widely in the village. Usually Rs. 10,000 per acre of land was deposited to lenders. Land mortgage was an important source of borrowing relatively big money.

Table 6 shows the outstanding loans from the formal credit, mainly from banks. Note that all the 79 households which participated in SHGs got a bank loan at least once (as already noted), but at the time of our household survey in 2008 only 3 SHGs (one under ASSEFA and two under PARD) had outstanding bank loans. The major findings from the table are as follows.

First, the amount of bank loans (other than SHG-linked) was usually much larger than the bank loans through SHGs (usually Rs. 10,000 per member).

²¹ Interest was charged in case of borrowing for more than 2 weeks, so 2 weeks period of borrowing was most commonly observed. The term '*kaimathu*' literally means 'money returned by labour' which had been widely observed between rich-patrons and poor-clients (especially poor women in the female-headed households) before. For instance, if a poor woman borrowed Rs. 600 from a patron (farmer) she repaid it by working 12 days (given the wage rate of Rs. 50). Repayment by labor was not only for agriculture but also for household works. However, by the time of our survey, such a practice between patrons and clients had almost disappeared.

Table 5 Borrowings by source of funds

Class	Number of HH	Informal financial sources										Land mortgage (oti)	SHG revolving fund			
		borrowing from informal sources		Relatives		Neighbors		Moneylenders		Other relatives						
		H/H	Range of loan amount	H/H	Range of loan amount	H/H	Range of loan amount	H/H	Range of loan amount	H/H	Range of loan amount					
Upper	15	9														
U. Middle	17	15	1	NA	1	25,000	2	10,000–50,000	1	NA			5	5,000–1,25,000	7	1,500
Middle	37	34	2	NA	3	10,000–20,000	5	5,000–45,000	8	500			8	7,000–15,000	13	600–5,000
L. Middle	39	31	2	NA	4	10,000–60,000	1	25,000	4	3,000–4,000	4	10,000–30,000	6	5,000–20,000	27	900–5,000
Lower	26	20	1	NA	2	80,000	1	NA	6	100–1,000	7	8,000–25,000	1	3,500	11	1,000–2,700
Total	134	109	6	10	10	9	19	18	27	79			27		79	

Notes Other relatives include households whose living place is unknown (some may include migrated households)

Source Fieldwork by the author in 2007–2009

Second, bank loans through SHGs were used by the borrowers more for consumption, including medical expenses. Third, however, most of the poor who borrowed from banks could not have access to bank loans before they joined the SHGs. Out of the 14 households with bank loans in the 'lower' class, for instance, 10 households received it only through SHGs, and in the case of the 'lower-middle' class, the same figure was 18 out of 27 households. In this sense, we can recognize a notable impact of SHGs, although the small amount that can be borrowed from banks through SHGs had an apparent limitation, especially if we consider the existence of poor households having more than Rs. 10,000 of debt from moneylenders.

To sum up, the SHGs had a certain impact on poverty alleviation, but at the same time there was an apparent limitation. The major limitation was due to the small size of loans through SHGs, either from its revolving fund or from banks. Another major limitation of SHGs lay in the fact that the poorest people found it difficult to join the SHGs, especially women from the female-headed households. In fact, out of the 14 female-headed households in the 'lower' class only 3 households (21 %) joined the SHGs, compared to 42 % in the whole class and similarly, out of the 12 female-headed households in the 'lower middle' class only 6 households joined the SHGs, compared to 54 % in the whole class. We confirmed the existence of the stylized fact in the study village as well that micro-finance tends to bypass the poorest people.²²

By contrast, we need to emphasize the significance of SHGs for the nonpoor people, because as noted before, the percentage of households joining the SHGs was the highest among the 'upper-middle' and the 'middle'.

According to our interview in January 2010 with a branch post master in the village post office, the number of long-term deposit accounts (time deposit,²³ recurrent deposit and account under the 'Rural Postal Life Insurance') has been increasing rapidly in recent years. The number of time deposit was 25 in the village, most of which were for 1 or 2 years, with an interest of 6.6 % per annum. The average saving amount for time deposit was Rs. 5,000–15,000, with maximum amount of Rs. 60,000. The number of recurrent deposit was roughly 300, including the two neighboring villagers. Usually, they saved Rs. 50–200 per month (maximum Rs. 500) for 3–5 years. They can get an accumulated amount of savings with an interest of 7.5 % per annum. The number of accounts under the 'Rural Postal Life Insurance' was 42 in the village. Besides, there were many villagers who saved in a private life insurance company whose staff regularly came to the village.

In sum, since the mid-1990s, as the shift of occupation from agriculture to nonagriculture accelerated the income of rural households started to rise rapidly in rural Tamil Nadu, including the study village. There are increasing opportunities to save in various forms. If one joins an SHG with the monthly saving of Rs. 50, she can get roughly Rs. 5,000 after 5 years (with 2 % per month interest). If she

²² For instance, see Fujita (2000) on the case of Bangladesh.

²³ The terms were 1 year, 2 years, 3 years, and 5 years.

Table 6 Households with bank loans

Class	Office (military)		Commercial and coop banks		SHG-bank linkage			Number of HH borrowed from banks through SHG only	Percentage (%)						
	Number of HH	H/ H amount	Number of HH	Range of loan amount	Usage	Usage	Usage								
					Agri ^a	House repair	Education	Others ^b							
Upper	15	3	60,000-1,00,000	8	15,000-3,50,000	7	1	1	7	4	3	3	42.9		
U. Middle	17			6	8,000-3,00,000	3	2	1	13	3	1	2	5	53.8	
Middle	37			20	12,000-75,000	9	6	2	27	7	2	1	5	10	37.0
L. Middle	39			9	10,000-25,000	8	1	1	4	5	3	2	2	18	85.7
Lower	26			4	2,500-5,000	1	1	1	2	1	2	5	5	10	90.9
Total	134	3		47		28	10	4	79	20	8	3	20	48	35.8

Notes: Blank means zero

^a Includes money for land rent and livestock rearing

^b Includes consumption and medicine

Source: Field work by the author in 2007-2009

joins 2 SHGs she can get Rs. 10,000. The SHG is therefore considered to be one of the saving opportunities for the rural people (except for the poorest).

5 Conclusions

This chapter analyzed mainly how SHGs were functioning in rural Tamil Nadu, India under rapid economic development, by taking a village in Madurai District as a case study. The major findings and implications are finally summarized. First, the participation rate to SHGs was substantially higher among the 'upper-middle' and the 'middle' class women than their counterpart from the 'upper', the 'lower-middle' and the 'lower' class. Moreover, there were not-a-few women who participated in 2 or 3 SHGs at a time. The major purpose to join SHGs seems to be money saving, especially for nonpoor women.

Second, however, the SHG program gave a certain apparent impact on poverty alleviation through lowering the interest rate imposed by moneylenders, since many rural poor still relied on moneylenders.

Third, the SHG program also benefitted the poor who participated in, by enabling them to get bank loans, although the amount of loan was rather limited (Rs. 10,000 per person).

Fourth, contrary to the policy intention to alleviate poverty of the poor, the connection of SHG-linked bank loans with purchasing livestock such as goats was often not in conformity with the resource endowment of the poor who paradoxically lacked labor to take care of animals, especially in the case of the female-headed households.

Fifth, the SHG program is not effective for financing the expenditure for higher education for children, which is the real route for the rural people to escape from poverty.

Sixth, the SHG program was functioning as one of the saving opportunities for rural people under rapid economic development (with accelerated labor migration to urban centers), especially among the 'upper-middle' and the 'middle' class households.

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Achievements and Challenges of SHG-Bank Linkage Program in India: The Result of Village Surveys in Andhra Pradesh and Maharashtra

Toshihiko Suda and M. C. S. Bantilan

1 Introduction

Poverty alleviation is one of the biggest agenda in the world, especially in South Asia where more than 500 million people live below the poverty line (World Bank [n.d.](#)).¹ Since International Year of Microcredit was declared by the United Nations in 2005, microfinance has been increasingly recognized as an effective instrument of poverty alleviation in developing countries.

These are the fundamental reasons why financial inclusion of the the poor through microfinance (MF) is highlighted as one of the main instruments for poverty alleviation and equitable economic development in India, especially in rural areas where majority of BPL people live (GOI 2008; Mehrotra et al. 2009). Government policy to extend microfinance in rural India is presently implemented mainly through the SHG-Bank Linkage n.d. Program (the SHG Program) which is effectively put into operation by the national refinancing agency National Bank for Agriculture and Rural Development (NABARD). This program aims to provide financial services of formal financial system such as savings and loan facilities to the poor by linking banks and Self Help Groups (SHGs), each of them formed by 10–20 neighboring villagers, mostly by women.

As Table 1 shows, development of microfinance in India was classified as a medium level in South Asia, much behind Bangladesh and Sri Lanka till mid 2000s (World Bank 2006). However, recent fast growth of the SHG Program has achieved

¹ This is the accumulated number of BPL people of India, Pakistan, Bangladesh, Nepal, Sri Lanka, Bhutan and Maldives by international standard (1.25 PPP\$ per day) as on 2010. There is no figure shown in the World Bank ([n.d.](#)) for Afghanistan.

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Table 1 Situation of Microfinance (MF) in South Asia

Country	Poor families (million)	MF clients (million)	Ratio of MF clients to poor families (%)	MF coverage of poor families (%)
Afghanistan	2	0.12	6	3
Bangladesh	13	16	123	62
India	60	15	25	9
Nepal	1.6	0.5	31	14
Pakistan	8.5	0.58	7	2
Sri Lanka	1	2.5	250	63
Whole South Asia	86.1	34.7	40	17

Source World Bank (2006), p. 23

Notes (1) "Poor Families" are families subsisting on less than the government-defined poverty thresholds. (2) The above data are the latest available data by 2005 and include estimates of the authors of World Bank (2006). (3) "Ratio of MF Clients to Poor Families" may exceed 100 % partly because one family may be clients of more than one MF institutions and partly because some nonpoor families may be clients of MF institutions. (4) "MF Coverage of Poor Families" are estimates of the authors of World Bank (2006)

remarkable increase of microfinance clients in India. As on March 31, 2010, the SHG Program provides savings facility to 97 million households through 6.95 million SHGs (NABARD 2010), which means about 44 % of the total households in India² are beneficiaries of this world's largest microfinance program (NABARD 2010). Thus, the ratio of SHG member households to the total poor households (63 million³) reaches 154 %, which surpasses the Bangladeshi figure in Table 1. Present India is, no doubt, one of the leading countries in the development of microfinance at least in terms of outreaches to rural households.

However, the degree of development of the SHG Program varies greatly across India due to different policies undertaken by respective states (Sriram and Raddha 2007). In general, the SHG Program is more developed in India's southern states. Four southern states, namely, Andhra Pradesh (AP), Karnataka, Tamil Nadu and Kerala, account for 46.4 % of the total SHGs in the country, although these states have only 21.0 % of the India's total population. Among them, as Table 2 shows, AP alone accounts for 20.8 % of the total SHGs, almost three times of its population share of 7.2 % in the country. Significant expansion of the SHG Program in southern India, especially in AP, becomes evident when we see the volume of loan disbursement by banks to SHGs. The four southern states account for 67.8 % of the total loan outstanding given by banks to SHGs, and AP alone

² This figure was calculated based on the assumption that the total population in India is 1,186 million (Government of India 2011) as on 2010, one family has on average 5.36 members (as per Population Census 2001), and there is one SHG member in each SHG member household.

³ This figure was calculated based on the same assumption as the above "Note 2", and the BPL ratio of 28.6 % by the national poverty line (Government of India 2011).

Table 2 Region wise situations of the SHG program (2010)

Region/state	Population (2008)		Savings of SHGs in banks			Loan outstanding of banks to SHGs			NPA against loan outstanding to SHG (%)
	Person (million)	Share (%)	Number of SHG (million)	Share (%)	Savings outstanding (billion Rs)	Share (%)	Number of SHG (million)	Loan outstanding (billion Rs)	
Northern region	152	13.2	0.35	5.1	3.4	5.5	0.15	8.2	6.6
North Eastern region	43	3.7	0.29	4.2	1.2	2.0	0.13	6.7	5.5
Eastern region	252	21.9	1.37	19.8	11.2	18.1	1.03	36.9	3.2
Central region	294	25.5	0.77	11.0	5.1	8.3	0.50	24.6	8.1
Western region	168	14.6	0.95	13.6	9.3	14.9	0.46	13.7	4.5
Maharashtra	109	9.4	0.77	11.1	5.7	9.2	0.39	12.0	4.7
Southern region	242	21.0	3.22	46.4	31.7	51.2	2.58	190.2	1.9
Andhra Pradesh	83	7.2	1.45	20.8	12.6	20.3	1.47	117.4	1.3
Whole India	1,150	100.0	6.95	100.0	62.0	100.0	4.85	280.4	2.9

Source NABARD (2010)

Note (1) Population of the year 2008 are "Estimated Mid Year Population". (2) The data of savings, loan outstanding and NPA are as on March 31, 2010. (3) NPA stands for "Non Performing Assets".

represents 41.9 % of the whole country as on March 31, 2010. These figures clearly indicate that AP is the most notable state in terms of development of the SHG Program.

In contrast to the vibrancy of the SHG Program in the southern region, the northern and the central regions are least developed areas in terms of the SHG Program. Development of the SHG Program in the north-eastern, eastern and western regions is medium level as shown in Table 2.

2 Objectives and Methodology of the Study

2.1 Objectives of the Study

Considering the outstanding development of microfinance in AP and the expectation that other states in India can learn a valuable lesson from AP (Ramesh 2007), it is worth conducting an in-depth study on what the SHG Program of AP has achieved and what challenges it is facing. The in-depth study is necessary because, in spite of worldwide effort to develop microfinance, it is not still very clear how effectively and efficiently microfinance impacts on poverty reduction (Hermes and Lensink 2007). Indeed, other states in India as well as other countries which plan to embark on this exemplar program can learn a valuable lesson from the experience of AP through this in-depth study.

The World Bank (2006) recommends that the achievements of microfinance programs should be evaluated using two criteria and refers to it as “double bottom line”. The first criterion is to what extent the program is contributing to poverty alleviation; and since poverty alleviation is the main goal of the SHG Program, obviously this is the primary criterion used in this study.

The second criterion is to what extent this program is sustainable, or viable in the long term. Because the goal of the rural financial reform is to ensure the inclusion of the poor in the modern financial market, that is, to provide sustainable financial services to the poor (Adams et al. 1984; Adams et al. 1981), the SHG Program should be able to stand on its own foot, at least in the long run. In AP State, as much as 67 % of the total refinance fund provided by NABARD, the national refinancing agency, to banks is used as loans to SHGs during 2009–2010. This fund is not costless and should be examined for its efficiency and sustainability.

Based on the village level data used in this study, the evaluation of the SHG program focuses on how effective the SHG Program is for poverty alleviation and what problems it has at grass root level. Investigation of the efficiency criterion, namely “efficiency and sustainability of the SHG Program as a poverty alleviation program”, needs broader discussions such as subsidy dependence index (SDI), which is beyond the scope of the data available in this study.

2.2 Methodology of the Study

This chapter addresses the essential question: “how effective is the SHG Program for poverty alleviation and what critical challenges is it facing?” Analysis will be based on the household data collected using personal interviews and survey instruments in two villages, one each in the states of Andhra Pradesh and Maharashtra of India. The data collected from selected households and all SHGs in the study villages included relevant information related to the SHG membership and activities. The household and SHG data are supplemented by information gathered from key informants and other stakeholders including bank staff. The two survey villages were selected from among six villages in which the International Crops Research Institute for Semi-arid Tropics (ICRISAT) has been conducting the Village Level Surveys (VLS) longitudinal household panel survey since 1975. A comparative analysis is undertaken by considering one village in Maharashtra as the control village where the SHG Program has not been actively implemented versus the study village in AP where the dynamics of the success of the SHG program is distinctly experienced. By comparing the two villages, we examine how and to what extent the SHG Program can change villagers’ life and what measures are required to develop the SHG Program further. Available data from the VLS longitudinal panel are also used to present a better understanding of the village level dynamics with respect to availability of credit to women and the individual/household/village poverty alleviation and empowerment.

3 Situation of the SHG Program in AP and Maharashtra

Across all the states in India, AP State is a front runner of the SHG Program. The latest data indicate that there are 995 thousand SHGs and 11.1 million members in AP as of November 2011. The members are exclusively women (SERP 2011). This means that the ratio of rural households having SHG member reaches 82 %⁴ in AP state.

As shown earlier in Table 2, the share of AP in the national total loan outstanding given by banks to SHGs reaches 41.9 % (based on the update of March 31, 2010), which is significantly higher than the AP to All-India population share of 7.2 %. Moreover, we should pay attention to the high ratio of SHGs getting loans from banks. The same table shows that the number of SHGs having loan

⁴ This estimate is based on the following assumptions. The total population of AP state is 84.7 million (as per Population Census 2011), of which 72.7 % live in rural area (as per Population Census 2001). Each household in AP state consists of an average of 4.52 family members (as per Population Census 2001). SHGs exist only in rural area. There is only one SHG member in a household. However, these assumptions would give an overestimation of SHG member households, because some households have more than one SHG member (say a mother and a daughter or daughter-in-law).

outstanding from banks is, unlike other regions, almost equal to the number of SHGs having savings in banks. This means that almost all SHGs and their members in AP State can get loans continuously from banks.

High recovery ratio of loan in AP State is also notable. The ratio of Nonperforming Assets (NPA) against the loan outstanding is only 1.3 %, much lower than the national average of 2.9 % and Maharashtra of 4.7 %. In contrast to the common problem of low repayment ratio which most of rural financial institutions and programs are suffering in India, the SHG Program in AP is exceptionally healthy as a government financial program in terms of repayment ratio.

These remarkable achievements of the SHG Program in AP are greatly attributed to the strong commitment of the state government. The AP Government has empowered an integrated program called “Indira Kranti Patham (Indira Revolutionary Way)”, which includes the former Development of Women and Children in Rural Areas (DWCRA) Program and Velugu (Light) Program, with a central focal position for enabling anti rural poverty policies (Government of Andhra Pradesh n.d.). As a result, the SHG Program (SHG-Bank Linkage Program) became one of the major components of Indira Kranti Patham which then provides various social and economic services to the rural women through SHGs. In addition, the AP Government has set up a special agency called Society for Elimination of Rural Poverty (SERP) to implement Indira Kranti Patham. At the village level, SHGs are federated to Village Organizations (VOs) under the support of SERP; and VOs in turn work as facilitators of the SHG program by disseminating the merits of SHGs in the village, thus helping women in establishing SHGs, and connecting SHGs with banks and supporting capacity building for SHG management (including book keeping and settlement of problems) to ensure long-term viability.

Maharashtra State, where another survey village is located, has a relatively lower level of the SHG Program’s development and utilization. Historically, the cooperative movement has been quite strong in this state and the government’s efforts to deliver financial services to rural area have been mainly pursued by credit cooperatives (Primary Agricultural Credit Societies (PACS) and District Central Cooperative Banks (DCCB)). This may be one reason for the Maharashtra Government for not proactively promoting the SHG Program. The relatively stagnant SHG Program in Maharashtra is evident from the following indicators. First, the share of SHGs formed in Maharashtra in the whole country (11.1 %) is almost same as its share of population (9.4 %). Second, the share of Maharashtra’s outstanding bank loans to SHGs (4.3 %) in the whole India is much less than that of population. Third, it is also noted that the number of SHGs having loan outstanding from banks (0.39 million) is much less than the SHGs having savings in banks (0.77 million). This means that SHGs and their members in Maharashtra cannot get loans from banks as easily as in AP. Additionally, the NPA ratio of this state is 4.7 %, much higher than AP of 1.3 %. These figures indicate that loans to the rural poor through SHGs are not flowing smoothly and there is a serious non repayment problem in this program in Maharashtra.

A significant disadvantage of the Maharashtra’s SHG Program in comparison to the program in AP is the absence of a special government organization such as

SERP of AP to support the SHG Program systematically. It is observed that where proper supporting NGOs or voluntary supporting persons are available even in maharashtra, they may work as intermediary or facilitator of this program by bridging banks and SHGs and supporting the activities of SHGs. But where such NGOs or persons are not available, bank staff themselves must visit villages to organize and support SHGs. The results of these differences in policy of the two states are presented in the next section.

4 Field Observations and Analyses

4.1 Background on the Study Villages

The locations of the case study villages in the states of Andhra Pradesh and Maharashtra are shown in Fig. 1. As stated earlier, these villages were selected from among six villages in which International Crops Research Institute for Semi-arid Tropics (ICRISAT) has been conducting household survey since the mid1970s. Household data used in this chapter were mainly collected by ICRISAT staff stationed in the respective study villages.

The study village in AP (hereafter stated “Village A”) has 766 households with a population of 3,563 in 2008. As Table 3 shows, the Gouda Caste, a scheduled caste (SC) whose traditional occupation is toddy collection, is the largest caste group in the village and accounts for 23.9 % of the total village population. This is followed by the Madiga SC (leather work), Kurma SC (shepherd), Mala SC (agricultural laborer), Vaddera (stonecutters; backward caste (BC)); and the Reddy (farming; forward caste (FC)) etc. Distance from the state capital Hyderabad is about 70 km and villagers’ life is changing quickly due to the influence of this fast developing mega city. These changes include emigration to Hyderabad for job and

Fig. 1 Locations of the study villages, *source* illustrated by author

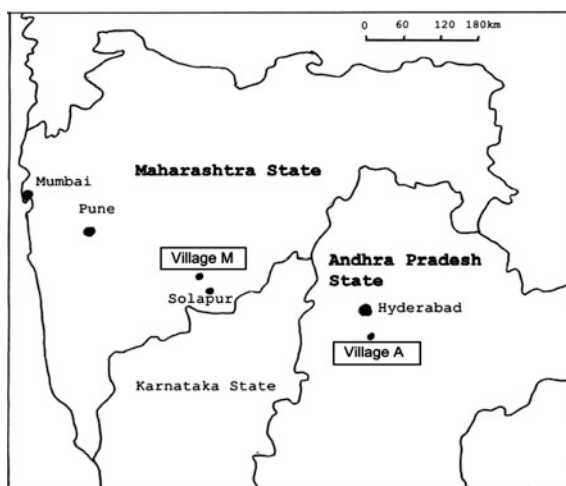


Table 3 Outline of the study villages

	Village A (AP)	Village M (Maharashtra)
Total households (HH)	766	546
Number of landless households and their ratio (HH, %)	131 (17.1 %)	229 (41.9 %)
Average landholding of the total households (ha)	1.3	1.3
Average landholding of the agricultural land holders (ha)	1.5	2.3
Main occupations of household heads (person)	Agriculture (300), Laborer (144), Stonecutter (31), Sheep Rearing (21), Mason (21), Driver (18), Carpenter (17), Grocery shop (12)	Agriculture (153), Agriculture Laborer (115), Non-Farm Work (38), Private Job (34), Driver (30), Government Job (25), Sheep rearing (16), Casual Laborer (15), Regular farm servant (12)
Major caste (HH)	Gowda (183), Madiga (141), Kurma (89), Mala (86), Vaddera (61), Reddy (42), Shakali (23), Vadla (21), Muslim (15), Mangali (14)	Maratha (250), Shepherd (104), Mahar (46), Holer (24), Wadar (19), Muslim (17), Chambar (11)
Total number of SHGs in the village	46	14
Ratio of SHG member households (%)	83.9 %	26.0 %
Number of the surveyed households	70	89
Number of SHG member households among the surveyed households and their ratio (HH, %)	52 (74.3 %)	24 (27.0 %)

Source: Census Survey conducted by ICRISAT in 2008, SHG Survey conducted in 2010

change of cropping pattern from sorghum, pearl millet, and pigeon pea to vegetable and Bt. cotton. Traditional toddy business and livestock rearing are also prospering than before due to the increase of demand with the increase of household incomes.

The study village in Maharashtra (hereafter called “Village M”) has 546 households and the total population of 2,518 as of 2008. The Maratha Caste (farming: FC) accounts for 45.8 % and Shepherd Caste (BC) 19.0 % of the total households. Thus these two castes form the majority of the village. Then, Mahar (service: SC, 8.4 %), Holer (leather work and cleaning: SC, 4.4 %), and others follow. This village is located near to the trunk road connecting fast growing mega cities, namely Pune, Mumbai, and Hyderabad. And recently, much of the land was covered by canal irrigation scheme, which changed the cropping pattern of the village drastically from sorghum and chickpea to sugarcane, wheat, and vegetable. The good road access and the availability of water through canal irrigation have been observed to drive the faster pace of the economic growth and to give opportunities for diversification of economy in this village.

As for the landholding structure, these two villages are in a similar situation in terms of the average agricultural landholding size being 1.3 ha. However, the magnitude of landless households is quite different. The share of households having no agricultural land (landless) is much higher in Village M (42 %) than in Village A (17 %). This suggests that the poverty may be more severe in Village M than in Village A.

4.2 Development of the SHG Program in the Study Villages

The SHG Program started in the study villages in early 2000s. In the Village A, the first SHG was formed in the year 2000, while in Village M the first SHG was formed in 2003. The number of operating SHG is 46 in Village A and 14 in Village M. The total numbers of SHG members (all women) are 643 and 142 in the respective villages, which means that 84 and 26 % of the total households in the respective villages participate in the SHG Program assuming that each member household has only one SHG member. Thus, the SHG Program is much more widely spread in the Village A than in the Village M (Fig. 2).

4.3 Analyses of the Household Data

(a) Outreach to the Poor

(i) Characteristics of the SHG Members

In order to examine the achievements and limitations of the SHG Program, analyses were based on the detailed data of 70 households in Village A and 89 households in Village M which have been generated through the ICRISAT VLS

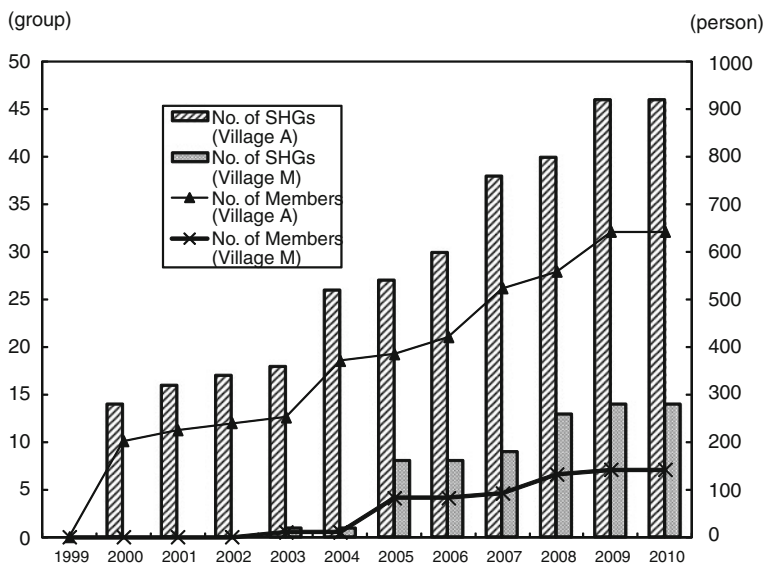


Fig. 2 Growth of the SHG Program in the Study Villages. *Source* Survey conducted in 2010. *Note* The numbers of SHGs and their members in respective years are those calculated by the established years of the presently working SHGs. Collapsed SHGs in the past and their members are not reflected in this figure. Therefore, the actual numbers of SHGs and their members in the respective years may be different from the numbers shown in this figure

longitudinal household panel surveys (see ICRISAT website on www.icrisat.org for description of the different VLS modules and other relevant information).

As Table 4 shows, majority of surveyed households (74.3 %) are SHG members in Village A. Interestingly, however, despite the main goal of this program being poverty alleviation, most of upper class households are found to be participating in the program while most of nonmembers belong to landless, marginal, and small landholding classes.

The data of Village M show the same result. That is, majority of the landless and small landholders are not included in the SHG Program, while many upper class households are benefiting from it. Seemingly, this program has failed to target the poor section of the rural society.

Landholding sizes of the member and nonmember households shown in the Table 5 confirm the above observation that SHG members are relatively rich households compared with nonmember households. The average landholding of member households is larger than nonmember households. But the median values of the member household and the nonmember household groups show little difference. This indicates that big landholders are included more often in member households than in nonmember households as the largest landholding sizes of member and nonmember households in the respective villages show.

Table 6 shows the relationship between the SHG Program and the main occupations of household heads. The result tells that the SHG Program covers all

Table 4 Relationship between landholding size and participation ratio in the SHG program

	Member of SHG		Nonmember of SHG		Total	
	Number of HH	Ratio (%)	Number of HH	Ratio (%)	Number of HH	Ratio (%)
Village A: Total	52	74.3	18	25.7	70	100.0
Landless	3	50.0	3	50.0	6	100.0
Marginal	17	85.0	3	15.0	20	100.0
Small	9	50.0	9	50.0	18	100.0
Small medium	15	83.3	3	16.7	18	100.0
Medium	8	100.0	0	0.0	8	100.0
Village M: Total	24	27.0	65	73.0	89	100.0
Landless	4	22.2	14	77.8	18	100.0
Marginal	5	29.4	12	70.6	17	100.0
Small	8	30.8	18	69.2	26	100.0
Small medium	4	20.0	16	80.0	20	100.0
Medium	3	37.5	5	62.5	8	100.0
Total	76	47.8	83	52.2	159	100.0

Source Survey conducted in 2010

Note Each household is classified into Landless (no agricultural land), Marginal (0.01–0.09 ha), Small (1.00–1.99 ha), Small-Medium (2.00–3.99 ha), Medium (4.00–9.99 ha), and Large (10.00 ha and above) according to the size of own agricultural land. There is no “large farmer” in the surveyed households

Table 5 Landholding size of member and nonmember households of the SHG program

	Village A		Village M	
	Member HHs (52 HHs)	Nonmember HHs (18 HHs)	Member HHs (24 HHs)	Non member HHs (65 HHs)
Average land holding (ha)	1.9	1.1	2.2	1.5
Median (ha)	1.4	1.1	1.2	1.1
Largest landholding (ha)	5.6	2.8	9.9	6.7

Source Survey conducted in 2010. ICRISAT VLS data base

kind of occupations almost evenly in both villages and shows no concentration on particular occupations.

In general, agricultural laborer households form the bottom of rural society. Therefore, the SHG Program should focus on this occupation along with other deprived sections. However, in both villages, the participation ratio of agricultural laborer households in the SHG Program is not visibly high. In other words, many agricultural labor households are excluded from this anti-poverty program. The reason the poorest of the poor do not participate in the SHG Program will be examined more carefully in the latter part of this chapter.

Table 6 Main occupations of household heads and participation ratio in the SHG program

	Member household		Nonmember household		Total	
	Number of HH	Ratio (%)	Number of HH	Ratio (%)	Number of HH	Ratio (%)
Village A: Total	52	74.3	18	25.7	70	100.0
Agriculture (Cultivation)	29	80.6	7	19.4	36	100.0
Livestock rearing	2	50.0	2	50.0	4	100.0
Agriculture Laborer	12	70.6	5	29.4	17	100.0
Non agriculture self employed	3	60.0	2	40.0	5	100.0
Non agriculture Permanent employee	4	100.0	0	0.0	4	100.0
Non agriculture day laborer	0	–	0	–	0	–
No job	2	50.0	2	50.0	4	100.0
Village M: Total	24	27.0	65	73.0	89	100.0
Agriculture (Cultivation)	9	25.7	26	74.3	35	100.0
Livestock rearing	1	20.0	4	80.0	5	100.0
Agriculture laborer	5	29.4	12	70.6	17	100.0
Non agriculture self employed	3	21.4	11	78.6	14	100.0
Non agriculture permanent employee	3	27.3	8	72.7	11	100.0
Non agriculture day laborer	1	33.3	2	66.7	3	100.0
No job	2	50.0	2	50.0	4	100.0
Total	76	47.8	83	52.2	159	100.0

Source Survey conducted in 2010

Table 7 Caste and SHG participation

	Member household		Nonmember household		Total	
	Number of HH	Ratio (%)	Number of HH	Ratio (%)	Number of HH	Ratio (%)
Village A: Total	52	74.3	18	25.7	70	100.0
Forward caste (FC)	5	71.4	2	28.6	7	100.0
Backward caste (BC)	30	71.4	12	28.6	42	100.0
Scheduled caste (SC)	17	81.0	4	19.0	21	100.0
Village M: Total	24	27.0	65	73.0	89	100.0
Forward caste (FC)	12	22.2	42	77.8	54	100.0
Backward caste (BC)	10	40.0	15	60.0	25	100.0
Scheduled caste (SC)	2	20.0	8	80.0	10	100.0
Total	76	47.8	83	52.2	159	100.0

Source Survey conducted in 2010

Likewise, it seems there is no particular relationship between the SHG Program and particular castes (Table 7). The SHG Program covers all castes almost evenly in the Village A, although the participation ratio of scheduled castes (SC) is slightly higher than the average. Participation ratio of SC in Village M is less than the average. And half of the total SHG members belong to forward castes (FC).

In conclusion, the above village-level evidences suggest that the SHG Program, so far, is not functioning well to deliver financial services to the poorest section of the rural society even in AP. While this program is open to all classes of the rural society, many nonpoor households and upper classes are more often enjoying the benefit of this program.

(ii) Reasons the Poor do not join the SHG Program

One natural question is “why many people, especially the poor, do not join the SHG Program?” As Table 8 indicates, the biggest reason majority of nonmember households do not join the SHG Program in Village A is that “There is no money to save”. Since the SHG Program is, unlike Grameen Bank of Bangladesh, “Savings First, Loan Later” type of microfinance program, it is difficult for the very poor households which have no saving capacity to join the program even if they wish to.

The second major reason of not joining this program is that “Husband does not encourage (to join SHG)”. This means there is still a psychological resistance in rural society at least for some men to let their wives go out for SHG activities.

The third common reason is that a woman who wishes to join the program is too old to be eligible for SHG’ membership. Since there is an age limit for SHG members, women over 60 years old are not able to join SHGs.

In conclusion, due to economic, social and institutional restriction, some women, especially poor and old women are excluded from this program even though they want to join it. Among these problems, poverty is the biggest reason for nonmember households’ exclusion from this program. Here lies a contradiction that the SHG Program, in spite of being a poverty alleviation program, tends to exclude its target beneficiary due to (a) lack of the poor sector’s adaptive capacity; as well as (b) ability of the elite to capture a whole range of beneficial development programs.

Another important result which is of interest in this study relates to the major reasons why majority of villagers in village M do not join the SHG program. Their commonest answer to this question is that they are not interested in this program.

Table 8 Main reasons nonmembers do not join SHGs

	Not interested	No money to save	Husband doesn’t encourage	Over the age limit	Others	Total
Village A (HH)	0	9	5	3	1	18
Village M (HH)	59	3	0	0	0	62
Total (HH)	59	12	5	2	1	80

Source Survey conducted in 2010

How should we interpret this answer? Interviews with some villagers revealed that attending monthly meeting of SHGs held in daytime for collection of savings and repayment of loans is taken as troublesome and waste of time especially for the poor who work on the field as agricultural laborers. Moreover, many people do not trust SHGs for safety of their savings due to experiences of collapse of several SHGs in the past. One informant revealed that 22 SHGs had been formed in this village but only 14 groups were working at the time of the survey (May 2010). The main reasons of SHGs' collapse are, according to the statement of villagers, that some members did not make repayment of their loans and did not save regularly. Conflicts among members regarding management of SHGs were also one of the major reasons of SHGs' collapse. In a word, SHGs in Village M are not working properly to make their members observe financial contracts and to solve conflicts among members.

On the contrary, collapse of SHGs is reportedly very rare in Village A. There is only one case that SHG stopped its activity because of conflict among members. However, after the leader of the group was replaced it started to work properly again.

Therefore, the question why many SHGs have collapsed in Village M arises as an important issue to understand the situation of the SHG Program in this village. This problem will be discussed again later.

(b) Effect of the SHG Program on Poverty Alleviation

(i) Financial Inclusion of the Poor by the SHG Program

We have seen that the SHG Program covers the majority of rural households in AP, while its outreach to rural people in Maharashtra is much less. So what results does the different outreach of the SHG Program in the two states make?

As Table 9 shows, the SHG Program has contributed to inclusion of many poor households having no or little land which were otherwise excluded from the formal finance in Village A. Over 31 % (22 households) of the total surveyed households, whose average landholding (0.8 ha) is much less than the average of the total surveyed households (1.7 ha), report that SHG is the only loan source from the formal financial sector. Similarly, 14.3 % of the surveyed households, again many of them are poor (average landholding 1.1 ha), answered that SHG is the sole means of savings in the formal financial sector. Thus, the spread of the SHG Program in Village A has contributed to the poor by including substantial part of the poor in the formal financial system.

However, we should not overlook the fact that there are still many poor households which are excluded from the formal finance. In Village A, nearly one-fourth (23 %) of the total surveyed households, many of them are poor in terms of landholding (average landholding 0.9 ha), still do not have access to the formal financial institutions.

As observed in the earlier section, inclusion of the poor in the formal financial sector through the SHG program in Village M has been constrained. Only four

Table 9 Contribution of the SHG program to financial inclusion of the poor

	Village A			Village M		
	Number of households	Percentage (%)	Average landholding (ha)	Number of households	Percentage (%)	Average landholding (ha)
Total households	70	100.0	1.7	89	100.0	1.6
No formal loan including SHG	16	22.9	0.9	35	39.3	1.3
Formal Loan only from SHG	22	31.4	0.8	4	4.5	0.6
Formal loan both from SHG and other formal institution/s	26	37.1	2.9	7	7.8	2.1
Formal loan other than SHG	6	8.6	1.5	43	48.3	1.9
No savings in formal institution/s	4	5.7	0.1	3	3.4	0.0
Savings in formal institution/s	66	94.3	1.8	86	96.6	1.7
Formal savings only in SHG	10	14.3	1.1	0	0.0	-

Source Survey conducted in 2010

Note Formal institutions include SHG, bank, cooperative, chit fund, post office, financial company, micro finance other than SHGs, pawn shop, etc

households (4.5 % of the total surveyed households) could obtain access to the formal financial sector by joining the SHG Program. In most cases, the SHG Program only provided additional loan sources to households which already had access to formal loans such as credit cooperatives and banks. On the other hand, 39.3 % (35 households) of the total surveyed households in Village M, many of them belong to the poor section inferred by their small landholding size (1.3 ha), are still left outside of the formal financial system in terms of access to loans, while most of the villagers have access to savings facilities in the formal sector. Although credit cooperatives in Maharashtra provide savings facility to all villagers, one must own at least one acre (0.4 ha) of agricultural land in order to be eligible for membership and to obtain loans. But as we have seen already, more than 40 % of the households in Village M are landless. Thus, the landless villagers generally do not have access to formal loans. Their loan sources are mostly friends/relatives and shopkeepers. These loans and advances are given usually free of interest but the amount is very little. Therefore, the biggest contribution expected for the SHG Program as a poverty alleviation program is to give financial

services, especially loans to the landless poor who are left outside of the cooperative system and in short of loan sources. But we must conclude that the SHG Program has failed to meet this expectation in Village M.

(ii) Position of the SHG Program in Rural Financial Market

In spite of general expectation that development of microfinance would eliminate dependency of the poor on informal finance especially usurious money lenders, the share of SHGs in the total financial market is very limited even in Village A. As Table 10 shows, shares of SHG loan and savings in the total loan and savings of the surveyed households are only 5.7 and 6.5 %, respectively. In Village M, the share of SHG on the villager's loan and savings portfolio is much less, only 0.9 and 4.9 %, respectively. This fact implies that the SHG Program has very limited impact on the rural economy as a whole even in Village A where majority of households participate in the SHG Program.

However, all households do not join the SHG Program and the impact of the program may be greater for the member households. So we divided the surveyed households into SHG nonmember households and SHG member households to see the impact of the SHG Program on the member households. Amount of loan and savings outstanding of SHG for each SHG member households are on average 5,900 Rs and 3,300 Rs, respectively in Village A and 1,800 Rs and 5,000 Rs, respectively in Village M. However, even for member households, shares of SHG loan and savings among their total loan and savings are only 7.2, 7.7 % respectively in Village A and 2.3, 14.6 % in Village M. Therefore, impact of the SHG Program is minor even for SHG member households.

The major loan sources and means of savings are quite different between the two villages. This is clearly a reflection of the governments' different policies and partly a difference of culture between AP and Maharashtra. The major differences of financial structure between the two villages are the role of cooperative sector and informal finance. The major loan sources in the Village A are still informal loans, especially from usurious money lenders (40 % of the total) who charge 33 % of annual interest rate on average. Interest rate of moneylenders' loan is much higher than those of the SHG Program charging 12 or 24 %. The former

Table 10 Share of SHGs in the rural financial market

	Village A	Village M	Total
Average loan outstanding of the total households (1,000 Rs)	76.2	55.2	64.4
of which, SHG loans (1,000 Rs)	4.36	0.48	2.19
Share of SHG loan in loan outstanding of the total households (%)	5.7	0.9	3.4
Average savings of the total households in financial institutions (1,000 Rs)	38.1	27.8	32.3
of which, SHG savings (1,000 Rs)	2.47	1.36	1.85
Share of SHG savings in the total savings in financial institutions (%)	6.5	4.9	5.7

Source Survey conducted in 2010

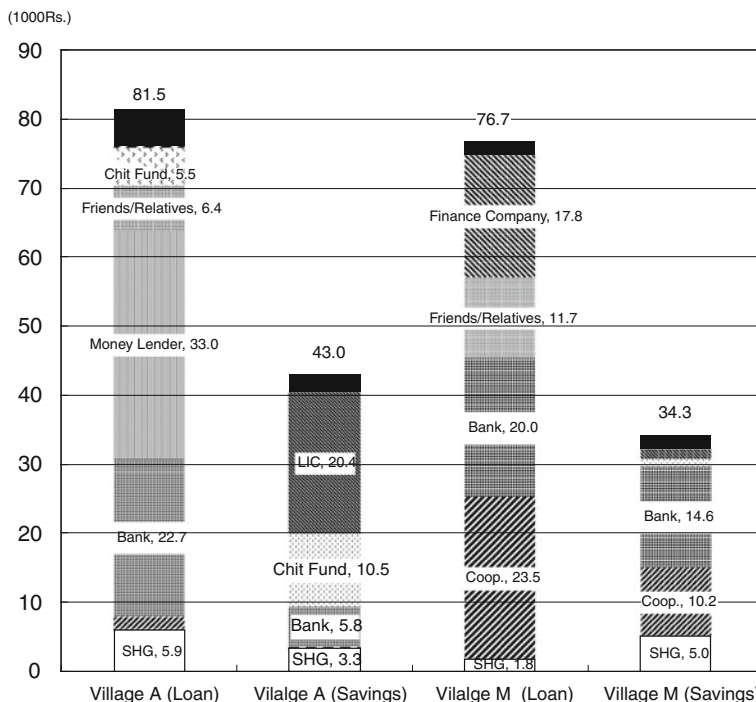


Fig. 3 Source wise average Loan and Savings of SHG Member Households (Outstanding). *Source* Survey conducted in 2010. *Note* LIC stands for “Life Insurance Corporation of India”

interest rate is applied for the loan provided by bank fund and the latter for the loan provided by members’ own savings, that is, internal loans. Unlike Village M where no interest is charged on loans from friends/relatives, loans are also charged high interest of 29 % on average in Village A. This suggests us that there is a big cultural difference regarding mutual credit among friends/relatives between the two survey villages, which even may be a difference between the north and south India. It is surprising that dominance of moneylenders in Village A has not changed very much since last 30 years or so (See [Table 7.2](#) of Walker and Ryan 1990), even after the remarkable development of the SHG Program and banks.

In this sense, the SHG Program in AP has had a very limited success on replacing usurious loans. Other financial institutions like banks, chit fund, and insurance (Life Insurance Corporation of India) are playing far bigger roles in Village A as loan sources and means of savings.

On the other hand, cooperative sectors, namely, Primary Agricultural Credit Societies (PACSS) and District Central Cooperative Banks (DCCBs), are the major loan sources and means of savings in Village M reflecting the long history of strong cooperative movement in Maharashtra (Walker and Ryan 1990). Banks (commercial banks, regional rural banks) and finance companies have also

Table 11 Use of SHG loan

Purpose of loan	Village A			Village M		
	Number of outstanding loans (official purpose)	Share (%)	Number of outstanding loans (actual use)	Share (%)	Number of outstanding loans	Share (%)
Agriculture production	330	54.6	231	35.6	31	38.3
Purchase of livestock	164	27.2	118	18.2	3	3.7
Business	52	8.6	41	6.3	2	2.5
House construction/repair	15	2.5	39	6.0	3	3.7
Repayment of other loan	2	0.3	94	14.5	0	0.0
Ceremony/marriage	1	0.2	34	5.2	10	12.3
Education	2	0.3	19	2.9	2	2.5
House Expenditure	0	0.0	9	1.4	27	33.3
Medical Expenditure	0	0.0	8	1.2	3	3.7
Purchase of motor cycle	3	0.5	3	0.5	0	0.0
Purchase of assets (land, gold etc.)	1	0.2	13	2.0	0	0.0
Lending to others	0	0.0	9	1.4	0	0.0
Others	34	5.6	31	4.8	0	0.0
Total	604	100.0	649	100.0	81	100.0

Source: Survey conducted in 2010

Note (1) These are the data collected not from the surveyed households but from all SHGs in the two villages regarding their members' present loans. (2) In the questionnaire for Village M there was no question asking the difference of "official purpose" and "actual use". The question was only about "purpose of loan". (3) The answers to the question are free answers. (4) If one loan is used for multiple purposes, each purpose is counted as a separate loan up to two major purposes. (5) The shares of loans were calculated by numbers of loans not by amounts

appeared as major loan providers and means of savings. The role of the SHG Program as a source of loan is negligible as Fig. 3 clearly shows even for SHG member households. The SHG Program is playing a rather bigger role as means of savings as SHG's local name "Bachat Ghat (savings group)" rightly indicates.

(iii) **The Use of Loan**

Although SHGs have a very limited share in rural financial market, it may have an important effect on poverty alleviation depending on the ways loans are used. Therefore, before we conclude hastily that the impact of the SHG Program on poverty alleviation is negligible, we should discuss the qualitative aspects of this program.

Table 11 shows that how SHG loans are used in Village A and Village M. Notice that these data are the present loans of all SHG members in both villages.⁵ This table shows that the major uses of SHG loans in Village A are agricultural production (crop production), livestock purchase, repayment of other loans, business, house construction/repair, social ceremony, and so on. The major uses in Village M are agricultural production, house expenditure and ceremony/marriage. The share of loans used for house expenditure (purchase of food etc.) is high in Village M. Perhaps it is because bank loans are not easily available and sources of SHG loans in Village M are often members' own savings (internal loan). Amount of internal loans are usually little as the average amount of loan outstanding from SHGs 3,900 Rs shows. Therefore, internal loans do not satisfy villagers' credit need.

As seen above, the use of SHG loans is quite diversified and different between the two villages. However, apart from whether loans are used for productive purposes or consumption purposes, most of SHG loans are used for betterment of the members' life.

(iv) **Interest Rates of SHG Loans**

For loan seekers, interest rate is an important criterion for selection of loan sources. And the level of interest rates influences greatly the life of borrowers and the ways of loan use.

If interest rate is extremely high, it would trouble the borrowers' life because he/she has to pay a huge amount as interest at the time of repayment, which sometimes surpasses the principal and drives the borrower to lose important assets like land and impoverish him/her or even to commit suicide. And high interest loans usually cannot be used for investment purposes, because profits from investment in agriculture and businesses are usually not so high as to allow borrowers to pay 30 or 40 % of annual interest rates.

But if the interest is low, borrowers can easily repay the loan without trouble and can invest the loan for long-term investment such as buying agricultural land, tractors, installing a tube-well and starting new businesses etc.

⁵ The reason the data of the total SHG members in the two villages are shown here is that the number of loans from SHGs is very limited, especially in Village M. Therefore, we cannot understand correctly for what purposes SHG loans are used if we only use the data of the surveyed households.

Table 12 shows the interest rates of loans borrowed by the households at the time of the survey. Interest rates of loans are quite various depending on the sources and the village. In Village A, pawn brokers, money lenders, shopkeepers, and friends/relatives charge high interest rates of around 30 to 40 % annually. Among various loan sources, SHGs (Bank Fund) offer the cheapest loan along with banks and PACS. Even the interest rate of SHGs' internal loans is lower than most of informal loans. Another great merit of SHGs' internal loans is that the interest charged is distributed equally among all members as a profit of SHG. Therefore, it is easily understandable that SHG loan is highly appreciated among villagers.

SHG loans, however, have a totally different meaning in Village M. Surprisingly, the loan which charges the highest interest rate is SHGs in Village M. Common loan sources in this village are shopkeepers, friends/relatives, and banks and their interest is nil in case of borrowing from shopkeepers and friends/relatives and only 12.5 % for loans from banks. Interest rate of loans from PACS is even lower (6.5 %). Compared with these common loan sources, interest rate charged by internal loans of SHGs (24 %) is the highest level in this village. And lower interest loans from banks are not easily available as the number of loanees of SHG (Bank Fund) being only 3 as Table 12 shows. Relatively high interest rate of SHG

Table 12 Source wise interest rates of loans and the number of borrowers

Source of loan	Village A (70 HH)		Village M (89 HH)	
	Average annual interest rate (%)	Number of loanees (HH)	Average annual interest rate (%)	Number of loanees (HH)
SHG (Bank Fund)	12.0	43	14.0	3
SHG (Own Fund)	24.0	11	24.0	8
SHG (average)	14.4	48	21.3	11
Bank	11.6	27	12.5	49
PACS	12.0	8	6.5	11
Chit fund	24.0	16	n.a.	0
Pawn broker	42.0	8	n.a.	0
Finance company	18.0	1	14.0	5
Micro finance	20.3	8	n.a.	0
Dairy company/owner	n.a.	0	0.0	16
Money lender	33.3	43	n.a.	0
Friends/relatives	28.6	13	0.0	62
Shopkeeper	30.9	14	0.0	74

Source Survey conducted in 2010

Note "Average Annual Interest Rates" were calculated by simple averages of interest rate of each loan except "SHG (average)" which were calculated by average interest rate and numbers of loanees of "SHG (Bank Fund)" and "SHG (Own Fund)" (internal loans)

Table 13 Effect of the SHG program on life improvement

Question: Has your life improved by joining SHG ?			
	Village A	Village M	Total
Yes, very much	10 (19.2 %)	2 (8.3 %)	12 (15.8 %)
Yes, but not much	24 (46.2 %)	16(66.7 %)	40 (52.6 %)
No change	17 (32.7 %)	4(16.7 %)	21 (27.6 %)
Life worsend	0 (0.0 %)	0 (0.0 %)	0 (0.0 %)
No answer	1 (1.9 %)	2 (8.3 %)	3 (3.9 %)
Total	52 (100.0 %)	24 (100.0 %)	76 (100.0 %)

Source Survey conducted in 2010

loans must be one of the main reasons, the SHG Program is not popular and some SHGs have collapsed because of default of SHG members in Village M. If this is true, relative high interest rate charged by SHGs is diminishing its own market as Stiglitz and Weiss argued the effect of “adverse selection” caused by high interest rate (Stiglitz and Weiss 1981).

It is true that there are moneylenders who charge 60 % of annual interest rate in village M. But fortunately very few people go for them nowadays. In our surveyed households, there was no borrower from such usurious money lenders.

(v) Effect of the SHG Program on Life Improvement

So the next question arises. If SHG loans are used for necessary purposes and interest rate is low in Village A, is the SHG Program improving the life of the members? If “yes”, to what extent? To this question one-fifth (19.2 %) of SHG member households in Village A answered that their life has improved “very much” due to the SHG Program (Table 13). If we include “Improved, but not much”, 65 % of member households answered that their life has improved at least to some extent due to the SHG Program.

Likewise, in Village M, 75 % of the total member households appreciate the effect of the SHG Program on their life. But the ratio of member households which answered that the SHG Program has improved their life “very much” is considerably lower (8 %) than Village A (19 %). Lower appreciation of members on this program in Village M may be attributed to the less chance of getting low interest bank loans and high interest rate charged for internal loans. Nonavailability of other services like subsidized gas, pension scheme and scholarship for children, which the SHG Program in AP offers to SHG members is probably another cause of low satisfaction from this program in village M.

However, it should be also noticed that no member household answered that her/his life has worsened because of joining the SHG Program. Readers of this chapter may think this answer is a matter of course. But we must remember that some microfinance providers in AP State have recently caused suicide of poor borrowers by putting heavy pressure on them for recovery of loans (Sriram 2010). The SHG Program in AP is a great success in that it realizes almost 100 % recovery without making such problems. The main reason of this success seems to

Table 14 Villagers' perception of the SHG program

	Village A	Village M
Number of SHG member households	52	24
Number of households wishing to continue SHG activities	51	23
Ratio of SHG HHs wishing to continue SHG activities (%)	98.1	95.8
Biggest reason SHG members wish to continue SHG activities		
Biggest reason	Low interest loan (47), Savings (2)	Savings (18), Safe savings (3), Easy procedure (1)
Second biggest reason	Savings (34), Pension (9), Subsidized gas (3)	Savings (3), Safe savings (2), Availability of loan (2)
Third biggest reason	Pension (17), Subsidized gas (16), Education scholarship (9)	
Biggest reason non SHG members don't wish to join SHGs	No money to save (9), Husband doesn't encourage (5)	Not interested (59), No money to save (3)

Source Survey conducted in 2010

Note Numbers in parentheses are the numbers of households answered

be that SHGs in AP are functioning as effective and flexible peer monitoring organizations ⁶(See Stiglitz 1990).

(c) Factors to improve the SHG Program

(i) Members' Perception of the SHG Program

How do villagers perceive the SHG program? As Table 14 shows, most of the present SHG members wish to continue SHG activities. This means that the SHG Program gives at least some benefit to most of members and the benefit they get is bigger than the cost they pay. And for most of members, the major benefits they get from this program are "low interest loan" and "means of safe savings" in Village A. Other than low interest loans from banks, monthly small savings of 50–100 Rs are also appreciated by most of members, because they can get fairly a big amount of money from own savings and the SHGs' profit when SHGs divide the savings and profit equally among members after several years of operation.

⁶ Information from SHG leaders of Village A and M revealed that collecting repayment of loans and savings regularly was the biggest problem of SHGs' management. Some borrowers and members cannot or don't want to repay and save regularly due to various reasons. In such cases, SHGs allow members to postpone the repayment of loans and monthly savings up to certain limit. But finally most of SHGs realize 100 % of repayment. This shows that at least existing SHGs are working as a flexible and strong recovery system.

In addition to these basic financial services, other poverty alleviation schemes of the AP Government like “pension scheme”, “subsidized gas”, and “scholarship for children’s education” are provided through SHGs as parts of Indira Kranti Patham Program. They are additional incentives for rural women to participate in the SHG Program. Thus, the SHG Program is considered as a beneficial program by most of rural households in Village A.

While positive feedback has been expressed in Village A, majority of villagers in Village M including the landless poor who do not have access to the formal financial institutions do not recognize the merit of joining the SHG Program. How does cultural and governance factors explain this observation? The main reason of the unpopularity of this program in Village M is that it is difficult to get low interest bank loans through SHGs. There is also a risk that they may lose their savings in SHGs due to collapse of SHGs. In Village M or more generally speaking in Maharashtra State, scarcity of bank loans from SHGs and weak management of SHGs seems to be the two sides of the same coin. Banks do not give loans to SHGs easily, because SHGs are not well managed and possibility of loan default is high as NPA (Nonperforming Assets) ratio of Maharashtra in Table 2 shows. And some SHG members do not want to repay their loans, because the chance to get the next bank loan is low and interest rate of internal loans (24 %) is much higher compared with other formal loans from PACS and bank loans (6.5–12.5 %). In addition, credit from friends and relatives are usually free of interest. Therefore, many SHG members try to escape from repayment of their loans. The bad culture nourished by frequent loan waivers (See Walker and Ryan 1990, Chap. 7) may be one of the reasons that SHG members try to escape from loan repayment. These various factors altogether deteriorate the management of SHGs. Thus, weak management of SHGs and less availability of loans from banks are making vicious circle in Village M and Maharashtra State, which loses interest and expectation of villagers for the SHG Program.

(ii) **Necessary Measures to Enhance the Effect of the SHG Program**

In the above analyses, we have examined the achievements of the SHG Program and found that it is generally considered to be a good and effective program for improvement of villager’s life in spite of its limited impact. So what measures are necessary to enhance its effect of poverty alleviation?

In Village A, more generally speaking in AP State, one necessary measure would be to enlarge its coverage, that is, to expand its membership to the poorer section of the society. Many poor people are still excluded from this program due to problems caused by defects of program design. Since many other anti-poverty programs are also delivered to the villagers through SHGs, exclusion of the poorest people from the SHG Program may widen the gap between the poorest and other section of the rural society. Therefore, inclusion of the poorest of the poor into this program by tuning up the program design is of urgent necessity.

Another effective measure would be to provide bigger and more frequent bank loans to meet the demand of SHG members. To the question asking the most expected measures for development of the SHG Program, 25 leaders among 47 SHGs answered “large and more frequent loans” in Village A. It is necessary to

widen the loan pipe and smooth the credit flow from banks especially to those villagers who do not have another access to formal finance, namely, the poor.

On the other hand, low participation ratio of the SHG Program in Village M suggests the importance of good management of SHGs and adequate support of banks or NGOs for this sake. Without experienced and well-functioning SHGs, there will be no scope that the SHG Program will develop in Village M, or generally speaking in Maharashtra. Existing SHGs in Village M are supported by a few voluntary “coordinators” in the village. But more systematic and firm support system like Indira Kranti Patham and SERP in AP seems to be the essential condition to extend the SHG Program especially to the poor.

5 Conclusion

Due to a strong initiative and elaborate support of the government, the SHG Program has spread rapidly to every corner of rural area and majority of rural households are now involved in this program in AP State. For the beneficiaries, this program provides not only cheap loan but also other various services like savings facility, pension scheme, subsidized gas, and scholarship for children’s education. Although the amount of loans compared with their total credit need is very little, its interest rate is much lower than the loans from money lenders and friends/relatives. Thus, most of SHG members feel that the SHG Program is beneficial to them. However, the amount and frequency of SHG loans are far less than their need which drives villagers go for other loan sources including usurious money lenders and relentless micro finance.⁷ In order to solve the mismatch of credit demand and supply and to increase the effect of poverty alleviation, banks are expected to give bigger and frequent loans to SHGs. But this requires SHGs to enhance their capacity as effective financial intermediaries which have stronger assessing, monitoring, and enforcement power.

Moreover, many poor households are still excluded from the SHG Program due to poverty (lack of saving capacity) and age limit etc. In order to include these poor and aged households, the design of this program needs to be improved.

In Maharashtra State where Village M is situated, the SHG Program is not very active as in AP State, although most of present members appreciate the benefit of this program to some extent. The problems of the SHG Program in Village M suggest the factors causing its inactivity and the challenges this program is facing in Maharashtra. Lack or inadequate support system for the management of SHGs seems to be the main cause of inactivity and unpopularity of this program. Due to weak management of SHGs, many groups have dissolved and villagers’ trust on

⁷ One of SHG leaders in Village A told the author that one micro finance institution has come and started lending in this village recently. Although it charges higher interest rate and weekly collection of loans is inflexible and relentless, some people have to borrow from it because loans from SHGs do not satisfy their credit need.

the SHG Program has been lost. These weak SHGs make the banks hesitate to give large and frequent loans to SHGs, which again reduces villagers' expectation toward the SHG Program. As a consequence, the program is thrown into the vicious circle of weaker management of SHGs and lack of impact especially on achieving poverty alleviation and more equitable development.

In conclusion, putting aside the discussion about efficiency and viability of the program, the SHG Program can be a more effective tool for delivering various financial services to the rural poor and for effective poverty alleviation. But the key factor for success of this program is the firm and well-functioning SHGs as financial intermediary institutions. In order to strengthen the management of SHGs, they need to be more sufficiently supported by banks/NGOs/government institutions especially with respect to capacity building on management, book-keeping, monitoring, and enforcement of loan repayment. As Geertz (1962) argued the role of ROSCAs in financial development, keeping the advantage of flexible informal self organizations, SHGs must learn the financial discipline, so that they can play more vital role to deliver formal financial services to the rural area especially to the rural poor.

In order to extend the SHG Program to areas/states/countries where it does not exist or has not developed well, experiences of AP and Maharashtra provide lessons on what works and what does not work. The different results of the AP and Maharashtra experiences reflect the differences in government policies, management of SHGs, culture, etc. If properly designed and implemented, the SHG Program will have a much bigger impact on inclusion of the poor, poverty alleviation, and equitable development not only in India but in South Asia where 500 million people still live in sheer poverty.

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Synergistic Effects of Microfinance Through SHGs: A Study of Basic Health and Primary Education Indicators

Sharmistha Banerjee and Arijita Dutta

1 Microfinance: A New Direction

Traditionally, money-lending institutions such as banks, lent funds only to people who had property, steady earnings, and a credit history. They did not regard the poor as creditworthy, leading to serious bias for the rich to grab all the credit available in the market. Also, the poorest people, with the highest need of credit for almost everything in life (crop cycle, crop failure, regular consumption, health shocks, educational fees, daughter's dowry, health, and bereavement), had to depend solely on the usurious money lenders, and thus they were shackled in the exploitative grids of informal credit market. In the last few decades, however, the concept of banking for the poor has become a reality, thanks to the world famous experience of Bangladesh Grameen Bank. In such programs, loans are small and often paid back in daily, weekly, or monthly installments. The term "microcredit" has come to identify them. The microfinance movement has spread across the globe by an unprecedented effort to reduce poverty. The concept of lending credit to the impoverished has made its way to the public eye, with 2005 being named as the 'Year of Microcredit' by the U.N. and the 2006 Noble Peace Award being given to the father of microfinance, Mohammed Yunus. Yunus is a staunch proponent of socially focused private firms, to the point that he advocates societies should set up separate industries for these areas. With this movement, development and maintaining MFI through Self Help Groups (SHGs) has been identified widely in the policy anvil and India too has stressed on this instrument to reduce poverty as well as to improve the education and health seeking behaviour of the members of such SHGs.

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Often, loans from microfinance institutions (MFI) are made to groups of people rather than to individuals as a means of ensuring greater security to the microfinance institution through the option of ‘peer pressure’ among the group members. Although group lending is still prevalent at many microfinance institutions, lending to individuals has become more popular. Today, MFIs offer diversified loan products, including personal savings options, housing loans, insurance packages and social services including health, education, and care. The numerous financial products for the poor fall under the umbrella of microfinance.

It is widely acknowledged that the poorer people need more than microfinance to address the causes and condition of their poverty. Ideally, the poor require a *coordinated combination* of microfinance services and other development services to improve business, income, assets, health, nutrition, family planning, education of children, and social support networks. The question is how to ensure a *coordinated combination* of appropriate services, especially in rural communities where multiple services are simply unavailable. In this chapter, an attempt has been made to study the grass root reality of the functioning of microfinance mechanism through SHGs in West Bengal and their developmental influences.

Microfinance has evolved over the past quarter century across India into various operating forms and to varying degrees of success. One such form of microfinance has been the development of the Self-Help movement. As a supplementary development approach, this business model was launched by NABARD in 1991–1992 for linking the SHGs to formal credit institutions, without any security or collateral. Subsequently, in 1996 the Reserve Bank of India advised all commercial banks to treat SHG lending as a priority area (NABARD 2005; Singh 2005). Based on the concept of “self-help,” small groups of women were formed into groups of 10 to 20 and operated a savings-first business model whereby the member’s savings were used to fund loans. In 1999, the Government of India merged various credit programs together, refined them and launched a new program called Swaranjayanti Gram Swarazagar Yojana (SGSY). The mandate of SGSY is to provide subsidized credit to the poor through the banking sector, to generate self-employment through a SHG approach and the program has grown to an enormous size.

The results from these SHGs are promising and have become a focus of intense examination as it is proving to be an effective method of poverty reduction and developmental activities (Kropp EW 2002). Large number of studies (referred later in this chapter) have addressed the linkages between microfinance practitioners and their motivation to provide nonfinancial services to their clients, because they recognize the need and hear the demand. Though this may challenge the legitimate concern for sustainability, interpreted as the financial viability of the microfinance service, it is worthwhile to make an academic exercise to focus on the possibility of the SHG meeting, the financial needs of their clients consequently fulfilling their nonfinancial needs.

This chapter examines the SHG operating model, the state of SHGs in West Bengal from the available secondary data, their impact on basic development indicators like health and primary education. Group-based microfinance, through the mechanism of SHGs, which is the focus of this chapter, provides a good

opportunity to provide awareness about the need for primary education and basic health care, through their meetings and peer consultations. This is especially true for village banking and related delivery systems that bring large groups of relatively poor clients together in regular meetings. While microfinance has begun to provide capital, there is a lack of adequate resources to provide knowledge and opportunity. It is believed that group-based micro finance provides a good opportunity for creating not only the financial resources for education and health but also the human capital. Nonformal awareness generation techniques can be used effectively in these regular meetings to promote changes in personal behaviour, inculcate the spirit for acceptance of primary education, and health care. A variety of education and awareness issues can be covered effectively to shed light on their superstitions and myths. Thus, this model of SHG not only has a tremendous intrinsic value, but also possesses crucial instrumental value for overall development.

As it has been already identified in a number of studies that financial independence of women and community pressure can alter the health seeking behaviour of not only the mothers, but also for the children. It also creates positive externality of awareness generation for the need of education. Women—often marginalized women are the primary loan recipients of microfinance. Women are the gateway to household security, as they generally invest more in the welfare of the family than do men. This includes expenses for education, health care, clothing, shelter, and household items. Women are also more conscientious savers to protect themselves and their family in time of crisis. Women are thus an appropriate target group for mitigating poverty and maximizing the social impact of development strategies. As data from many developing countries reflect (where India is not an outlier), women rarely have many savings on expenditure of general family income, and hence small saving in hand does provide her crucial power to spend in developmental activities of the family.

The chapter's first section provides a brief description of microfinance and highlights the positive impacts on client, their families, and the community at large. It then discusses the issue of positive externalities (health and education), resulting from microfinance interventions. The discussion revolves around the success of SHGs in implementing microfinance strategies to accomplish better health and education. The case study of microfinance initiatives by the way of grade improvement in SHGs in West Bengal, and their impact on basic parameters of health and primary education is deliberated upon. The analysis in this chapter is meant to provide policy making bodies a better understanding of client needs and how to (re)structure programs to increase their impact in addressing multiple needs.

2 Objective and Methodology

Given the above-mentioned backdrop, the purpose of this chapter is to explore associations, if any, between successful functioning of SHGs in facilitating microfinance activities with primary education and basic health awareness

indications among people, based on secondary data from the different districts of West Bengal with reference to the years 2004–2005 and 2006–2007.

There are generally two models of SHGs operational in West Bengal. The SHGs formed under Primary Agricultural Society do not have any gradation system. The other type formed under Gram Panchayat under Swarna Jayanti Swarojgar Yojana (SGSY) operates a gradation system. After 6 months of operation, an SHG moves to grade I and after completion of 1 year of operation, the SHG is entitled to loan from the bank (mostly micro finance) and is said to move grade II. This chapter tries to investigate the synergy, if any, between the incidence of grade II SHGs (engaged in microfinance) taken as a proxy indicator for success of the SHGs and the primary education and basic health indicators. This may possibly evaluate, the inter district variation in the incidence of SHGs which have responded successfully to the challenge of integrating microfinance and education, health awareness, without compromising the sustainability of their microfinance and overall operations.

Following the legacy of Panchayati Raj System for the last 30 years in West Bengal, decentralization movement has received significant momentum in the state, and hence the environment has been conducive for the microfinance model to boost the household expenditure on human developmental activities.

The basic research questions of the chapter are:

- How far the districts in West Bengal have utilized the model of microfinance?
- Has there been any significant impact of microfinance at macrolevel to improve the health and education facilities in the districts?

The basic methodology of our chapter is descriptive analytical. The analysis is based on secondary data. For SHG-related data we used the report 'Paschimbanger koyekti jela-r meyeder swanirvar goshtir agragati: samiksha o suparish', Debjani Sengupta (Deb), Paschimbanga Mahila Commission 2008.

Health parameters related data have been culled from DLHS 2 and 3 (District Level Household and Facility Survey conducted by IIPS). The primary education related data has been used from Sarva Siksha Avijan records (www.ssa.nic.in). In order to normalize the number of SHGs in the districts, numbers of SHGs per 10,000 people are collected from Statistical Abstract 2005 (Table 4.2, Estimated Population of West Bengal), Bureau of Applied Economics and Statistics, Government of West Bengal.

3 Survey of Existing Literature

Until the past few years, offering loans to the poor has been the domain of non-governmental organizations (NGOs). Goldberg (2005) offers a rigorous, collective summary of a large number of quality impact studies on the performance of microfinance throughout the world. This section reviews the relevant research studies related to various aspects of microfinance and its relation with education and health.

Microfinance is financial intermediation through the distribution of small loans, acceptance of small savings and provision of other financial products and services to the poor (Remenyi and Quiñones 2000; De Armendariz and Morduch 2005). MFIs are generally categorized by the scope of their products and services: a 'minimalist' approach (providing financial services only) or an 'integrated' approach (financial services and additional services are offered). Microfinance focuses on providing poor people with access to credit, so they can engage in income-generating activities. Increased incomes are used to increase assets, including permanent houses or savings accounts, which offer recourse during hard times, and consumption, especially in food, nutrition, and education (Sebstad and Cohen 2000).

Given the multi-dimensional elements of poverty, solutions to poverty require multi-pronged efforts, with simultaneous action on multiple fronts (Sebstad and Cohen 2000; Takahashi 1998). Therefore, critics question the extent to which microfinance (with its emphasis on financial services for the poor) reduces poverty. It is believed that 'minimalist' MFIs Ignoring clients' health and education not only negates the ultimate poverty alleviation goal of the MFI but also threatens the institution's viability, as increasing number of clients are unable to pay back their loans (Ohri Chandni 2009). The linkage between microfinance and health improvement can work in two specific cases. First, people identify illness and death as the most frequent and devastating economic shocks. So the expenditure on health becomes something without any other alternative. Second, sick people cannot work as well or engage in income generating activities. In both the cases, MFIs can play an instrumental role in bringing health services to their clients. They provide regular access to the poor, applicable for health.

Gramin Bank reports that, among its clients, illness-related expenditures are the leading cause for microbusiness failures and loan default (Gramin Health Centers Serve Thousands in Gramin Connections, 2000). The negative impacts of poor client health on MFIs include delayed and nonrepayment, deterioration in business performance, due to neglect and redirection of capital and consequently undermining MFI client group solidarity.

A microcredit impact study showed that medical expenses are a determining factor in endangering household budgets. People identify illness and death as the most frequent and devastating economic shocks (Sebstad and Cohen 2000). Sick people cannot work as well or engage in income generating activities. It is not a co-incidence that HIV/AIDS is emerging as a major problem precisely in the geographic locations that MFIs work in—poverty is the common factor in both cases. There is significant overlap between the target population for microfinance and population affected by this disease—people who are 25–40 years old, poor, uneducated, and lack of access to health services. On the other hand, in countries with high incidence of HIV/AIDS, approaching 30 % in parts of Africa, MFIs are struggling to operate successfully.

Since many MFIs target women as potential clients, numerous studies have documented additional positive effects for women: increased empowerment and self-worth, improved gender relations within households, and decreased domestic

violence (Sebstad and Cohen 2000; Mizan 1994). MFI client targeting to women exacerbates the health issue, as women are usually more susceptible to health problems. In case of sick family members, woman nurse care for them. Poor women face increased health risks due to overwork and susceptibility to gynecological child-bearing related problems. Thus, the weak health of MFI female clients and their families adversely affect their engagement in economic activity and loan repayment. Such client problems directly impact MFI loan recovery and threaten financially self-sustainable organizations.

MFIs can play an instrumental role in bringing health services to their clients. Effective outreach is a major problem when targeting poor people. MFIs provide regular access to the poor, for health service delivery. Many MFIs have group-based delivery mechanisms where clients form groups that meet at regular intervals for loan administration. This group-based forum is an appropriate venue for health education services (Dunford 2002). Additional MFI program delivery systems include branch locations in poor areas, client relationships, and home site visits. These channels are also effective in providing health services. Studies document women increase healthcare service access when available locally (Mizan 1994).

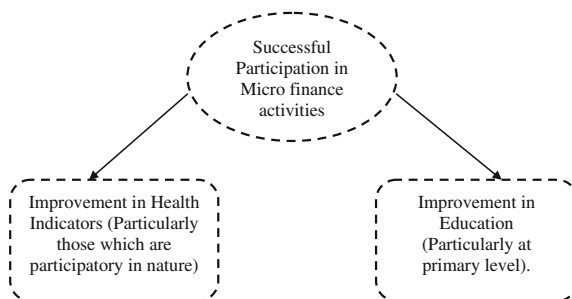
Increased health services on availability are an insufficient poverty alleviation mechanism without complementary efforts to improve income and education. By itself, health intervention impact is minimal and not cost-effective (Mosley and Chen 1984). Individual health programs providing information on better nutrition are incomplete without methods to increase income to purchase food. MFIs providing opportunities to increase income and development of social support groups help overcome the socioeconomic hurdles, maximized in conjunction with increased access to health facilities.

Edmark and Ericson's study on the impact of microcredit on children's schooling provides specific examples of positive impacts from increased household income (Edmark and Erica 2002; Tooley 2000, 2005; Amin and Arends-Kuenning 2004; Dixon and tooley 2003). Card (2001) and Patrinos and Psacharopoulos (2004) find that marginal returns on education are highest for the poorest, previously uneducated segments of populations. This brings one to infer that education is an area that requires the much needed push and seeks to explore how much of it can be driven by interventions through microfinance initiatives.

Maldonado (2005) (Blom and Canton 2004; Chowdhury et al 2003; Khumawala and Frazier 2007) examined the educational effects that microfinance programs have on children of clients, in Bolivia. Conclusions from the study include the need for incentives to be offered to clients to keep their children in school. Gonzalez-Vega et al. (2002) examined the impact of education programs provided by microfinance firms on business performance and overall education levels of clients.

Despite documented positive impacts like female empowerment, children's schooling, and better health, poverty persists, and critics contend these benefits are limited in both size and scope. In order to accomplish all encompassing poverty alleviation, including better health and education, these issues require specific

Fig. 1 Inter-linkages between micro finance and human development



program targeting. Successful intervention is not possible only through increasing incomes. As Streeten aptly expressed, “The choice is between precision bombing and devastation bombing.” (Streeten 1981) MFIs with scarce resources can apply them more efficiently to yield greater impact on poverty alleviation.

The above discussion highlights the various reasons why MFIs need to include overall ‘development’ as a primary goal, and provide products and services in the field of health and education to fulfill the same. Figure 1 depicts the relationship between microfinance, health, education, and overall development of the vulnerable population. A bad performance in microfinance-related activities may reduce the access and utilization of health care and education services. In this chapter, we attempt to explore this linkage in the context of West Bengal.

4 Microfinance in West Bengal

In India, the SHG model appeared to be a very successful concept of microcredit disbursement. As on March 31, 2010, there were 69.53 lakhs of SHGs, out of which 53.10 lakhs were women SHG (Status of Micro Finance in India 2009–2010, NABARD, November 2010). The rise of SHGs and more formal SHG Federations coupled with SHG Bank Linkages (referred to as moving to grade II, in this chapter) have made this a dominant form of microfinance in addition to MFI.

West Bengal, an eastern state in India, has overall poor performance of growth in State Domestic Products in the last 20 years. It performs in the middle rung of health indicators, while toward the lower rung in educational indicators across the states. Moreover, an overwhelming share of the population is dependent on agriculture and informal sector growth has been tremendous in the last few years. With this, the availability of formal credit is truncated in the state in a great extent. It has the Advance-Deposit Ratio in commercial banks (57.74 % in 2009), far lower than all-India average of 70.32 % (NABARD Status Report 2010). Inadequate banking facilities have been identified as a crucial barrier to growth and subsequent development in the state. In 2010, the RBI task force identified 938 Gram Panchayats (GP) without any branch of commercial banks, out of which 246 did not have any such facilities within a radius of 15 km!

To confront this acute dearth of formal credit availability, SHGs emerged as a leading alternative, especially at the grass-root levels. West Bengal, with 8,94,469 SHGs on March 31, 2010, with a cumulative savings of Rs. 1113.28 crores, ranks high among the states in terms of numbers of SHG. With a legacy of Left Politics and the drive for decentralization in the state, the SHG model was a huge success in creating informal, yet nondraining credit alternative to the general poor mass in West Bengal.

Though a late starter in comparison to other Indian states like Tamil Nadu, Andhra Pradesh and Karnataka, still West Bengal pioneered the move through the West Bengal State Co-operative Bank in 1992 in Mathurapur Block of south 24 Parganas.

District-wise records on SHGs, their formation, and gradation have been scattered due to the multiplicity in formation patterns. Out of the 16 districts from which data have been received in an organized fashion, the absolute number of SHGs formed in 2004–2005 and 2006–2007 have been studied here (Tables 1, 2).

Jalpaiguri is observed to be a consistently well performing district, holding rank 1 in the cumulative position on SHGs formed between 1999 and 2007, it topped the list showing the highest number of 5,453 SHGs formed in 2004–2005, but after a gap of 2 years (in 2006–2007) the rank of Jalpaiguri went down to 5. Similarly, Birbhum, which occupied rank 7 in 2004–2005 reached the first position in 2006–2007 and continued to hold the fourth position at the end of 9-year period. A more or less consistent position was maintained by Purulia and Malda when the SHG formations in the two focal years are considered, and even when their efforts over the 9-year period is considered (1999–2007). A notable decline in the number

Table 1 District-wise SHG formation in 2004–2005 and 2006–2007

District	SHG formed in 2004–2005		SHG formed in 2006–2007	
	Number	Rank	Number	Rank
Bankura	997	11	1299	9
Bardhaman	3024	6	2910	3
Birbhum	2125	7	4162	1
Cooch Bihar	3780	3	1825	7
Dakshin dinajpur	389	14	2786	4
Darjiling	264	15	384	16
Howrah	593	12	759	14
Hugli	417	13	1084	11
Jalpaiguri	5453	1	2133	5
Malda	3157	5	2109	6
Murshidabad	1936	8	1232	10
Nadia	1414	10	1535	8
North 24 Parganas	3865	2	569	15
Puruliya	3779	4	3475	2
South 24 Parganas	77	16	838	13
Uttar Dinajpur	1496	9	1043	12

Source Report of Paschimanga Mahila Commission 2008

Table 2 Cumulative number of SHGS formed between 1999 and 2007

District	Number	Rank
Bankura	11937	8
Bardhaman	14173	5
Birbhum	14179	4
Cooch Bihar	9996	10
Dakshin dinajpur	9030	11
Darjiling	1993	16
Howrah	6245	14
Hugli	4597	15
Jalpaiguri	19248	1
Malda	12292	6
Murshidabad	15766	3
Nadia	8250	12
North 24 Parganas	12081	7
Puruliya	16527	2
South 24 Parganas	10041	9
Uttar dinajpur	7251	13

Source Report of Paschimbanga Mahila Commission 2008

of SHGs formed in 2004–2005 in comparison to those in 2006–2007 may be observed in North 24 Parganas (from rank 2 to rank 15). Dakshin Dinajpur and Birbhum have, on the other hand, made significant improvements. The numbers of SHGs formed in Dakshin Dinajpur have gone up almost seven times. Specialized intervention on part of the state may have resulted in this remarkable change. Cooch Behar may have started late (given the poor rank in the cumulative table) but has been a good performer as far as SHG formation is considered in 2004–2005 and 2006–2007. We seek to investigate further, because sheer numbers do not explain much as to their income generation or health and educational awareness-related activities of the SHGs and rather specifically the research focus of this chapter which tries to find whether there has been any impact of the cooperative nature of SHGs on the overall improvement in the lives of the members. It is important to look into the target population that each of the SHGs is expected to serve. In order to obtain a scientific explanation to this idea, we next look into the number of SHGs formed per 10,000 population, in each district for the focal years 2004–2005 and 2006–2007, in Table 3.

From the normalized data (with reference to per 10,000 populations), the intra-district variation shows a similar trend as the absolute figures. Birbhum and Purulia were leading districts of North 24 Parganas and South 24 Parganas, Hugli and Murshidabad continued to be the laggards. Following the pattern of Table 1, Dakshin Dinajpur showed that there were almost 17 SHGs catering to the population of 10,000 people in 2007, the biggest jump among all districts.

In the context of SHGs serving the population, it is also relevant to find the qualitative nature and performance of the SHGs. The more successful SHGs which advance to gain the advantage of bank linkages provide microfinancial support to

Table 3 District-wise distribution of SHGs per 10,000 population

District	SHG per 10,000 population in 2004–2005		SHG per 10,000 population in 2006–2007	
	Number	Rank	Number	Rank
Bankura	3	10	3.81	8
Bardhaman	4.22	7	3.95	7
Birbhum	6.71	5	12.71	3
Cooch Bihar	14.65	2	6.89	4
Dakshin Dinajpur	2.44	12	16.77	1
Darjiling	1.54	13	2.14	11
Howrah	1.33	14	1.66	14
Hugli	0.79	15	2	12
Jalpaiguri	15.12	1	5.69	6
Malda	8.98	4	5.74	5
Murshidabad	3.1	9	1.89	13
Nadia	2.91	11	3.05	10
N 24 Parganas	4.07	8	0.57	16
Puruliya	14.32	3	12.83	2
S 24 Parganas	0.11	16	1.1	15
Uttar Dinajpur	5.68	6	3.76	9

Source Report of Paschimbanga Mahila Commission 2008 and Statistical Abstract 2005, Bureau of Applied Economics and Statistics, Government of West Bengal for estimated population figure

their members; therefore we look into the number of SHG groups that have moved into grades I and II in each of the 16 districts.¹

Coochbehar and Jalpaiguri report that more than 80 % of the SHGs moved up to grade I, but the movement to grade II in these districts, particularly Jalpaiguri was very poor (as low as 1.56). This is especially relevant for this study, because the real involvement of microfinance is focused on the SHGs which have moved to grade II. Thus, we will diagnose the health and educational parameters of the better and worse performing districts with special reference to their movement to grade II. In this context, Bardhaman showed a consistent grade improvement with 80 % of the SHGs formed between 1999 and 2007, moving to grade I and more than 40 % of their units have started operating in microfinance-related activities.

The dismal performance of Murshidabad and Hugli in terms of formation of SHG changes to remarkably good performance in ultimate success of the economic performance of these SHGs. Table 4 reports that Hugli in qualitative terms performed almost at par with Bardhaman, (70 % moving to grade I and 26 % to grade II). Murshidabad was a low ranking district in terms of number of SHGs formed (in 2004–2005 and 2006–2007), but 75 % of them moved to grade I and 25 % to grade II (between 1999 and 2007). The consistent efforts of Howrah and Bardhaman may be accountable to their proximity to the urban agglomerate

¹ Please give a short note on what are gradations.

Table 4 District wise performance of SHGs in Grade I and Grade II

District	Percentage of SHGs graduated to grade I	Rank	Percentage of SHGs graduated to grade II	Rank
Bankura	63.77	16	8.94	14
Bardhaman	79.91	3	43.22	1
Birbhum	75.36	8	12.53	12
Cooch Bihar	83.84	1	22.72	5
Dakshin dinajpur	71	10	10.96	13
Darjiling	69.19	12	20.87	6
Howrah	69.8	11	30.42	2
Hugli	68.28	13	26.41	3
Jalpaiguri	82.18	2	1.56	15
Malda	73.68	9	13.42	11
Murshidabad	75.39	7	25.88	4
Nadia	67.83	14	14.24	10
N 24 Parganas	79.87	4	17.18	7
Puruliya	78.52	5	0.44	16
S 24 Parganas	75.54	6	15.84	9
Uttar Dinajpur	66.34	15	16.01	8

Source Report of Paschimbanga Mahila Commission 2008

and larger district head quarters. But we need to explore further into the probable effects of these SHGs on the health and education of the people in these districts.

5 SHG Membership and Health Indicators

Table 5 presents the inter-district variation in the two crucial health indicators, namely, institutional delivery and rate of immunization for children of 12–23 months. We choose two specific indicators because they are the most closely related to the focus area of health service delivery by the government, namely reproductive and child health. Over the two periods, Bankura, Howrah, and Hugli have been the three most consistent performers in terms of both the indicators. A surprising entry in 2006–2007 has been Darjeeling. The most consistent bad performer, on the other hand, has been Uttar Dinajpur. It has the lowest rank in both the indicators, in both time periods! Malda too performed quite badly.

Interestingly, we find that the districts like Howrah, Hugli, and Bankura had quite small number of SHGs per 10,000 populations in 2006–2007 (Table 3). In fact, Howrah has third lowest numbers of SHGs per 10,000 populations. So it is not at all true that mere presence of SHGs can eventually improve the human development indicators. We know that creation of SHG has been on the policy anvil throughout the states in India since mid1990s. The district officials, Department of Panchayat and Rural Development etc., take special thrust in creating SHGs among the poorest population as part of their policy intervention to remove poverty. Hence, creation of SHG turns out to be a simple supply side big-push.

Table 5 District-wise performance of health indicators in 2004–2005 and 2006–2007

District	2004–2005		2006–2007	
	Institutional delivery (%)	Children (12–23 months) fully immunized (%)	Institutional delivery (%)	Children (12–23 months) fully immunized (%)
Bankura	62.7	67.4	61.4	91.7
Bardhaman	58.2	60.2	58.0	63.8
Birbhum	55.9	43.2	48.7	65.8
Cooch Bihar	49.3	53.4	46.4	78.0
Dakshin Dinajpur	51.9	60.2	40.3	88.9
Darjiling	54.8	57	72.4	86.2
Howrah	55.2	58.3	65.7	76.4
Hugli	58.7	73.6	80.1	92.9
Jalpaiguri	52.4	69.5	48.4	78.4
Malda	33.6	46.9	28.6	69.7
Murshidabad	52.3	27.9	41.6	62.5
Nadia	46.3	71.9	69.9	86.0
N 24 Parganas	48.3	62	62.8	81.7
Puruliya	48.3	65.5	39.9	84.3
S 24 Parganas	50	54.4	36.4	73.8
Uttar Dinajpur	32.1	27.6	27.6	54.5

Source DLHS 2 and 3

Actually, as we have already noted that the actual performance of the SHGs depend on the better qualitative performance indicated by moving to grade II. This signifies whether the created SHGs have been really able to develop the network among themselves, which eventually help them to break the barriers of underdevelopment. We find that both Howrah and Hugli's share of SHGs moving to grade II are pretty high (Table 4). We calculate the simple Pearson's correlation for the said qualitative indicator across the districts and the growth rates of the health indicators between 2004–2005 and 2006–2007 (Table 6).

An interesting story emerges here from the aforesaid table. The qualitative indicator of SHG is significantly correlated with growth rate of institutional

Table 6 Correlation Table

Indicators	Share of SHGs moving to grade II
Growth rate of ID between 2004–2005 and 2006–2007	0.27*
Growth rate of Immunization between 2004–2005 and 2006–2007	0.03

*Significant at 5 % level

delivery, but not with growth rate of immunization rate. Studies suggest that main barriers to go for delivery at institutions are more related to traditional beliefs and customs, rather than supply side bottlenecks, while those for immunization depend on the regularity of ANM, availability of subcenters, economic status of the household etc. (Dutta and Khasnabis 2012; Barman and Majumdar 2009). The difference in the results actually emanates from the fact that creation of SHG and its better performance can crucially influence the community behaviour of the members, as well as those who are nested in the same neighborhood even without being the co-members. The very '*being together*' as peers can greatly control the same feelings, community pressure as well as the decision-making power. Whether a lady should be brought to the institution for delivery or be kept within the home is determined most heavily by this community pressure and the feel of need. Several earlier studies have pointed out that most often the mother wants to go to the hospital for delivery, but the family members and friends think that they should be kept at home. The joint forums of SHG are often utilized by frontline health workers for an effective out-reach to their awareness generation. On the other hand, immunization is something which is primarily a private decision of the child's parents and not by the peer pressure. Hence, the results of this table succinctly show that how and where being a part of successful SHG can alter a specific type of health indicators, and not all.

6 SHG Membership and Primary Education Participation

Further, we seek to explore SHG formation, sustenance and relation if any, with the level of NER (number of children of official primary school age who are enrolled in primary education as a percentage of the total children of the official school age population) ratios of these districts. Both primary (up to class IV) and upper primary (up to class VII) data have been used from Sarva Siksha Avijan records for analysis.

We submit that the gross enrolment ratios have not been considered here purposely. Given that the proactive drive on behalf of the state authorities through the Sarva Siksha Avijan was at its height in the period under study. Therefore, the efforts to ensure "all children into school" brought about a surge in enrollment in schools, regardless of any awareness or motivation among families and age of the children.

In contrast to health, we find some startling facts about the impact of SHG on education of the children. It was expected from the literature that improvement in financial status through SHG would mean more investment in education for the children. As we do not have data on investment on education at district level, we used the output indicators like Net Enrolment Ratio in both primary and upper primary levels.

Considering the NER figures of the districts of 2004–2005 (Table 7), it may be observed that Darjeeling and 24 Parganas (N) occupy an overall dismal position at

both primary and upper primary levels. Malda has high NER at primary levels. But a remarkable difference is noted in the district as the children move up to upper primary levels. At primary level, Malda has the highest NER (96.2) which falls to almost one-third between 48.8 and 36.6 respectively, being the lowest among the districts of the state. On the other hand, Coochbehar maintains its top ranks of NER at both primary and upper primary levels.

Further, the 2006–2007 figures (Table 7) show a similar pattern in Coochbehar which maintains an all district high and stable NER at primary and upper primary levels. A fall of <50 % from primary to upper primary levels in GER and NER is found in Malda, Uttar Dinajpur and Purulia (same as 04–05).

Comparing the figures of 2004–2005 and 2006–2007 as in Table 7, it may be observed that Malda, Murshidabad, Uttar Dinajpur, and Purulia have achieved NER of 100, which show an improvement, and may be a fall out of the push toward sending all children to school accounted for by the efforts of Sarva Siksha Avijan and not necessarily an awareness of mothers involved in SHG. But considering the change over these 24 years, in case of Malda, Murshidabad and Dakshin Dinajpur, it may be seen that NER at upper level has improved more than 15 percentile points. This is probably an exceptionally favorable improvement indicating that children in the right age continue up to the upper primary levels in these three districts. The decline in Darjeeling may be submitted to be a documentation issue, given the political disturbances that plague the district.

Following the analysis in Sect. 4, Purulia is found to be a top ranking district as far as SHG formation and grade I movement is concerned (Tables 1 and 2).

Table 7 District wise NER for Primary and Upper primary education for 2004–2005 and 2006–2007

District	NER_P_ 04–05	NER_UP 04–05	NER_P_ 06–07	NER_UP 06–07
Bankura	79.5	44.3	92.75	52.74
Bardhaman	67	42.1	74.95	48.34
Birbhum	86.3	43.4	96.19	53.02
Cooch Bihar	87.9	52.9	98.71	63.36
Dakshin dinajpur	85.5	45	96.39	63.88
Darjiling	42.6	17.5	28.75	18.43
Howrah	63.6	42.4	85.96	52.42
Hugli	63.5	39.8	72.51	42.95
Jalpaiguri	79.2	41	87.51	52.08
Malda	96.2	36.6	100	51.02
Murshidabad	91.3	41	100	57.01
Nadia	82.3	47.5	92.28	59.25
North 24 Parganas	56.4	39.6	63.4	47.2
Puruliya	84	40.9	100	49.75
South 24 Parganas	78.4	42.2	89.36	52.39
Uttar Dinajpur	86.4	31.9	100	42.41

Source www.ssa.nic.in

But Table 4 shows that only 0.44 % graduated to grade II. This trend shows a particular behaviour of the people who are possibly eager to take the benefit of any new scheme floated by the government (formation of SHG or mid-day meal schemes in primary schools) but are unable to continue their activities in a steady manner. Purulia, being one of the backward districts therefore may have formed large number of SHGs and also obtained high NER at primary levels (moving from 84 to 100 from 2004–2005 to 2006–2007), but due to structural and motivational challenges the SHGs grading to grade II is lowest, and NER at upper primary shows a rise of 9 percentile points from 2004–2005 to 2006–2007. Hence, the hypothesis of improvement of NER and SHG performance may be truncated at the aggregate level. Malda was found to be one of the better performing districts when formation of SHG was considered and it also showed state level high NER for primary enrollment in 2004–2005 and also in 2005–2006, but only 13 % of the SHGs in Malda took the benefit of micro finance activities.

The same trend as in Purulia was noticed in Malda, with high NER at primary level. It falls to very low in NER at upper primary level for both the years under study. NER falls to one-third from primary level to upper primary level in 2004–2005 and to half from primary level to upper primary level in 2006–2007. Burdwan and Hugli were in significantly advantageous position as far as SHG sustenance and qualitative performance is considered (as reflected in Table 4), but their NER from 2004–2005 to 2006–2007 was average and below at both primary and upper primary level. Thus, the enrollment of the adults in SHG and their efficient functioning probably did not have much impact on their awareness about sending all children to school. But the same scenario of very poor enrollment was noted in 24 Parganas (S) and 24 Parganas (N) which also had a similarity in pattern with inferior performance as far as SHG formation or grade improvement is concerned. Thus, simple number analysis does not indicate any causal pattern of SHG formation, its involvement in microfinance act and the enrollment of the children in schools in the appropriate ages.

However, Table 8 shows that the correlation coefficient is negative and significant. This unexpected result may have some explanation from the theory of mothers' employment and drop-out rates. As the parents, particularly mothers, become engaged in some business with SHG money, they cannot spend time in domestic chores as before and hence older children are withdrawn from education. This happens more when they need more travel time to the upper primary schools. The following table shows that the NER in primary schools improve, though insignificantly, but success of SHG actually decreases in the NER in upper primary level.

Table 8 Correlation coefficients for SHG and education (NER and GER)

Indicators	Share of SHGs moving to grade II
Change in NER_Upper Primary between 2004–2005 and 2006–2007	–0.29*
Change in NER_Primary between 2004–2005 and 2006–2007	0.04

*Significance at 5 % level

7 Conclusion

The above analysis shows that the state of West Bengal has done considerably well in formation of SHG across the districts. Special care through state supported intervention measure has been taken for backward districts where the creation of SHG has been high. However, coming to the financial viability, the better-off districts like Bardhaman, Howrah, and Hugli performed well. Looking at the externality factors created by these SHGs, the chapter highlights two crucial observations.

- The health indicators which are dependent more on community pressure and awareness, performed in a better way in the districts with higher financial viability of SHG. But those indicators for which the health seeking behaviour is more privately determined by household members, rather than the community as a whole, did not improve over the years in association with SHG's success. The nested effect of households within communities could be altered by the 'out-reach' forums of SHG.
- In case of education, not much impact was found in improving net enrollment ratio in primary schools. More crucially, the enrollment ratio at the upper primary schools bore a negative relation with SHG, indicating the access crisis as well as impact of mother's employment on school drop outs.

Thus in totality, we can say that SHG is a very powerful tool to improve not only the poverty scenario of the vulnerable poor, but also creates a strong synergy in health and education seeking behaviour. However, it should be borne in mind that SHG is not magic. Its success in creating the awareness can be translated to actual output performance only if there is access to the service in general. If giving employment to the mothers increase dropout rates or vaccination coverage, special service for crèche facilities should be provided at the community level. The SHG can act as a catalyst in creating the demand side awareness, but the limitations in the supply side can truncate the positive externalities in a great extent.

Finally, the chapter does suffer from aggregation problems and a proper causal study can be at the primary field level actually identify the extent of the externality and the barriers to utilize them.

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For a Better World: Livelihood Security Measurement of the SHG Members

Avijit Brahmachary

1 Introduction

In order to achieve a satisfactory level of human development, it is essential for all individuals to enjoy a sense of security, a sense of belonging and a sense of direction. This sense of security must prevail, for each individual, not only within oneself, but also within the family, the workplace and the community. Lack of security raises uncertainty and vulnerability, and makes people lose their sense of moderation and induces them to behave opportunistically and irresponsibly. Insecurity also stamps out innovativeness and inhibits people from productive risk-taking options. As such, the sense of insecurity finds an echo all over the world among all types of people, regardless of their status or gender. It is universally acknowledged that ‘basic security’, with economic, social and representational connotations, should be a matter of human rights and must be seen as a necessary condition for advancing real freedom (ILO 2004; Robinson 2001).

Ironically, throughout history, periods of rapid economic growth have been associated with erosion of basic security through failure of mass entitlement. Development continues to involve increases in risks and uncertainties. These risks are not contingent in nature, to be alleviated by social insurance, but are systemic risks inherent in the process of development. Thus, a rights-based approach to economic and social ‘protection’ would perhaps be more appropriate. In view of this, any institutional change or innovation should be addressed by the principle that to be socially just, it must improve the position of the least secured groups in society. Insofar, as most of self-help group (SHG) members belong to the least advantaged section of the society, surviving on the knife-edge of stability, the possibility of improved security for them should assume significant importance (Morduch 2004; Yonus 1999).

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Here, we make an attempt to construct a security index (Overall and Component based) to measure the overall security of the self-help group members. Actually, here our position starts with the hypothesis that every self-help group member will enjoy some sort of economic and social security as compared to the non-members. The index will help to establish this hypothesis by measuring the economic and social status of both the members and non-members. Along with this, the index will help to assess the effectiveness of the programme in the context of India (West Bengal). The index will help to focus on major economic and social indicators related with the members to assess quantitatively the performance of the programme in India (West Bengal), and to identify the future tasks left to develop and implement the programme more efficiently.

2 Microfinance (MF) Through SHGs in India

The failure of formal institutions to serve the rural poor effectively led to a review and look at the informal financial systems and lending groups. In international lexicon, informal groups play an important role in channelling fund for unbanked poor. The basic feature of such groups (known as Rotating Saving and Credit Associations, or, Regular Savings and Credit Associations) is that there is negligible information gap between the lender and the borrower and little transaction cost involved for both parties (Bouman 1989; Dasgupta 2001). Besides, 'peer monitoring' among the beneficiaries of the groups rectifies the problem of low repayment of loan amounts associated with lending activities, with the absence of any collateral against such transactions (Stiglitz 1990; Khandker 1999; Yunus 1999).

Against this background and observing the success of group-based financial programme in poverty alleviation and empowerment of the poor households in different countries such as, in Bangladesh, Indonesia, Thailand, etc., some policymakers advocated the implementation of microfinance (henceforth MF) programme in India as a poverty alleviation tool (Nair 2005). They advocated forming a group, popularly known as Self-help Groups (SHGs) considering 5–20 members coming from homogeneous community and same geographical location. After the formation they will save according to their capacity up to a certain time period (say 6 months) to generate a fund, and then the group will be linked with the formal financial institution for credit and other financial services. Each group may get up to four times loan against their fund and group will decide through group meeting about the loan disbursement. Banks, Non Governmental Organisations (NGOs) and government agencies will co-operate with each group in time of formation, nurturing and regular operations of the group. Besides, they will provide training for capacity building, guidance about the use of loan amount to the members and help in time of marketing of the products, if any (www.nabard.org).

In 1986–1987, NABARD started its initial experiments in India to introduce group-based MF programme and the initiative developed into direct official involvement in 1992 through the launching of a pilot project linking 500 SHGs

with banks throughout India. RBI also extended their policy support in this regard directing all Formal Financial Institutions (FFIs) to consider SHG-bank linkage programme as a priority lending activity (Kropp and Suran 2002). The success of the pilot project initiated by NABARD, in terms of some broad indicators such as income generation of the members, investment on education and health by the members, decision-making power of the members, especially women, use of loan by the members, etc. encouraged the policymakers to introduce group-based MF programme throughout India as an important poverty alleviation tool since 1994–1995. The policy support from RBI in 1991 and 1993 also encouraged different formal financial institutions, i.e. commercial banks, co-operatives and RRBs to offer MF programme among the collateral-less poor. In 1999–2000, Government of India converted the IRDP programme into Swarnajayanti Gram Swarozgar Yojana (SGSY) to reduce several anomalies that were identified in IRDP. Though the subsidy element has not been abolished in the SGSY programme, it has been rationalised as much as possible. A part of the loan under this scheme goes through SHGs, gradually becoming an important MF delivery mechanism in India (www.nabard.org www.rbi.org).

However, different case studies throughout the world such as those in Bangladesh, Indonesia, Thailand, etc. reveal that the effectiveness of such a programme is more significant for female members than male members (NABARD 2001), and therefore most of the MF programme in India gives special emphasis on women rather than on male. But it should not be misinterpreted as that the MF programme in India discourages male members.

At present the group based Mf programme under different agencies has become an important and integral part of the government policy to empower the rural poor (especially women) through their socio-economic improvement (Nair 2005; Satish 2005). The programme has generated wide popularity among the least advantaged section of the society and many FFIs, NGOs and other agencies came forward to deliver the programme among these People. Mainly, there are three models of SHG-bank linkage have evolved over time (NABARD 2001):

- Model I: SHGs formed and financed by banks;
- Model II: SHGs formed by NGOs and formal agencies, but directly financed by banks; and
- Model III: SHGs financed by banks using NGOs and other agencies as financial intermediaries.

Under all these models, in 2009–2010 about 69.53 Lakh SHGs was savings linked with different commercial banks out of which 53.10 Lakh was women SHGs (<http://www.nabard.org>). The figure indicates the popularity of MF programme among the poor people (especially women) and observing such popularity the policymakers have considered the MF programme as an alternative poverty alleviation tool in India context.

3 Security Indices

In this chapter, our position starts from the assertion that every person has a right to basic security everywhere. Security is often linked to three overlapping ideas—participation, agency and empowerment (ILO 2004; Kabeer 2001, 2005). The sense of security is much wider and for a quantitative study/assessment we must have to narrow down the broader theme of security according to relevant issues which we would like to analyse. To assess the impact of MF programme on our sample members, we therefore, identified the following forms of security that can ensure an acceptable standard of secure livelihood:

- (a) Income security
- (b) Social security
- (c) Voice-representation security (ILO 2004).

The detailed methodology of the construction of each security index and the description of components under each security index is described in the next section.

4 Methodology

The basic idea of construction of a security index has been taken from the pioneer work of some eminent scholars (such as Guy Standing, Ajit Singh, Ellen Rosskam, and others) as developed in the study entitled '*Economic Security for a Better World*' sponsored by the International Labour Organisation (ILO 2004). We have followed the same procedure to quantify the extent of security (insecurity) which exists among the individuals (SHG members and non-members) to assess the merit of MF programme in providing better security to the individuals. We provide below the detailed methodology used in framing the index.

An index is a composite measure of the phenomenon in question consisting of a combination of several related indicators. The construction of a security index involves one's subjective view on a range of issues, as there is no pre-determined methodology available in making of a security index. It is an ad hoc procedure where we need to incorporate our insight based on our expectation in the field studies. One key principle used in the selection of indicators is the availability and reliability of data.

As mentioned earlier, three main dimensions of security (related with livelihood/basic security) have been considered here: (a) Income security, (b) Social security and (c) Voice-representation security, to construct a Livelihood Security Index (LSI) for the sample households. Each form of security involves several parameters based on the available responses from the individuals. Parameters are arranged in a binary composite approach assigning 'zero' for lower and 'one' for higher values, respectively. High value of the index indicates high security and vice versa.

Each security index is just the simple arithmetic mean of the respective components of that index. As mentioned earlier, the components under each of these indices play a crucial role in the construction of an individual's socio-economic security. The LSI is built by assigning equal weight to each of these three indices, and is the simple arithmetic average of these three indices. The components of Income, Social and Voice-Representation Security indices are mentioned below:

- (a) Income Security Index (INCINDEX)
 - (i) Income of an individual
 - (ii) Total current savings of the individual
 - (iii) Average wage/income per hour
 - (iv) Savings/other bank account
 - (v) Level of education
 - (vi) Special training, if any
 - (vii) Alternative job opportunities
- (b) Social Security Index (SINDEX)
 - (i) Total asset holding
 - (ii) Life insurance
 - (iii) Access to different social security schemes (government or non-government)
- (c) Voice-representation Index (VINDEX)
 - (i) Power to cope with different household problems which may lead to gender bias, physical violence, etc.
 - (ii) Increased control over the household's economic resources
 - (iii) Mobility outside the village
 - (iv) Access to proper information, such as information with regard to government/non-government schemes, village problems, etc.
 - (v) Power to discuss about or raise issues involving own/village level problems in Panchayat/Gram Sangsad meetings.

Table 1 indicates how the income, social and voice-representation security indices have been constructed, along with the rationale behind their choice. Note that the components are assigned with binary values 1 and 0 only: Value 1 is assigned to the prospect of higher security or 0 otherwise.

5 Sample Selection and Salient Features of Study Areas

In order to develop a detailed and concrete understanding regarding the different issues of group-based MF programme in India (West Bengal), we collected relevant micro-level data through field survey. These survey data have been used in the following exercise in this chapter.

Table 1 Binary value of different components of the security indices

Variables	Binary value = 1	Justification	Binary value = 0	Justification
Income (monthly)	If an individual earns a higher income than the sample average	Higher than the average income means, the particular individual is better placed than the average members, and hence enjoys higher level of income security	If an individual earns less than the sample average	Lower than the mean earning implies the individual is not secured, as far as his/her earning is concerned compared to the average income earner
Savings (per annum)	Higher than sample average	Saving is treated as future security for both consumption and production purposes, and individuals who have higher saving than the sample mean, enjoys more security than others.	Lower than sample average	Lower than sample mean saving, indicates a low level of security than the sample average
Average wage/income per hour	If the value is greater than sample average	Higher than average value implies individuals are enjoying higher income security than others	Lower than sample average	Lower than mean value indicates individuals are enjoying less security
Saving bank/other bank account holding	If Yes, then assign 1	Holding of saving bank or other bank accounts shows that the individual is accustomed to banking practices, which indicates an adequate level of income earned and some income security	If No, then assign 0	Opposite of column 3
Level of education	Higher than sample average	Knowledge is an essential characteristic for human development and is positively related with income earning capabilities. Individuals who have a higher level of education than the sample average have a better chance to earn more	Lower than sample average	Lower than sample average means the chance to earn more is less than average member
Special training	If Yes, then assign 1	Better chance to earn more than the average individual	If No, then assign 0	No chance to earn more than others

(continued)

Table 1 (continued)

Variables	Binary value = 1	Justification	Binary value = 0	Justification
Income security				
Alternative job opportunity	If Yes, then assign 1	Better placed than others and enjoys some level of income security	If No, then assign 0	Suffers from income insecurity
Social security				
Total asset holding (in Rs)	Higher than sample average	Individuals are socially secure if they hold some kind of assets and people who have higher asset than sample average are better placed than others	Lower than sample average	Opposite of column 3
Insurance	If Yes, then assign 1	If the individuals have any insurance then they are more socially secure than others who have not such facility	If No, then assign 0	Socially insecure
Access to different social security scheme	If Yes, then assign 1	If the individuals have any opportunity to avail of such type of security schemes, they are socially secured to some extent	If No, then assign 0	Individuals are not socially secured
Voice-representation security				
Power to cope with different household level problems	If Yes, then assign 1	Ensures individuals' self-sufficiency and capability	If No, then assign 0	No self-sufficiency
Increased influence over household's economic resources	If Yes, then assign 1	Ensures individuals worthiness to the household member	If No, then assign 0	No worthiness
Mobility outside village	If Yes, then assign 1	Ensures freedom of movement for the individuals for the sake of well-being	If No, then assign 0	No capability
Access to proper information	If Yes, then assign 1	Ensures social value and respect for the individuals	If No, then assign 0	No social value and respect

(continued)

Table 1 (continued)

Income security			
Variables	Binary value = 1	Justification	Justification
Raise or discuss different issues at gram Panchayat/gram Sangsad meeting	If Yes, then assign 1 If No, then assign 0	Ensures individuals self-confidence and voice power	No self confidence and voice power

The descriptive statistics of the components of each security index is shown in Annexure 1

Table 2 Some development indicators of the sample districts

	Nadia	24 Pgs (N)	West Bengal
1. (a) Total population (No.)	46,04,827	89,34,286	8,01,76,197
(b) Male (%)	51.40	51.92	51.72
(c) Female (%)	48.60	48.08	48.28
(d) Rural pop. (%)	78.73	45.70	72.03
(e) Urban pop. (%)	21.27	54.30	27.97
2. Sex ratio	946	926	934
(a) Total	941	942	950
(b) Rural	962	912	893
(c) Urban			
3. Literacy rate	66.14	78.07	68.64
(a) Total	61.82	69.07	63.42
(b) Rural	81.42	85.19	81.25
(c) Urban			
4. Percentage of total workers (main + marginal) to total population	35.09	33.45	36.77
(a) Total	34.75	33.65	37.90
(b) Rural	36.33	33.28	33.85
(c) Urban			
5. Number of commercial bank branch (Up to 2010)	200	493	5,023
6. Number of SHGs (NABARD Model) cumulative up to 2010	97,095	64,082	6,47,300

Source Information for rows, 1, 2, 3 and 4, have been derived from ‘Census India, 2001’; 5 from ‘Quarterly Handout, June 2010, Banking Statistical Division, RBI’; 6 from ‘www.nabard.org’

The two districts chosen for this study from the state West Bengal are Nadia and 24 pgs (North). Here, we have selected these two districts purposively due to the following reasons: (i) Nadia and 24 pgs (N) are among the leading districts in the state in terms of cumulative progress of SHG-Bank Linkage Programme (credit linked), (ii) Different models of SHG-Bank linkage (i.e. the three models as stated earlier) are available here. Some development indicators (such as literacy rate, employment structure, caste composition, etc.) of these two districts are shown in Table 2.

We have randomly selected a total of six villages from these two districts—three from each district. From these six villages, we randomly selected 255 SHG member households who belong to those SHGs, which are in operation for at least 2 years or more and collected required data from these households through questionnaire-based survey method. Besides, 74 non-member households were also selected randomly from these sample villages as a control group and requisite information was gathered from them. Thus, we carried out our study considering 329 sample households—255 member households and 74 non-member households. It may be noted that all the member and non-member households belong to the same socio-economic class and geographic location. The sample design for this study is shown in Table 3. In case of non-members, we have selected 14 households from Dangapara and 12 households each from rest of the villages. The socio-economic characteristics of the sample households have been shown in Table 4.

Table 3 Sample design

Village	Districts	Group promoting agency	Group financed by	No. of groups >2 years	Total members (No.)	Group surveyed (No.)	Members surveyed (No.)
Ruppur	Nadia	Nadia Gramin Bank (NGB)	NGB	16	193	10	43
Rabonbor	Nadia	Nadia District Central Co-operative Bank Ltd.	Nadia District Central Co-operative Bank Ltd.	14	179	9	42
Kulgachi	Nadia	Sreema Mahila Samity (SMS)	NGB	21	256	12	45
Datpur	24 pgs (N)	SMS	NGB	14	185	9	41
Taraberia	24 pgs (N)	Allahabad Bank	Allahabad Bank	16	243	10	44
Dangapara	24 pgs (N)	Allahabad Bank	Allahabad Bank	15	192	9	40
Total				96	1,248	59	255

Source Survey data

Table 4 Socio-economic characteristics of the sample households

Characteristics	Members	Non-members
Sample size	255	74
Household size (Average)	5.55	4.84
Sex of the respondents		
Male (%)	31.76	32.43
Female(%)	68.24	67.57
Sex of the household head		
Male (%)	64.31	70.27
Female (%)	35.69	29.73
Years of schooling of the respondents (Average)	5.63	5.46
Years of schooling of the household head (Average)	3.27	3.70
Agricultural land holding of the households (average)	4.66*	7.95*
Average income of the respondent (per month in Rs.)	999.02	1088.38
Average income of the household (per month in Rs.)	1787.06	2152.11
Principal economic activity of the households (%)		
Farm production	20.00	28.37
Non-farm production	6.67	8.11
Farm labour	20.00	8.11
Non-farm labour	13.72	10.81
Petty trader, vendors, hawker, etc.	21.96	25.67
Livestock rearing	4.31	5.41
Fishery	3.14	5.41
Others	10.19	8.11

*Here agricultural land holding is measured by the unit “Katha”, where 20 Katha = 0.33 acre
Source Survey data

6 Area-wise Assessments of Security Indices of Members and Non-members

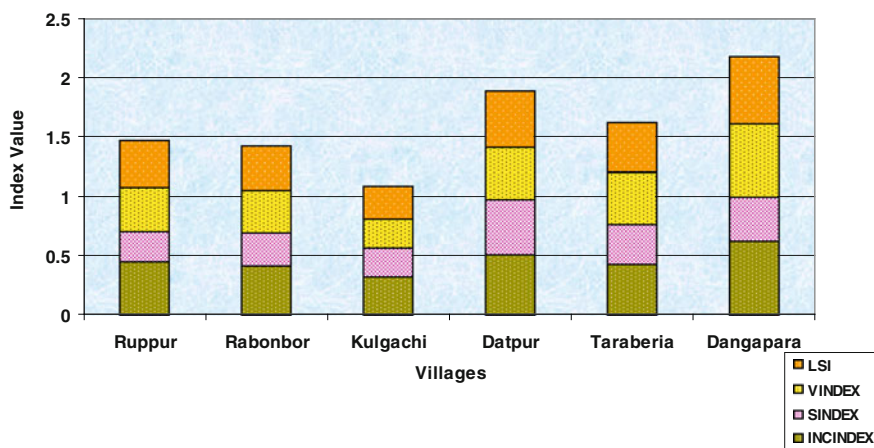
The village-wise assessment of security indices (Table 5) reveals that the members of village Dangapara are more secure than the other villages in terms of value of the LSI (0.57). Kulgachi, on the other hand, occupies the worst position (0.28) amongst the six sample villages. In case of INCINDEX, village Dangapara occupies the first position (0.625), followed by Datpur (0.512), Ruppur (0.449), Taraberia (0.429) and Rabonbor (0.411). The value of SINDEK is higher in case of Datpur (0.483), followed by Dangapara (0.375), Taraberia (0.333), Rabonbor (0.278) and Ruppur (0.256). Similarly, in case of voice index Dangapara registered the highest value (0.610) followed by Taraberia (0.445), Datpur (0.434), Ruppur (0.377) and Rabonbor (0.362). Village Kulgachi, however, occupies the worst position in case of all the three indices, as well. The village-wise assessments of LSI have been shown in Fig. 1.

The tabular and graphical presentations of the security indexes for six villages yield some important clues about the success of MF programme in our sample

Table 5 Village-wise assessment of different security indices for members

Village name		INCINDEX	SINDEX	VINDEX	Livelihood security index (LSI)
1. Ruppur	Mean	0.4485	0.2558	0.3767	0.3861
2. Rabonbor	Mean	0.4115	0.2778	0.3619	0.3682
3. Kulgachi	Mean	0.3206	0.2444	0.2444	0.2800
4. Datpur	Mean	0.5122	0.4634	0.4341	0.4784
5. Taraberia	Mean	0.4285	0.3333	0.4454	0.4151
6. Dangapara	Mean	0.6250	0.3750	0.6100	0.5700
Total	Mean	0.4543	0.3228	0.4088	0.4128
	N	255	255	255	255

Source Computed from survey data

**Fig. 1** Village-wise assessment of different security indices

villages. Though the mean value of the LSI for all sample households (255 households) stands at 0.413, the value of such index in case of village 2 (Rabonbor) is significantly lower (0.368), and in case of village 3 (Kulgachi) the picture is even more disappointing (0.280). It indicates that the success of MF programme has not spread symmetrically over all these sample villages, though the programme had started more or less at the same time for all. Moreover, though the group-promoting and group-financing agencies for villages 3 (Kulgachi) and 4 (Datpur) are the same (details have been shown in Table 3, the value of different security indices for these two villages is not comparable: Whereas village 4 occupies the second position in terms of this index, village 3 registered itself at the bottom.

It follows, therefore, that equal attention and effort are needed from group-promoting and group-financing agencies to monitor their programme everywhere (particularly where their clients are present) with the same efficacy. The table also shows that the success of the programme in terms of these indices is more

pronounced for those villages, where a commercial bank plays the joint role of both group-promoting and group-financing agencies simultaneously, and consequently have registered itself as the most important MF provider in these villages (www.nabard.org).

The result is in conflict with the usually held notion that the performance of SHGs promoted by NGOs would be far superior to those promoted by banks. Actually, NGOs have more expertise and wider reach for managing different village level activities and also to motivate the village people according to their scheduled projects. Banks have very limited knowledge about such activities and these are not usually the regular tasks of a bank.

But here the NGO promoted groups performed worse than those performed by banks in providing income, social and voice-representation securities to the members. We may put forward three possible explanations in this regard: (i) The operational territory of NGOs being greater than banks, the monitoring of the groups by the NGOs may suffer due to lack of manpower, efficacy, etc.; (ii) the operation of NGOs sometimes may be motivated by local politics and own business perspectives, where their main interest would be to promote groups for linking with banks, not to monitor these groups for their future development and (iii) in many cases, NGOs fail to monitor these groups due to fund shortages. Banks, however, are generally free from such problems. Also, banks generally take up the task of formation and nurturing of SHGs typically as an exemplar, to serve as a model for others to follow. As a result, their performance in ensuring the sustainability of the group may be better than NGOs. However, to establish these conclusions a detailed quantitative study is essential. As this is beyond the scope at the present chapter, we leave these issues for future study.

At this juncture, the district level performance of SHGs in terms of LSI should also compare. The district-wise LSI value for our sample (Table 6) indicates that the value is 41 % higher for the districts of 24 Pgs (*N*) than that of Nadia. According to West Bengal Human Development Report 2004, north 24 Pgs. is more developed (HDI: 0.66, Rank—3) than Nadia (HDI: 0.57, Rank—9) in terms of human development index. Thus, our findings suggest that the performance of SHG of the developed district is more pronounced than that of the less developed district. It indicates that the performance of SHGs not only depends on the activities of banks/NGOs and the amount of credit, but may also be determined by a number of development indicators such as, infrastructure, urbanisation, job opportunities, etc. Thus, *ceteris paribus*, for the groups belonging to the developed areas, their performance improves significantly than those in the less-developed areas. In order to improve the livelihood security of the persons belonging to

Table 6 District-wise livelihood security index value for members

District	LSI
Nadia (<i>N</i> = 130)	0.3448
North 24 Pgs (<i>N</i> = 125)	0.4878
Total	0.4128

Source Computed from Survey Data

group-based financial programme, therefore, along with better group monitoring, we would also have to concentrate on the development of the programme areas as well.

For the sample as a whole, the LSI value at 0.413 is quite low, contrary to our expectation of a value of at least 0.5 or more. However, as the case of Dangapara shows, this is not unattainable. Given the potential for improvement, it is quite probable that the villages with low LSI values are already on a trajectory for development and empowerment of the rural poor.

The relative contribution of each security index on the total security value is computed in Table 7. It indicates that the contribution of income and voice-representation indices is much better than the social index. The relative contribution of INCINDEX to the total security index value is 38.28 %, followed by VINDEX (34.5 %) and SININDEX (27.23 %). The table shows that, after joining in SHG, people has benefitted more through income and voice components as compared to the social components. There is no straightforward valid reason behind this finding. However, we may put forward one possible explanation here. The social components which we have considered here (say, asset holding, access to social security schemes such as insurance, etc.) have scored very low value, since most of the people are poor and have very limited or zero access to any social security schemes. To increase the score of these components, both micro and macro initiatives are needed. Due to lack of these initiatives in our sample villages, the contribution of SININDEX is lower than the other two indices.

In order to identify the extent of “group” effect, we have computed all the indices for non-members and compared these with those of the group members (Table 8). The village-wise assessment of security indices for non-members reveals that the value of LSI for non-members (0.377) is lower than that of group

Table 7 Contribution of each index (mean value) on overall security value

Village name	INCINDEX(A)	SININDEX(B)	VININDEX(C)	Total (A + B + C)
1. Ruppur	0.449 (41.50)	0.256 (23.66)	0.377 (34.84)	1.082 (100.00)
2. Rabonbor	0.412 (39.16)	0.278 (26.43)	0.362 (34.41)	1.052 (100.00)
3. Kulgachi	0.321 (39.68)	0.244 (30.16)	0.244 (30.16)	0.809 (100.00)
4. Datpur	0.512 (36.34)	0.463 (32.86)	0.434 (30.80)	1.409 (100.00)
5. Taraberia	0.429 (35.54)	0.333 (27.59)	0.445 (36.87)	1.207 (100.00)
6. Dangapara	0.625 (38.82)	0.375 (23.29)	0.610 (37.89)	1.610 (100.00)
Total	0.454 (38.28)	0.323 (27.23)	0.409 (34.49)	1.186 (100.00)

Source Computed from survey data

Figures in the bracket indicates percentage

Table 8 Comparison of security indices between members and non-members

Village name	INCINDEX				SINDEX				VINDEX				Livelihood security index (LSI)			
	Members		Non-members		Members		Non-members		Members		Non-members		Members		Non-members	
	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N
1. Ruppur	0.448	255	0.452	74	0.255	255	0.555	74	0.376	255	0.216	74	0.386	255	0.394	74
2. Rabonbor	0.411	255	0.321	74	0.277	255	0.333	74	0.361	255	0.266	74	0.368	255	0.305	74
3. Kulgachi	0.3206	255	0.357	74	0.244	255	0.333	74	0.244	255	0.266	74	0.280	255	0.322	74
4. Detpur	0.5122	255	0.439	74	0.463	255	0.512	74	0.434	255	0.307	74	0.478	255	0.410	74
5. Taraberia	0.4285	255	0.428	74	0.333	255	0.555	74	0.445	255	0.216	74	0.415	255	0.383	74
6. Dangapara	0.6250	255	0.050	74	0.375	255	0.512	74	0.610	255	0.307	74	0.570	255	0.441	74
Total	0.4543	255	0.418	74	0.322	255	0.468	74	0.408	255	0.264	74	0.412	255	0.377	74

Source Computed from survey data

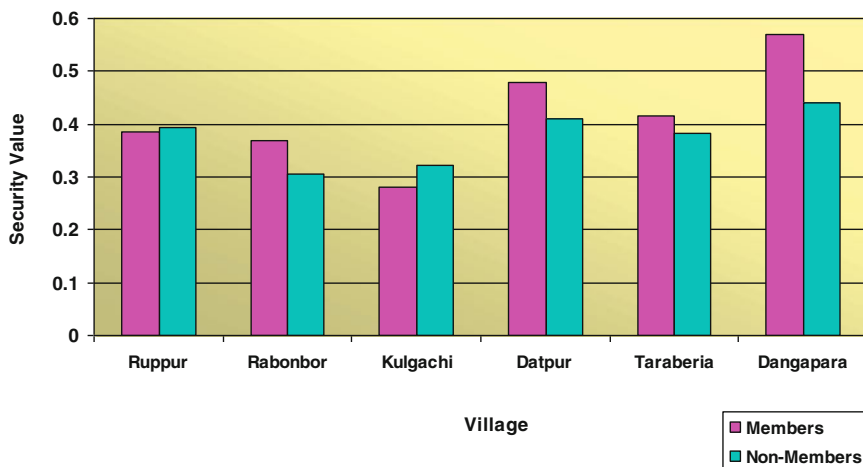


Fig. 2 Village-wise livelihood security index for members and non-members

members (0.412). In case of other three indices, the values of income (0.418) and voice (0.264) indices for non-members are much lower than those of group members, but the social index value (0.468) for them is higher than that for SHG members (0.322). It indicates that, non-members who have some access to social security schemes are not interested to be a member of SHG for financial activities. But this conclusion is very crude in nature. Extensive in depth survey and analysis is needed to establish this proposition, which is beyond the scope of this chapter.

The village-wise assessment of LSI for non-members reveals that here also village 6 occupies the first position (0.441), followed by villages 4, 1, 5 and 3. Here, village 2 registered itself as the worst village. This similarity in the ranking of villages in case of both group-members and non-members perhaps reinforces our argument about the effect of overall development. The village-wise assessment of LSI for both members and non-members is shown in Fig. 2.

7 Gender-Wise Assessment of Security Indices

It is widely assumed that MF will have a positive impact on women's livelihood in (i) leading to higher income for women that will help them to perform better their reproductive role and act as brokers of the health, nutritional and educational status for other household members, (ii) increasing women's employment in micro-enterprises and in improving the productivity of women's income generating activities, and (iii) enhancing their self-confidence and status within the family as independent producers and providers of valuable cash resources to the household economy (Dichter 1999; Kabeer 1999; King and Mason 2001). It is expected to raise women's 'material' empowerment, their 'cognitive' empowerment

(through encouraging them to recognise their skills or their capacity to acquire skills), their ‘perceptual’ empowerment (through generating awareness of how others treat them) and ‘relational’ empowerment (through altering gender relations within the family and society). An individual’s cognitive breakthrough comes with recognition of constraints for what they are and recognition that they need not be accepted as inevitable (Meenai 2003; Zaman 1999; Chen and Mahmud 1995).

In order to examine the status of women group members post-SHG formation vis-a-vis their male counterparts, an exercise, similar to that of the previous section was attempted here. The results obtained are quite disappointing. The gender-wise distribution of security indices for members (Table 9, Fig. 3) suggests that female members are still less secure than the male members. The LSI value for male is about 75 % higher than the value for female members. Such a trend also persists for the three component indices (namely, income, social and voice-representation index) as well. Whereas the gap between male and female index value for voice-representation index is about 41 %, it is 79 % for social index and as high as 98 % for income index. The result suggests that the position of female

Table 9 Gender-wise assessment of security indices for members

Sex		INCINDEX	SINDEX	VINDEX	Livelihood security index (LSI)
Female	Mean	0.3465	0.2587	0.3620	0.3337
	N	174	174	174	174
Male	Mean	0.6861	0.4650	0.5086	0.5827
	N	81	81	81	81
Total	Mean	0.4543	0.3228	0.4086	0.4128
	N	255	255	255	255

Source Computed from survey data

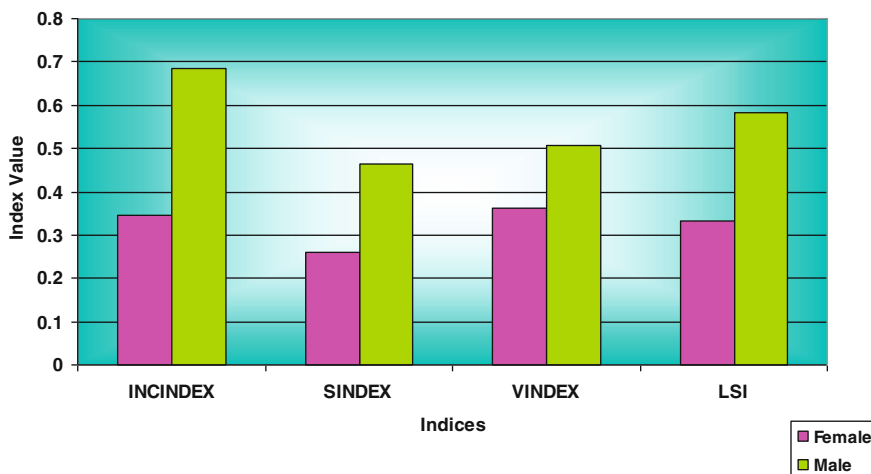


Fig. 3 Gender-wise livelihood security assessment for members

members in case of all these three indices remains much worse than that of the male. The only encouraging fact is that the gap of the index value is smaller for voice-representation index indicating a better comparative position of female members against males in this case than for the income and social index components.

Table 9 clearly indicates that women are more vulnerable than men even after joining in SHGs. In fact, insecurity measured in terms of all the above indices is more severe for female members. Actually, in our sample, most of the women have reported that they receive lower wages than that for men, and therefore suffer from severe income insecurity. Besides, due to lower mobility outside the village, women members are compelled to accept only those activities which are available and suitable for them within the confines of the village. Women are also disproportionately concentrated in the lowest remunerated categories of self-employment and casual wage labour, where male dominance/participation is lower. They often go into self-employment as a survival strategy, mainly in petty trading, hawking and domestic services and have very limited involvement even as micro or small-scale entrepreneurs. They bear a far larger share of non-commercial (unpaid) subsistence work (such as cooking, gathering food, fuel, water, etc.) than men, and that share is rising due to male migration. All these contribute to a lower income, lower employment opportunity and lower asset holding and so on for women members. Additionally, still now, women are the most deprived section within the households who have less power over the household economic resources and no decision-making power even within the household. All these deprivations and discriminations make women as the most vulnerable section in the society.

The percentage contribution of each index on the total index value (gender-wise) is shown in Table 10. The result indicates that in case of female, the contribution is maximum for voice-representation index (37.39 %), followed by income (35.85 %) and social indices (26.76 %). In case of male members, the contribution to total security value is higher for income index (41.33 %), followed by voice-representation (30.66 %) and then social (28.01 %) indices. The result is in line with our expectations. Since male have more opportunities in income earning activities than the female members; therefore, the contribution of income index for male is higher than the female. On the other hand, the components of voice-representation index are more pronounced for female, since these components are highly sensitive with female empowerment and self worth, and MF

Table 10 Contribution of each index on total security value (Gender-wise)

SEX	INCINDEX (A)	SINDEX (B)	VINDEX (C)	TOTAL (A + B + C)
Female	0.347 (35.85)	0.259 (26.76)	0.362 (37.39)	0.968 (100.00)
Male	0.686 (41.33)	0.465 (28.01)	0.509 (30.66)	1.660 (100.00)

Source Survey Data

Figures in the bracket indicates percentage

Table 11 Gender-wise assessment of security indices for Non-members

Sex		INCINDEX	SINDEX	VINDEX	Livelihood security index (LSI)
Female	Mean	0.3543	0.3467	0.2880	0.3307
	<i>N</i>	50	50	50	50
Male	Mean	0.5536	0.7222	0.2167	0.4750
	<i>N</i>	24	24	24	24
Total	Mean	0.4189	0.4685	0.2649	0.3775
	<i>N</i>	74	74	74	74

Source Computed from survey data

programme has strong positive impact on these components for female members as compared to the male. Again, the components of social index scored low value both for male and female members, and therefore its contribution to the total security value is low for both. It indicates that the social index components are very weak for both male and female members and need proper attention to up-lift the score.

However, for comparison the gender-wise security assessment for non-members has also been computed (Table 11). Here, though women have registered a higher value for voice-representation index (0.288) compared to male (0.216), the male–female gap for income and social indices is too high, and therefore the overall security index yields a disappointing picture for women. Two high positive gaps (income and social index values) outweigh the negative gap (voice-representation index gap), making women as the most deprived individual in the household as well as in the society.

Since one of the prime objectives of MF programme is to empower women both in the household as well as in the society, the group promoting agencies should concentrate extensively on this issue. Though we have observed in the previous chapter that the position of women in terms of self-worth and confidence have witnessed a significant positive jump from pre- to post-SHG situation, even now, women members are more vulnerable than males as revealed by our security indices. To make the programme viable for rural women; therefore, much attention is needed on the low value components of the security index.

8 Effects of Selected Components on LSI

An attempt is made here to find the impacts of some of the individual components of the security indices on the LSI. The components selected here are those that may be amenable to policy, such as education, alternative job opportunities and access to special training. The education-wise assessment of security indices for members (Table 12) tells that as the level of education of the member increases, the member becomes more secure in terms of our security indices.

Table 12 Education-wise assessment of security indices for members

Level of education		INCINDEX	SINDEX	VINDEX	Livelihood security index (LSI)
Illiterate	Mean	0.3465	0.2250	0.3500	0.3233
	<i>N</i>	40	40	40	40
1–4	Mean	0.2158	0.1510	0.2415	0.2114
	<i>N</i>	53	53	53	53
5–8	Mean	0.4757	0.3545	0.4426	0.4404
	<i>N</i>	94	94	94	94
9–10	Mean	0.6665	0.4771	0.4824	0.5874
	<i>N</i>	51	51	51	51
>10	Mean	0.6970	0.4510	0.6700	0.6353
	<i>N</i>	17	17	17	17
Total	Mean	0.4544	0.3229	0.4086	0.4129
	<i>N</i>	255	255	255	255

Source Computed from survey data

Though the index value between illiterate and junior level schooling (1–4) of the members is opposite in nature, the value has increased significantly thereafter with the level of education. This is an expected result. As the level of education of the group member increases beyond the threshold level, the possibility of getting better paid jobs also increases, which in turn ensures the income security to the members. Similarly, the knowledge variable has a significant impact on self-worth and confidence, mobility outside the village and access to different information associated with household wellbeing. All these raise the income level, asset holding, saving and so on for an individual. Thus, with the improvement in education (proxy for knowledge) all kinds of security of the members increase.

The value of different security indices for group members according to ‘alternative job opportunity’ for the members (Table 13) supports the view that people who have such opportunity are more secure than the others. In our study, nearly about 37 % of the total group members have reported that they have opportunity to change the present job. The value of all indices of such people is significantly higher than the others. A similar trend is also observed in case of ‘training’ the

Table 13 Index value for members according to the presence of ‘Alternative Job Opportunity’ (AJO)

Alternative job opportunity		INCINDEX	SINDEX	VINDEX	Livelihood security index (LSI)
No	Mean	0.3213	0.2898	0.3602	0.3280
	<i>N</i>	161	161	161	161
Yes	Mean	0.6822	0.3794	0.4915	0.5582
	<i>N</i>	94	94	94	94
Total	Mean	0.4543	0.3228	0.4086	0.4129
	<i>N</i>	255	255	255	255

Source Computed from survey data

member (Table 14). Here, people who have received some training are more secure through skill formation than those who have no such expertise. Actually, people who have some special training, have better opportunity to earn more and have a greater probability to find good remunerative jobs. These, in turn, ensure higher levels of income, social and voice-representation indices for the members. Unfortunately, according to our sample very few members (only 19 %) have such training. The result, however, suggests that the effectiveness of MF programme would be more pronounced if different capacity building programme are offered simultaneously with the usual credit and saving services. Appropriate policy attention is needed on these grounds to make the programme sustainable for the poor.

Finally, we have made an attempt to understand the correlation, if any, between different indices in our sample (Table 15). The LSI is, as expected, highly correlated with income, social and voice-representation indices, and the correlation co-efficient is highest between LSI and INCINDEX. In all the three cases, correlation is significant at 1 % (two tailed) level. Income index is also correlated significantly (at 1 % level) with social and voice-representation index although the value of 'r' is lower. However, the correlation is much lower between social and voice-representation index, though the result is significant at 5 % level.

Table 14 Index value for members according to their assess to 'Special Training'

Access to special training		INCINDEX	SINDEX	VINDEX	Livelihood security index (LSI)
No	Mean	0.4079	0.2963	0.3594	0.3694
	N	207	207	207	207
Yes	Mean	0.6547	0.4375	0.6208	0.6000
	N	48	48	48	48
Total	Mean	0.4543	0.3228	0.4086	0.4129
	N	255	255	255	255

Source Computed from survey data

Table 15 Pearson correlation coefficients between different indices for the whole sample (N = 255)

	INCINDEX	SINDEX	VINDEX	Livelihood Security Index (LSI)
INCINDEX	1			
SINDEX	0.290**	1		
VINDEX	0.253**	0.158*	1	
LSI	0.771**	0.542**	0.747**	1

* indicates correlation is significant at the 0.05 level (2-tailed)

** indicates correlation is significant at the 0.01 level (2-tailed)

9 Summing Up

Every human being needs basic security materially as well as morally and ethically to become responsible members of the society. People who lack basic security in themselves, within their families, in their workplaces and in their community tend to become socially irresponsible and behave opportunistically. The basic objective of MF programme is to empower the rural poor through their socio-economic improvement. We have observed that MF programme has a positive impact on income, voice-representation, freedom from morbidity, self-respect and so on.

However, the overall security measurement for the members has been simplified here for analytical convenience. Although the mean value of the LSI (0.413) is low for all villages taken together, and there is the disparity in security level among the sample villages, these certainly do not indicate that MF programme has no role to play in the provision of livelihood security to the SHG members. The high index values for some villages (villages 6 and 4) indicate that the MF programme has a high potential to empower the rural poor through socio-economic improvement, and hence provide an assurance of basic security to the members. This view is further reinforced by the finding that amid members and non-members (control group) the group members are much better placed than non-members in terms of the security indices. Still a considerable task is ahead in this regard. Programme providers should concentrate on those components of the index, which have been assigned very low or zero values in the respective regions. In our sample, few such low value index components are the 'Access to Social Security Schemes', 'Insurance', 'Alternative Job Opportunity', 'Access to Proper Information', 'Mobility outside Village' etc. To make the programme viable for the poor, adequate policy support is required to improve these characteristics as much as possible.

Much more disappointing is the result of the gender-wise security assessment over the sample members. It suggests that women are still much more vulnerable than men even after joining in SHG. Actually, lower wage, lower employment opportunity, lower asset holding and zero or limited influence of women in the household make them more vulnerable than men, and therefore make them suffer from severe insecurity in all sense. The group promoting agencies should concentrate extensively on these issues to minimise this gender gap with appropriate policy support.

The security assessment according to member's education, special training and alternative job opportunity suggests that as these characteristics rises, members become more secure than others. To provide basic security to these members, therefore, an extensive capacity building programme should be introduced along with the usual saving and credit services.

In this juncture it is also noted that, for the successful operation and implementation of the MF programme, development activities should combine with the usual programme. Without development initiatives say, better transport system, availability of school education, electricity facility, use of information and

communication technology, organised market facility, strong administration and law-legislation within the society, etc., the programme will not be successful as we usually expect. Unfortunately, due to lack of enough funds in the developing nations like India, it is quite impossible to meet these entire targets simultaneously in every part of the society. Therefore, policy should be directed in this regard also to achieve these targets as early as possible. We should realise that MF is not a panacea. It is just an alternative poverty alleviation tool which can up-lift the socio-economic status of the poor partially. To provide all round basic security among the poor we should offer other development programmes side by side. The ultimate target of every society is to achieve some basic developments on the area of education, health, transport, communication, power generation and others. In India, direct government initiatives and PPP model (Public Private Partnership Model) have developed tracking these issues sincerely. Government should ensure effective implementation of these development programmes with minimum leakages.

A.1 10 Annexure 1

Descriptive statistics of the components of different security indices

Income security		
Variables	Mean	Standard deviation
Income (monthly)	0.58	0.49
Savings (per annum)	0.35	0.48
Average wage/income per hour	0.49	0.50
Saving bank/other bank account holding	0.61	0.49
Level of education	0.59	0.49
Special training	0.19	0.39
Alternative job opportunity	0.37	0.48
Social security		
Total asset holding (in Rs)	0.48	0.50
Insurance	0.26	0.44
Access to different social security scheme	0.22	0.42
Voice-representation security		
Power to cope with different household level problems	0.52	0.50
Increased influence over household's economic resources	0.40	0.49
Mobility outside village	0.42	0.49
Access to proper information	0.39	0.49
Raise or discuss different issues at gram Panchayat/gram Sangsad meeting	0.31	0.46

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Public Spending and Rural Livelihood in India: A Study of MGNREGA

Komol Singha and Parmod Kumar

1 Introduction

Development in economics concerns with poor country, community or sector. It consists of growth in income/output along with structural changes (Singha 2010a). It essentially is a dynamic process which transforms an economy and society from a relatively backward state to a more advanced state (Bezbaruah 2010). In reality, the question of development arises only when the system/sector lacks its basic necessary ingredients (Singha and Patikar 2010). At present, as per the Tenth Five-Year Plan report (2002–2007), around 75 % of India's population are living in rural areas, hardly meeting their minimum daily needs. Further, there are evidence of cascading effects of poverty, unemployment, poor and inadequate infrastructure in the rural areas (Singha 2010b).

Though Indian economy has witnessed spectacular success in terms of achieving a higher growth rate, above 5 % per annum (Negi 2010), and also became one of the 12 largest (WDR 2011) and 10 fastest growing (Saxena 2007) economies in the world, the rural community is still grossly neglected. Though the nation talks much about inclusive growth, the benefits of the government's programmes have not been percolated fully to the poor masses and the process of growth in the country has not been fully inclusive (Singha 2010b) till date. For many rural people like, smallholders, landless wage labourers and sharecroppers, and women, indigenous peoples, ethnic minorities are still facing the inability to influence decisions affecting their lives, negotiate better terms of trade, and make governmental and non-governmental organisations accountable to them (IFAD 2003). Some of this was because of the decline in public spending on rural employment programmes since the mid-1990s (Negi 2010). In the findings of Bezbaruah (2010) also opined that the rural development programmes and infrastructure projects in India are impeded due to the lack of funds from public

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investments, meant for rural development. Therefore, the rural infrastructure and provisions of basic facilities of rural poor can be sourced from the growing central allocations for rural development programmes and infrastructure projects.

To get out of the chronic poverty of the rural community, the Planning Commission of India has initiated many poverty alleviation programmes that are fully funded by the centre from the beginning of planning period. Among others, the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA hereafter) is one of the latest flagship programmes of Congress-led United Progressive Alliance (UPA) government in the country. This is also one of the prime policies of the centre (government) to uplift the poor rural masses by providing more work avenues to them (Hiremath 2007). More interestingly, in the recent past, this programme has not only become an important social-economic issue in the country, but also the most pressing political concern (Negi 2010).

The role of economic growth by providing more employment opportunities to the population is widely recognised by India. For the purpose, well-developed financial system brings poor people into the mainstream of the economy and allows them to contribute more actively to their personal economic development. Majority of the rural poor people in the country, especially the vulnerable sections can be pulled out of the vicious circle of poverty if proper income and work opportunities are provided to them. Keeping this in mind, the present paper tries to portray the role of MGNREGA in providing works opportunities to the rural India, total fund allocated and spent for the rural communities in different rural development and employment generating projects in India.

Still, the specific objectives of the present study are as follows:

1. to assess the total amount sanctioned in different projects under NREGA programme in India,
2. to assess the percent of work done against the amount spent in different projects,
3. to assess the amount spent per project done under NREGA,
4. to assess the percentage of employment given out of the fund spent under NREGA.

For the purpose, the available data on the total amount spent and number of work done (ongoing and already completed together) in 3 years study period from 2008–2009 to 2010–2011 under National Rural Employment Guarantee Act (NREGA hereafter), funded by Rural Development Ministry were collected from the Ministry's website. The information of 10 projects related to rural development that have been undertaken by NREGA were collected for the study. Of which, the last (10th) project, *the Rajiv Gandhi Seva Kendra* was initiated from the phase of 2010–2011 only. The collected information were analysed with simple statistics like, average, percentage and summation, to assess the share of fund allocation and works done in 10 different projects under the NREGA programme in 27 major states of the country.

Table 1 Total amount spent in 10 NREGA projects in 3 years (2008–2009 to 2010–2011)

States	Rural connectivity	Flood control	Water conservation and harvesting	Drought proofing	Micro irrigation	Irrigation land development	Renovation of water body	Land development	Any Activity approved by MRD	Rajiv Gandhi seva kendra	Total (Lakh)
AP	192456	5533	201802	46550	59280	236036	204996	118450	0	1207	1066308
Percentage (%)	18.0	0.5	18.9	4.4	5.6	22.1	19.2	11.1	0.0	0.1	100
Arunachal	1763	849	284	240	449	0	89	221	72	0	3968
Percentage (%)	44.4	21.4	7.2	6.0	11.3	0.0	2.2	5.6	1.8	0.0	100
Assam	145444	58838	61224	13024	10368	1272	7214	18429	344	527	316684
Percentage (%)	45.9	18.6	19.3	4.1	3.3	0.4	2.3	5.8	0.1	0.2	100
Bihar	448341	40693	66184	57679	42164	11132	40773	19681	845	0	727492
Percentage (%)	61.6	5.6	9.1	7.9	5.8	1.5	5.6	2.7	0.1	0.0	100
Gujarat	39480	17174	41348	11568	3153	25363	14905	3123	3948	868	160931
Percentage (%)	24.5	10.7	25.7	7.2	2.0	15.8	9.3	1.9	2.5	0.5	100
Haryana	16712	1502	10566	1837	3306	63	3508	4992	802	1626	44913
Percentage (%)	37.2	3.3	23.5	4.1	7.4	0.1	7.8	11.1	1.8	3.6	100
HP	57762	18556	17676	2784	14876	4191	7391	8657	1273	0	133166
Percentage (%)	43.4	13.9	13.3	2.1	11.2	3.1	5.6	6.5	1.0	0.0	100
Jammu and Kashmir	22500	15436	4403	943	7169	1363	2622	8254	230	0	62920
Percentage (%)	35.8	24.5	7.0	1.5	11.4	2.2	4.2	13.1	0.4	0.0	100
Karnataka	96576	82454	100189	48752	52502	29263	41647	69474	27502	3006	551364

(continued)

Table 1 (continued)

States	Rural connectivity	Flood control	Water conservation and harvesting	Drought proofing	Micro irrigation	Irrigation for land development	Renovation of water body	Land development	Any Activity approved by MRD	Rajiv Gandhi seva kendra	Total (Lakh)
Percentage (%)	17.5	15.0	18.2	8.8	9.5	5.3	7.6	12.6	5.0	0.5	100
Kerala	5077	33047	16869	4556	12186	5624	18648	35632	895	0	132534
Percentage (%)	3.8	24.9	12.7	3.4	9.2	4.2	14.1	26.9	0.7	0.0	100
MP	429535	15643	274298	94759	29392	361536	41645	85438	152	0	1332398
Percentage (%)	32.2	1.2	20.6	7.1	2.2	27.1	3.1	6.4	0.0	0.0	100
Maharashtra	152797	7833	430923	907243	9766	132736	93761	29567	223	38	1764887
Percentage (%)	8.7	0.4	24.4	51.4	0.6	7.5	5.3	1.7	0.0	0.0	100
Punjab	11471	1780	1100	1993	1141	5	13757	3417	920	746	36330
Percentage (%)	31.6	4.9	3.0	5.5	3.1	0.0	37.9	9.4	2.5	2.1	100
Rajasthan	590483	26355	318904	65885	72955	118345	254080	51178	7136	15709	1521031
Percentage (%)	38.8	1.7	21.0	4.3	4.8	7.8	16.7	3.4	0.5	1.0	100
Sikkim	1407	667	147	303	445	7	78	605	80	0	3740
Percentage (%)	37.6	17.8	3.9	8.1	11.9	0.2	2.1	16.2	2.2	0.0	100
TN	109740	4814	65777	0	69533	0	235850	196	9	0	485918
Percentage (%)	22.6	1.0	13.5	0.0	14.3	0.0	48.5	0.0	0.0	0.0	100
Tripura	63148	4956	25280	10918	13550	3725	5991	26761	22489	787	177605
Percentage (%)	35.6	2.8	14.2	6.1	7.6	2.1	3.4	15.1	12.7	0.4	100

(continued)

Table 1 (continued)

States	Rural connectivity	Flood control	Water conservation and harvesting	Drought proofing	Micro irrigation	Irrigation for land development	Renovation of water body	Land development	Any Activity approved by MRD	Rajiv Gandhi seva kendra	Total (Lakh)
UP	598099	69723	221382	60140	41805	88081	184187	108447	43583	1121	1416567
Percentage (%)	42.2	4.9	15.6	4.2	3.0	6.2	13.0	7.7	3.1	0.1	100
WB	209373	60210	105926	37686	42250	18325	76750	39638	37	155	590350
Percentage (%)	35.5	10.2	17.9	6.4	7.2	3.1	13.0	6.7	0.0	0.0	100
Chhattisgarh	148986	9908	61202	427941	34737	37493	82532	31124	6	271	834202
Percentage (%)	17.9	1.2	7.3	51.3	4.2	4.5	9.9	3.7	0.0	0.0	100
Jharkhand	119088	2870	122566	13105	8816	64885	20103	23174	1759	3593	379959
Percentage (%)	31.3	0.8	32.3	3.4	2.3	17.1	5.3	6.1	0.5	0.9	100
Uttarakhand	3409	22361	22939	8262	10139	990	3020	5117	224	151	76610
Percentage (%)	4.4	29.2	29.9	10.8	13.2	1.3	3.9	6.7	0.3	0.2	100
Manipur	51937	13077	11664	9889	20233	496	4116	16110	4485	280	132287
Percentage (%)	39.3	9.9	8.8	7.5	15.3	0.4	3.1	12.2	3.4	0.2	100
Meghalaya	33060	3174	7063	4151	2245	121	1732	3589	2435	1632	59200
Percentage (%)	55.8	5.4	11.9	7.0	3.8	0.2	2.9	6.1	4.1	2.8	100
Mizoram	47565	406	1798	1717	126	761	68	3766	1452	1085	58743
Percentage (%)	81.0	0.7	3.1	2.9	0.2	1.3	0.1	6.4	2.5	1.8	100
Nagaland	85520	6147	5959	4950	9052	459	899	7784	1944	0	122714

(continued)

Table 1 (continued)

States	Rural connectivity	Flood control	Water conservation and harvesting	Drought proofing	Micro irrigation	Irrigation for land development	Renovation of water body	Land development	Any Activity approved by MRD	Rajiv Gandhi seva kendra	Total (Lakh)
Percentage (%)	69.7	5.0	4.9	4.0	7.4	0.4	0.7	6.3	1.6	0.0	100
Orissa	152483	1712	29663	7481	5644	10924	50615	3400	8834	31062	301819
Percentage (%)	50.5	0.6	9.8	2.5	1.9	3.6	16.8	1.1	2.9	10.3	100
(27 States)	3835127	525954	2227522	1844586	577458	1153329	1411223	726435	131726	63878	12497236
Percentage of the total	30.7	4.2	17.8	14.8	4.6	9.2	11.3	5.8	1.1	0.5	100

Source Compiled from NREGA website of different States. [Accessed on November 18, 2011 and available at: <http://nrega.nic.in/netnrega/home.aspx>]
 Note Data up to March 2011; Amount in Lakh

2 MGNREGA and its Genesis

The National Rural Employment Guarantee Act 2005 (NREGA) was brought into force by the UPA-led government in February 2006. Since, it is the first nationwide employment scheme that guarantees employment legally to India's rural population, has generated intense speculation and interest especially among the academia (CSE [Undated](#)). Four years after the scheme was introduced, in 2009, the government has renamed it as Mahatma Gandhi National Rural Guarantee Act, as M. K. Gandhi (the Father of the nation) had always held the concept of 'Gram Swaraj' or 'Rural India' at the highest esteem. The detail of NREGA/MGNREGA can be had from the *Annexure I* and the two terms (NREGA and MGNREGA) will be used interchangeably throughout the present paper.

The primary aim of *MGNREGA* is to enhance the livelihood security of people in rural areas by guaranteeing 100 days of wage employment in a financial year to a rural household who volunteer to do unskilled manual work. In the context of rural poverty, the NREGA should be seen more as a livelihood-generating programme than a wage-earning scheme. It offers a unique opportunity to turn around rural development (CSE, [Undated](#)). This scheme is also an important step towards realisation of the right to work and aims at arresting out-migration of rural households in search of works, simultaneously enhancing people's livelihood on a sustained basis, by developing the economic and social infrastructure in rural areas. But, till date, the objective of the scheme has not been fully achieved due to one factor or the other. However, in the findings of Negi (2010), despite all the weaknesses, MGNREGA is a major step in the direction of addressing the problem of poverty in rural India. Further, he found that the change is slow but its impacts are visible in terms of income generation and creation of productive assets in villages. In the present study, we will re-examine the fund allocation, spending and its nature and performance of the NREGA scheme.

3 Total Fund Sanctioned in Different Projects Under NREGA

As the sufficient funding is one of the most important components for successful implementation of any project, Government of India has been giving its best effort with necessary funds to make NREGA successful. Table 1 portrays the total amount of fund spent under 10 projects of NREGA programme in 3 years from 2008–2009 to 2010–2011. Also, *Annexure II* depicts year-wise total amount (in Lakh) spent under NREGA in 27 major selected states of India. Most of the states gave more emphasis on the project, *Rural Connectivity*, and on an average, almost 31 % of the total fund allocated under NREGA of the country in 3 years was spent on '*Rural Connectivity*' project alone. It was followed by the project,

water conservation and water harvesting, spent a total of 17.8 % of the total fund sectioned.

Among the states, Mizoram spent 81 % of the total fund of NREGA on rural connectivity, highest in the country. It was followed by Nagaland with 70 % and Bihar with 67 % of the total fund sanctioned under NREGA spent on rural connectivity project. Very close to these states, Meghalaya and Orissa also spent their major share under this project with 56 and 51 % respectively of the total fund sanctioned. At the bottom, Kerala and Uttarakhand spent 3.8–4.4 % respectively of their share on *rural connectivity*.

The absolute amount spent per project was different for different projects, and the amount differs from one state to another depending on the size and population of the states. Still, the detail amount sanctioned for different project in different states can be seen from the Table 1. From the Fig. 1, it was also visualised that the major share of the fund sanctioned in 3 years under the NREGA was spent on Rural Connectivity, Water Conservation and Harvesting, Drought Proofing and Renovation of Water Bodies, etc. However, the number of works done was not at the same direction with the amount spent. As per the Fig. 1, most of the works (completed and on-going) done were seen on Irrigation Facility for Land Development, Water Conservation and Harvesting, Land Development programme, etc. Also, these projects have better performance against the amount sanctioned. The project, rural connectivity that spent highest share of fund did not perform well compared to the few projects mentioned above.

The share of fund sanctioned under NREGA compared to the size of rural population in 27 states was given in the Table 2. From the 2011 provisional

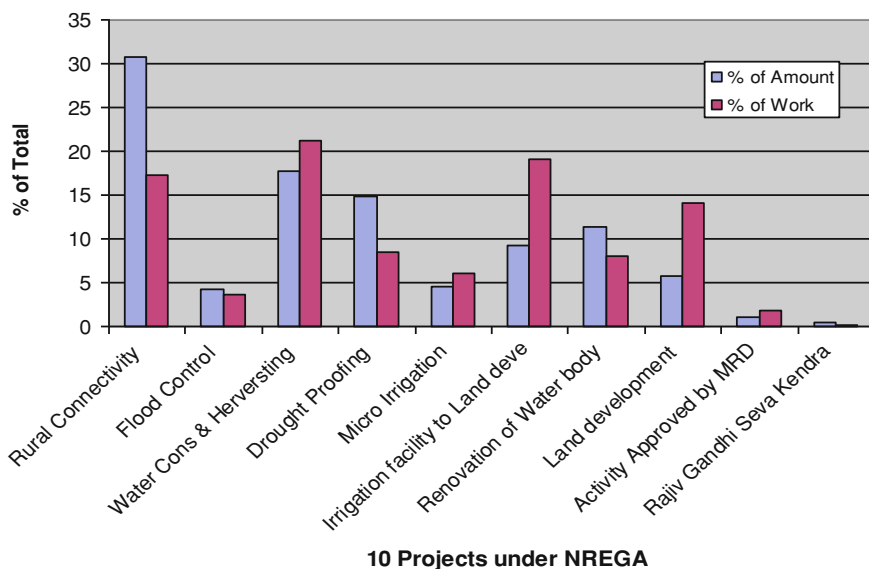


Fig. 1 Percent of amount spent and works done in 3 years

Table 2 Percentage of fund sanctioned against the rural population in 2011 (in Lakh)

States	Total rural population	Amount sanctioned under NREGA	Per capita fund sanctioned
AP	563	4,72,806	840
Arunachal	11	916	86
Assam	268	1,29,369	483
Bihar	921	2,29,321	249
Gujarat	347	72,358	209
Haryana	165	20,700	125
HP	62	47,153	765
J & K	91	36,861	404
Karnataka	376	2,47,596	659
Kerala	175	67,151	385
MP	525	5,06,051	963
Maharashtra	615	28,908	47
Punjab	173	15,531	90
Rajasthan	515	3,44,988	669
Sikkim	5	905	198
TN	372	2,20,143	592
Tripura	27	59,898	2,210
UP	1,551	5,11,356	330
WB	622	2,43,388	391
Chhattisgarh	196	5,67,420	2,894
Jharkhand	250	1,13,158	452
Uttarakhand	70	36,632	521
Manipur	19	42,184	2,221
Meghalaya	24	30,690	1,295
Mizoram	5	22,958	4,340
Nagaland	14	56,113	3,989
Orissa	350	1,48,517	425
27 States	8,312	42,73,071	514

Source Computed from the Annexure II and provisional population data of 2011

census, the per capita fund sanctioned for NREGA compared to the total rural population in 27 states stood at Rs 514 lakh in 2011 (assuming the rural populations demand job proportionately across the states). Among the states, Mizoram got highest share of NREGA fund with a total of Rs 4,340 lakh per capita rural population. It was followed by Nagaland with Rs 3,989 lakh per rural population, and at the bottom, Maharashtra registered lowest with Rs 47 lakh per rural population in the state. Though Arunachal Pradesh was a poor, hilly tribal state, the share of NREGA fund was very meagre. It was only Rs 86 lakh per rural population, second lowest in the country (27 states).

The amount spent per NREGA scheme/work done during the study period can be seen from the Table 3. During the 3 years period, on an average in 27 states, the cost of work under NREGA was accounted to be Rs 1 lakh per scheme. *Land development* project turned out to be the costliest project, estimated with

Table 3 Amount (Lakh) spent per NREGA scheme/work in 3 years (2008–2009 to 2010–2011)

States	Rural connectivity	Flood control	Water conservation and harvesting	Drought proofing	Micro irrigation	Irrigation for land development	Renovation of water body	Land development	Any activity approved by MRD	Rajiv gandhi Seva Kendra	Average
AP	0.8	3.0	5.3	2.4	6.1	2.0	1.1	4.7	NA	0.6	2.8
Arunachal	1.1	0.9	1.6	2.4	2.0	NA	1.4	2.3	3.5	NA	1.4
Assam	0.3	0.1	0.1	0.5	0.3	0.9	0.3	0.4	0.5	0.1	0.2
Bihar	0.4	0.7	0.8	2.1	0.8	0.8	0.9	0.9	1.3	NA	0.6
Gujarat	0.7	0.8	6.3	2.9	1.0	1.6	0.9	4.3	5.5	0.6	2.7
Haryana	0.6	0.7	0.5	0.7	0.8	0.7	0.7	0.6	0.4	0.3	0.6
HP	1.2	1.1	1.4	1.2	1.1	2.0	1.5	1.5	1.6	NA	1.3
Jammu and Kashmir	1.5	1.5	2.1	1.6	1.8	2.0	2.0	1.3	0.5	NA	1.6
Karnataka	1.2	0.9	1.7	3.1	1.4	5.7	1.6	2.8	1.8	0.4	1.9
Kerala	2.6	3.4	2.3	2.5	3.2	1.8	2.9	2.0	2.5	3.3	2.6
MP	0.5	0.8	0.8	2.8	0.9	1.9	1.0	3.8	9.7	NA	1.3
Maharashtra	0.4	0.6	0.2	0.1	0.9	1.8	0.2	3.4	2.0	0.4	0.4
Punjab	0.8	0.5	0.9	2.0	1.6	1.1	0.8	1.0	1.1	0.2	0.9
Rajasthan	0.3	0.3	0.3	0.4	0.3	2.0	0.3	0.6	0.5	0.3	0.4
Sikkim	1.0	1.0	5.2	4.9	1.1	1.4	1.2	1.0	1.7	NA	1.5
TN	0.4	0.2	0.3	NA	0.3	NA	0.3	0.5	0.4	NA	0.3
Tripura	1.1	1.1	2.4	1.9	2.0	1.6	4.2	2.5	1.5	0.1	1.8
UP	0.9	1.0	0.9	1.3	1.8	2.8	0.6	2.0	1.9	0.3	1.1
WB	0.8	0.5	0.9	2.1	0.7	1.2	0.9	1.1	0.8	2.9	0.9
Chhattisgarh	0.5	0.2	0.4	0.0	0.3	2.8	0.5	2.4	4.9	0.8	0.4
Jharkhand	0.9	0.6	1.4	1.0	0.8	2.4	1.4	2.4	2.4	0.4	1.4
Uttarakhand	1.7	1.1	1.6	1.3	1.1	2.9	1.4	1.0	1.2	0.5	1.3
Manipur	0.2	0.7	0.3	0.5	0.1	0.3	0.3	0.2	0.2	0.1	0.3

(continued)

Table 3 (continued)

States	Rural connectivity	Flood control	Water conservation and harvesting	Drought proofing	Micro irrigation	Irrigation for land development	Renovation of water body	Land development	Any activity approved by MRD	Rajiv gandhi Seva Kendra	Average
Meghalaya	0.5	0.4	0.8	0.7	0.6	0.8	1.1	0.5	0.4	0.1	0.5
Mizoram	0.1	0.6	0.3	0.5	0.3	0.0	0.5	0.4	0.1	0.1	0.2
Nagaland	0.1	0.3	1.1	0.4	0.2	0.3	0.8	0.7	0.1	NA	0.2
Orissa	1.2	1.6	3.6	3.6	1.0	7.1	2.5	3.0	2.7	0.2	1.9
India	0.6	0.9	1.2	0.6	1.4	2.2	0.8	2.5	1.8	0.3	1.0

Source Same as Table 1

Rs 2.5 lakh per project. It was followed by Irrigation for Land Development, as second highest costly project with Rs 2.2 lakh per project. At the bottom or cheapest project under NREGA during the 3 years was *Rajiv Gandhi Seva Kendra* (RGSK) with Rs 0.3 lakh per project.

4 Employment Given Under NREGA

Table 4 depicts percentage of employment given by NREGA against the total job card issued. This section also briefly highlights the performance of NREGA and its direction in the last 3 years. The overall employment rate was below the 50 % of the total job card issued under the programme. Some of the bigger states are literally low compared to the smaller states. For 2011–2012, it is understood that

Table 4 Percentage of employment provided out of the total job card issued under NREGA

States	2009–2010	2010–2011	2011–2012*
Andhra Pradesh	13.2	51.0	34.1
Arunachal Pradesh	49.5	4.9	NA
Assam	37.9	19.6	19.9
Bihar	13.0	21.5	5.0
Gujarat	37.1	28.8	14.8
Haryana	27.7	37.7	28.9
Himachal Pradesh	48.4	41.9	31.8
Jammu and Kashmir	22.2	25.1	17.8
Karnataka	66.7	43.2	9.4
Kerala	33.0	40.6	72.1
Madhya Pradesh	30.2	34.5	20.1
Maharashtra	8.0	7.5	11.0
Punjab	30.8	34.1	18.8
Rajasthan	62.7	53.9	38.9
Sikkim	47.2	65.8	39.6
Tamil Nadu	66.5	75.0	62.4
Tripura	98.4	94.3	91.2
Uttar Pradesh	52.3	58.4	38.7
West Bengal	46.5	48.7	21.7
Chhattisgarh	53.1	61.1	50.1
Jharkhand	42.1	46.2	28.0
Uttarakhand	12.8	24.3	52.2
Manipur	42.2	75.0	83.3
Meghalaya	74.3	79.7	83.3
Mizoram	77.4	95.6	NA
Nagaland	NA	33.0	14.3
Orissa	NA	NA	NA
27 States	43.7	46.2	34.1

Source Same as Table 1

* Data up to November 21, 2011

the financial year is not still complete, expecting the employment rate to go up when it comes to an end of financial year in March month 2012.

From the Table 4, one can visualise that the employment given by the NREGA programme was 43.7 % in 2009–2010, and slightly increased to 46.2 % in the following year. However, the rate of employment given against the job card issued in the year 2011–2012 was extremely low at 34.1 %, expecting some miraculous improvement at the end of the financial year. Among the states, Maharashtra was extremely poor in this regard in 2009–2010. The state could provide hardly 8 % of the total job card issued, turned out to be lowest in the country. However, some North Eastern states, like Tripura, Mizoram and Meghalaya did excellent performance with 98.4, 77.4 and 74.3 % of employment given under this programme in 2009–2010, respectively. In the year 2010–2011, extremely poor performing states were Arunachal Pradesh and Maharashtra with 4.9 and 7.5 % of employment, respectively. However, in the same year, major performing states were Mizoram, Tripura and Meghalaya with the percentage of employment given were 95.6, 94.3 and 79.7 %, respectively.

5 Conclusion

From the above analysis and data, one can easily infer the role of central/public funding in materialising poverty alleviation programmes especially MGNREGA in rural India. Failures of the 'Rural Development Policies' were attributed to many factors. In India, almost all the central funding programmes for the rural development faced insufficient fund coupled with excessive delays in the release of funds. Similarly, the MGNREGA programme has also proved that the states having better funding or higher per capita of fund performed well. For instances, Mizoram got highest share of NREGA fund with a total of Rs 4,340 lakh per capita rural population and the total employment was 95.6 % in 2010–2011. The per capita rural population fund sanctioned under NREGA in Tripura was Rs 2,210 lakh and in Meghalaya, it was Rs 1,295 lakh per capita rural population in the state. The employment rate of these states was much higher than the national level. Tripura and Meghalaya did excellent performance under NREGA with 98.4 % and 74.3 % of employment rate respectively in 2009–2010.

However, Maharashtra registered lowest per capita NREGA fund with Rs 47 lakh per rural population in the state in 2011–2012 and the employment given against the job card issued in the same year was 11 % only. Though Arunachal Pradesh was a poor, hilly tribal state, the share of NREGA fund was very meagre. It was only Rs 86 lakh per rural population, second lowest in the country (out of 27 states under study), and the state's employment rate under NREGA was lingering around 5 % in 2010–2011. In nutshell, MGNREGA performed well in the states where more share of fund was sanctioned and poor with the poor funding states. Therefore, more public funding is called for rural development programmes in India.

Appendix I

National Rural Works Guarantee Act 2005 (NREGA)

Objective

NREGA is designed as a safety net to reduce migration by rural poor households in the lean period through at least 100 days of guaranteed unskilled manual labour provided on demand to each household, at minimum wages prescribed by respective states. It is also expected to enhance people's livelihoods on a sustained basis, by developing the economic and social infrastructure in rural areas. Works focused on water conservation, land development and drought proofing are to be taken up under the Act.

Registration for Works

The adult member of every house hold who resides in rural area and is willing to do unskilled manual work, may apply for registration of household for issuance of Job Card (Schedule 2(1) of the Act).

Works in the Scheme

Works must be provided to all applicants within 15 days of receipt of an application and within a radius of 5 km from their place of residence. In case, Works cannot be provided within 15 days of receipt of the application, the applicant shall be entitled to a daily un-Works allowance (Schedule 7(1) of the Act).

Un-Works allowances Rates

The un-Works allowance rate for the first 30 days shall not be less than one-fourth of the wage rate. For the remaining period of the financial year, the un-Works allowance rate should not be less than one-half of the wage rates. In the event of any delay in the payment of un-Works allowance, the recipients shall be entitled to compensation based on the same principles as wage compensation under the Payment of Wages Act, 1936. Compensation costs shall be borne by the state government.

Minimum Wage

Minimum wages for the state shall be such that a person working for 7 h would normally earn a wage equal to the wage rate. Minimum wages are to be fixed by the state government under Section 3 of the minimum wage Act, 1948 until the time, the wage rate is fixed by the central government. However, the minimum wages shall not be at a rate less than 60 Rs per day.

Type of works under the Scheme

As per Schedule 1 of the Act, the focus of the Rural Works Guarantee Scheme shall be on the following works:

- Water conservation and water harvesting
- Drought proofing (Afforestation and tree plantation)
- Irrigation canals

- Provision of irrigation facility to land owned by SC/ST/beneficiaries under Indira Aawas Yojana¹
- Renovation of traditional water bodies
- Desilting of tanks
- Land development
- Flood control and protection works including drainage in water logged areas
- Rural connectivity to provide all weather access
- Other works notified by the central/state governments

Application for Work

At the Gram Panchayat level, application for work is to be submitted to the Sarpanch of the Gram Panchayat. The application can also be submitted to the Programme Officer. The Sarpanch of Gram Panchayat and the Programme Officer shall be bound to accept the valid applications and to issue a dated receipt to the applicant.

Works Card

As per Schedule 2(1) of the Act, the Gram Panchayat will issue a job card after registration free of cost to each applicant household. The job card will contain the details of adult members of household such as names, age, address and photographs. Registration will be made for 5 years and may be renewed from time to time.

Availability of Works

Under the Act, Works shall be provided within a radius of 5 km from the residence of the applicant (Schedule 2(12) of the Act). If Works are provided outside 5 km, it must be provided within the Block with 10 % extra wage to meet additional transportation and living expenses (Schedule 2(14) of the Act). Applicants are to be intimated by written letter and a public notice shall be displayed at the office of Gram Panchayat and Programme Officer (Schedule 2(11) of the Act). Priority shall be given to women and in such a way that at least one-third of the beneficiaries shall be women (Schedule 2(6) of the Act).

Facilities at Work site

Worksite facilities are to be provided by the implementing agency (Schedule 2(27) of the Act). These include: (1) Safe drinking water; (2) Shade for children and periods of rest for workers; (3) First-aid Box for emergency treatment and minor injuries; (4) Safety equipments and measures for health hazards connected with work.

To look after the women workers' children below the age of 6 years, one woman worker shall be deputed for every five such children. The deputed woman shall be paid wage rate (Schedule 2(29) of the Act).

¹ The IAY was launched in 1997–1998. The basic objective of the scheme is to help construction of new dwelling units as well as conversion of unserviceable kutch houses into pacca/semi pacca houses to the marginalised sections of the society who are living below the poverty line by extending them grants-in-aid.

Serious accidents at work site

If any person Works under the scheme or a child accompanying any such person is injured he/she shall be entitled to free of charge medical treatment which shall include accommodation, treatment and medicines (Schedule 2(24) of the Act). During the period of hospitalisation of injured worker half of the minimum wage per day is to be paid for his upkeep (Schedule 2(25) of the Act). If a person Works under a scheme dies or becomes permanently disabled by the accident at site the legal heirs of the deceased or the disabled shall be paid an ex gratia payment at the rate of Rs 25,000 by the central government.

Wage payment

The wage under the scheme may be paid either wholly in cash or in cash and kind. But at least one-fourth of the wages shall be paid in cash only. All payment of wages in cash and the un-Works allowance shall be made to recipients in the presence of eminent persons of the community on pre-announced dates (Schedule 23(4) of the Act). The disbursement of daily wages shall be done on a weekly basis or in any case not later than a fortnight specified under the scheme (Schedule 3(3) of the Act). In case of delay of wage payments, labourers shall be entitled to receive payment of compensation as per the provisions of payment of wages Act, 1936.

Implementing Agencies

The Gram Panchayat shall be responsible for identification of projects in the Gram Panchayat area and prepare a development plan as recommended by Gram Sabha and Ward Sabha (Schedule 16(1) of the Act). The Gram Panchayat shall maintain a list of possible works to be taken up as and when demand for work arises. It is also responsible for the execution and supervision of such works. The other implementing agencies can be Intermediate and District Panchayat, line departments of the Government, Public Sector Undertakings of the Central and State Governments, Cooperative Societies with a majority shareholding by the Central and State Governments, and reputed NGOs having a proven track record of performance. Self-Help Groups may also be considered as possible implementing agencies.

Sanctions and allotment of works

The Gram Panchayat shall forward its proposals in the order of priority to the Project Officer for approval. The Programme Officer must be someone not below the rank of BDO at block level (Schedule 15(1) of the Act). The Programme Officer shall allot at least 50 % of works in terms of cost, to be implemented through Gram Panchayat. The Programme Officer shall supply each Gram Panchayat with muster rolls for the works and a list of Works opportunities (Schedule 16 (4, 5 and 6) of the Act).

Provision of Social Audit

The Gram Panchayat shall make available all relevant documents; muster rolls, bills, vouchers, sanction orders and other books of accounts and papers to the Gram Sabha for the purpose of social Audit (Schedule 17(3) of the Act).

Ban on Contractors and Machines

Machines and Contractors are banned. The scheme shall not permit engaging any contractor for implementation of the project under this scheme (Schedule 1(11) of the Act). Works under this scheme shall be performed by using manual labour and not by machines (Schedule 1(12) of the Act).

Grievance Redressal Mechanism

The state government shall make rules and regulations to deal with any complaint at Block and the District level (Schedule 1(19) of the Act). If any dispute or complaint arises under the scheme against the Gram Panchayat, the matter shall be referred to Programme Officer (Schedule 23(5) of the Act). The PO shall enter every complaint in a complaint register and shall dispose the disputes and complaints within 7 days of its receipt (Schedule 23(6) of the Act). Appeal against the Programme Officer will be to the District Programme Coordinator. Appeal against the District Programme Coordinator may be with an appropriate authority designated by the state government.

Annexure II

Total amount (in Lakh) spent under NREGA in 3 Years

Sl. No.	States	2008–2009	2009–2010	2010–2011 ^a	Total ('000 Lakh)
1	Andhra Pradesh	2,42,484	3,51,018	4,72,806	1,066
2	Arunachal Pradesh	1,503	1,548	916	4
3	Assam	87,798	99,517	1,29,369	317
4	Bihar	3,25,920	1,72,250	2,29,321	727
5	Gujarat	18,273	70,300	72,358	161
6	Haryana	10,599	13,614	20,700	45
7	Himachal Pradesh	32,821	53,191	47,153	133
8	Jammu and Kashmir	8,313	17,746	36,861	63
9	Karnataka	33,565	2,70,203	24,7596	551
10	Kerala	20,661	44,722	67,151	133
11	Madhya Pradesh	3,77,308	4,49,039	5,06,051	1,332
12	Maharashtra	12,86,940	4,49,039	28,908	1,765
13	Punjab	6,707	14,092	15,531	36
14	Rajasthan	6,02,474	5,73,569	3,44,988	1,521
15	Sikkim	2,150	686	905	4
16	Tamil Nadu	96,102	1,69,673	2,20,143	486
17	Tripura	46,978	70,729	59,898	178
18	Uttar Pradesh	3,44,792	5,60,418	5,11,356	1,417
19	West Bengal	1,34,515	2,12,447	2,43,388	590
20	Chhattisgarh	1,39,351	1,27,430	5,67,420	834
21	Jharkhand	1,38,798	1,28,003	1,13,158	380

(continued)

(continued)

Sl. No.	States	2008–2009	2009–2010	2010–2011 ^a	Total ('000 Lakh)
22	Uttarakhand	12,741	27,236	36,632	77
23	Manipur	52,855	37,248	42,184	132
24	Meghalaya	9,465	19,046	30,690	59
25	Mizoram	15,799	19,987	22,958	59
26	Nagaland	22,777	43,824	56,113	123
27	Orissa	65,071	88,231	1,48,517	302

Source Compiled from NREGA website of different States. [Accessed on November 18, 2011 and available at: <http://nrega.nic.in/netnrega/home.aspx>]

Note ^a Data up to March 2011 including a project “Total Rajiv Gandhi Seva Kendra”

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Factual Achievement of MGNREGA Calls for an Optimal Planning Using Fuzzy Logic

Chinmoy Jana

1 Introduction

Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) has appeared to be the saviour for providing livelihood security to the distressed masses by engaging them as wage labor on public works up to a period of 100 days per household per annum whose adult members volunteer to do unskilled manual work. The MGNREGA, in its content, has established a guaranteed right-based framework of wage employment by keeping Government and Panchayat accountable to the demanding job seekers. The Act was renamed from National Rural Employment Guarantee Act (NREGA) to MGNREGA in 2009. Since its enactment in 2005, so far the National Rural Employment Guarantee Act (NREGA) has been implemented in all districts except the districts having fully urban population. Till now, the scheme is active in 615 districts out of 640 districts in India [NREGA official website]. Based on state-level employment demand and supply data and the use of funds released under NREGA, it is found that, although it is a demand-driven scheme, there are significant interstate differences in the supply of labor. The supply falls far short of demand, particularly in low-income states, where the organizational capacity to implement the scheme is limited. It is also noted that the NREGA-induced fiscal expansion has not contributed to higher fiscal imbalances. The NREGA fund utilization ratio varies widely across states and is terribly low in the poorer states (Chakraborty 2007). Since the flow of resources to individual states is based on approved plans outlining employment demand, it may turn out to be regressive for the poorer states with low-organizational capacity in terms of planning and management of the schemes, especially labor demand forecasting (Jha et al. 2012).

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1.1 Background

NREGA Schemes started as an instrument to address the challenges of unemployment and poverty in the country as its major objective. The Act seeks to strengthen the natural resource base of rural livelihood and create durable assets in rural areas (Imai 2007). Policy makers aimed to achieve the goal of sustainable development of rural agrarian economy, transforming the geography of poverty, new ways of doing business, as a model of reform in governance which is anchored on the principles of transparency and grass root democracy (Rabee 2010). The methodology adopted in this act was based on fulfillment of such goals and monotonically it is being developed for its realistic application (Mukherjee and Sinha 2011). In this act, it is placed that adult members of willing households may apply for employment as unskilled manual worker to local Gram Panchayat (GP) for registration and GP issue job card to the household after verification. Failure to provide employment within 15 days will call for daily unemployment allowance as a liability to the State Government. At least one-third of the workers allotted with works should be women. It is also mentioned in the Act that the disbursement of wages has to be done on a weekly basis and not beyond a fortnight. The implementation of the Act suffered from various procedural and technical shortcomings. Panchayat has the principal role in planning, implementing, and monitoring of the schemes. Unfortunately, the GPs in their present structure and capacity are not capable of performing the task as expected. The technical back-up available at GP is too meager, often sub-standard and suffers from obsolete standards. The predominant work under the Act is related to digging of ponds and other earthworks, which is hard to perform during the rainy season, mid-July to mid-October, and this period also covers the bulk of the lean season while it may be possible to execute other types of work during this period.

The analysis offered here is largely validated using a field study of the Jhargram Community Development Block of Paschim Medinipur District of West Bengal in India. Block is the lower tier of three-tier planning system in India, State, District, and Block. The article proceeds as follows: [Section 1.2](#) reviews the sectors, facilities, and financing pattern of the MGNREGA. [Section 1.3](#) outlines the problems and gaps between planning, allocation, and implementation under the Act. [Section 2](#) presents the structure of model used to maximize the use of mandays subject to minimum fund and maximum asset generation in which [Sect. 2.1](#) illustrates asset values, [Sect. 2.2](#) represents the nomenclature used in this study, and [Sects. 2.3](#) and [2.4](#) represent the objective functions and constraints, respectively. [Section 3](#) is used to describe the solution technique of the model. [Section 4](#) presents the study area and sample used in the study. The next [Sect. 5](#) discussed the results of this study, and finally [Sect. 6](#) contains the summary and conclusion.

1.2 Sectors, Facilities, and Financial Pattern

The predominant work under the MGNREGS is related to physical labor, depending on earthworks. There are major eight sectors which are enlisted for implementation. Out of which two are related to irrigation—one is ‘micro irrigation’ works and other one ‘irrigation facility to the land owned by schedule caste or schedule tribe beneficiaries’. In India, about two-third of the rural households are dependent on agriculture for their livelihood, but agricultural operation always remained vulnerable since the state of crop harvests is conditioned by the vagaries of monsoon. Hence, these two sectors on irrigation should help the economic development of rural India. ‘Water conservation and water harvesting’, an important enlisted sector, is also significant in this era of civilization and modernization of our society. As there are many waterborne diseases and drinking water is the fast media of disease transformation, this sector along with another sector namely ‘renovation of traditional water bodies’ should get special attention in India. There are two sectors important on location basis and should get priority according to spatial meteorological information. These are ‘drought proofing’ and ‘flood control and protection’. As in this study priority of sectors are considered, these two sectors will be prioritized depending on its historical information of flood and drought, though second one is very common in rural India. ‘Land development’ is also a permissible enlisted task related to new industry proposal on rural India and change the land use pattern as a whole. The last sector, which is so far implemented on maximum level and seen to be easy to implement with people’s eagerness to have in all areas, is ‘rural connectivity’. There are many sub-sectors of all these major sectors and any new work can also be implemented through notification of central government in consultation with the state government. During execution of the schemes, the card holders are entitled to enjoy some basic facilities. Worksite facilities like crèche, drinking water, resting shed, etc. have to be provided. Due to lack of infrastructure, these facilities are rare and in rural areas demand of such facility is also not remarkable (Dey and Bedi 2010). There should be one grievance remedy mechanism to ensure responsive implementation. Due to political pressure, records are not made available to common people which are also an assured facility of the schemes.

The financial responsibility is taken care of by the central government, whereas some minor part is provided by the state governments. It is mentioned in the Act that if any card holder is assigned a job which is 5 km far from his residence, he or she should get 10 % wage extra and the responsibility should be taken care by the state government. Central government pays full wages of unskilled workers whereas the share of funding between Central and State Government of payment of the cost of material and wages for skilled and semi-skilled workers is in the ratio of 75:25. All administrative expenses are incurred by the central government except expenditure on State Employment Guarantee Council. The state government has to pay the unemployment allowance. It is notified that if state government fails to provide wage employment within 15 days of application, the card holders will be

eligible to get such unemployment allowance. There exists many disputes over this issue and so far it is very rare case that job seekers are getting unemployment allowance (Jacob 2008). Mostly, job card holders are unaware on the matter and some aware people moved for legal solution, which is again expensive and time consuming, and many of them are waiting till now for any favorable resolution.

1.3 Problems and Gaps Between Planning, Allocation, and Implementation

During implementation of MGNREG Schemes, a significant number of problems have been faced by the people. There exist some general problems but beyond that many physical and organizational problems were also present. In many rural villages, no Below Poverty Line (BPL) household distribution is available. People are migrating in some fixed seasons from one village to another village or city and sector-based works are not planned considering such unavailability of the people. The predominant work under the NREGS is related to digging of ponds and other earthworks. Such work is hard to perform during the rainy season, mid-July to mid-October, and this period also covers the bulk of the lean season while it may be possible to execute other types of work during this period. Since rural people are mostly suffering from malnutrition, they are unable to work physically for whole day and basic amenities like rest-shed, drinking water sources are not provided according to the Act. The way of activities should differ from area to area because forms of terrain, structure, soil properties, etc. are differing largely from region to region. Biotic features of the region and sub-regions are often not the same, though most of the activities remain unaltered over the years. Environmental issues are also not addressed in the operation. In this study, it is observed and assessed that most of the GP members are not capable of planning task as expected. The technical back-up available at GP is too meager, often sub-standard and suffers from obsolete standards. These activities are implemented and controlled from GP offices where volunteers and staffs are not qualified enough to maintain accounts of such huge activities. Again there is always a political pressure for hiding the matter of man-days created, asset built, fund spent, etc.

The selection of work, job card holders, and its implementation is expected to be democratic and participatory. However, due to lack of awareness of common people and unwillingness of political activists, it is missing. There is no attempt to make the outcome-oriented achievement. Plan preparation does not start with any goal of working days of card holders and no importance is given on scientific application on priority basis. Potential physical resource availability is not considered as a factor of activity selection and there is always a lack of sectoral balance among these eight activities. A major hindrance was posed due to non-availability of any information on assets created by different activities at sectoral level. Asset has not been taken as one of the determinants of selection and

implementation of sectors and schemes. This is the objective of the present study which was investigated on the basis of asset measurement by taking samples at GP level. In these schemes, fund does not depend on potential of sectors, it depends on planning placed by the District personnel, their willingness, which is hardly unbiased on specific block/panchayat. The present study attempted to frame a multi-objective fuzzy linear programming model (Romel 1989; Zimmerman 1978) for allocation of work, man-days, and asset creation in the Block. Priorities can be decided on the basis of potential resource available, quantum of work executed in the previous year, ecological characteristics of the target area, any indirect benefit, and asset generation possibilities. An attempt has also been made for utilization of maximum man-days on lower investment to provide output on optimum utilization of fund for generation of maximum man-days and creation of maximum assets.

2 Proposed Structure of the Model

As discussed earlier, for best implementation of MGNREGS, a structured Block level Optimization model can be developed for maximum use of man-days with minimum fund and maximum asset generation. Since these objectives are conflicting in nature, fuzzy optimization technique can be used to get maximum satisfaction on the issues. It is important to note that here we are trying to frame a universal flexible model which can be applied on any community development (CD) Block and accordingly coefficients and priorities can be changed as input.

2.1 Asset Value

A major hindrance was posed due to non-availability of any information on assets created by different activities at sectoral level. This task can be done on the basis of asset measurement by taking samples at Block and GP level. Direct intervention with the concerned Block and GP level functionaries can help for estimating the asset value for each scheme representing a specific sector. Assets were estimated on three counts, (a) Material asset, (b) Associated economic asset, and (c) Social asset. Benefits and costs of each activity became the basis of asset estimation and a stream of 10 years of net benefits were taken and then converted the values at present market rate by applying net present value (NPV) of Cost-Benefit analysis. The asset value for sector was thus estimated as.

$$A_{oi} = -K_{oi} + \frac{\sum_{t=1}^{10} (B_{ti} - C_{ti})}{\{1/(1-r)\}^t} \quad (1)$$

where

- A_{oi} = Present unit value of asset of sector i in t -th year
 K_{oi} = Initial ($t = 0$) investment in sector i
 B_{ti} = Benefit accrued in sector i in t -th year
 C_{ti} = Cost incurred in sector i in t -th year
 t = (0,1,.....,10 years)
 r = Rate of depreciation (Considered 2.5 % on Capital Cost).

2.2 Nomenclature

To frame the optimization model, the following nomenclature is used.

- i Sectors, $i = 1-8$
 i' Specific value of i
 Z_1 Total fund used in the block
 Z_2 Total asset created in the block
 Z_3 Total man-days used in the block
 W_i The quantity of work of i -th sector ($i = 1-8$) in the block
 W_i The quantity of work executed of i -th sector in the Block in the last financial year
 D Average number of days engagement per card holder
 $(PO)_i$ Potential of work of i -th sector in the block
 M_i The man-days required for one unit of work for i -th sector in the block
 $(MC)_i$ Unit material cost for i -th sector in the block
 γ Wage rate fixed at national/state level
 F_i Total fund for work of i -th sector in the block
 A_i Unit value of asset created through unit work of i -th sector in the block
 (CH) Total card holders registered in the block
 (CHD) Demanding card holders in the block
 α Assigned minimum number of working days/year for each (CH)
 β Assigned minimum number of working days/year for each (CHD)
 U_{ij} Most accepted value of Z_{kj} where $k = 1, 2, 3$
 L_{ij} Least accepted value of Z_{kj} where $k = 1, 2, 3$

2.3 Objective Functions

In this study, three objective functions are considered according to purpose of the scheme. As first objective function, it is measured:

To maximize the man-days used in a Block,

$$\text{Max } Z_1 = \sum_i M_i W_i \tag{2}$$

secondly, to maximize Assets created through these activities,

$$\text{Max } Z_2 = \sum_i A_i W_i \tag{3}$$

and finally to minimize the utilization of fund

$$\text{Min } Z_3 = \sum_i F_i \tag{4}$$

where

$$\sum_i F_i = \gamma \sum_i M_i(W_i) + \sum_i (MC_i)(W_i) \tag{5}$$

2.4 Constraints

There are many constraints for successful implementation of these schemes. Some can be structured to resolve for more fruitful achievement.

Total card holder in the area is considered as first constraint.

$$0.01 * \sum_i M_i W_i \leq (CH) \tag{6}$$

Potential of works as sectorwise limitation of work in any Block, i.e.

$$W_i \leq (PO)_i \forall i \tag{7}$$

Considering the experience of administrative officers, opinion of senior citizens in the target area, and demand of local people, the four level of priorities are assigned among all the sectors in the Block. It is considered that allocation of work should be in such a way that more prioritize sector will be assigned more man-days in the Block.

So,

$$M_{P_L} W_{P_L} \geq M_{P_K} W_{P_K} \quad \text{when } P_L < P_K \tag{8}$$

for $L \neq K, L, K = 1, 2, \dots, 8$ and $P_L, P_K = 1, 2, \dots, m$ (m is number of priorities).

Less absolute value on priority indicates more priority on the sector, i.e. P_1 is more prioritize sector than P_2 and so on. Number of priorities in a specific target area can also be flexible according to decision makers and it's the then situation.

In this model, it is also assumed that allocation of work for all sectors should increase at least 10 % more than work executed in the previous year.

$$W_i \geq (1.1) W_i' \quad \forall i \quad (9)$$

Limitation on material cost to be provided

$$\sum_i (MC)_i \leq 0.40 F_i \quad (10)$$

This 0.40 is considered as government's decision on maximum material cost as 40 % of total cost.

Limitation to provide work to all willing job card holders (total and demanding) with a minimum number of days per year.

$$\sum_i M_i W_i \geq \alpha (CH) \quad (11)$$

And

$$\sum_i M_i W_i \geq \beta (CHD) \quad (12)$$

3 Solution Technique

Subject to above constraints, all the three objective functions Z_{1j} , Z_{2j} , and Z_{3j} are solved taking U_{kj} and L_{kj} as most accepted and least accepted values for each objective k ($k = 1, 2, 3$) in the Block.

Introducing λ as indicating satisfaction level, that is when $\lambda = 1$, maximum satisfaction level is achieved, otherwise it is reducing and minimum value is zero.

Then three more constraints are generated: Now the final model of compromised problem becomes:

Max λ

Subject to

$$Z_{1j} - d_{1j}\lambda \geq L_{1j} \quad (13)$$

$$Z_{2j} - d_{2j}\lambda \geq L_{2j} \quad (14)$$

$$Z_{3j} + d_{3j}\lambda \leq L_{3j} \quad (15)$$

where

$$d_{kj} = |U_{kj} - L_{kj}| \quad (16)$$

and

All other constraints written above including non negativity of the decision variables.

W_{ij} for Max λ will indicate Work-done for i and j . Values of W_{ij} , M_{ij} , A_{ij} and F_{ij} for all i and j are determined for a case study and presented in the next section.

4 Jhargram Block in Paschim Medinipur District, West Bengal, India: A Case

Jhargram Block is situated in Paschim Medinipur District of the West Bengal State. Paschim Medinipur has been carved out of erstwhile Midnapore District of West Bengal in 2002 with a population of 51.93 lakhs and a total geographical area of 9,786 square km with density of population 531/square km. The SC/ST component of population is 32.92 %, i.e. 1/3 of the total population and the urban population of the District is only 11.90 % of the total. Its 9 lakh households are spread over 29 Blocks of the District, Jhargram is one of these Blocks. The Block is situated in $22^{\circ} 27'N$ and $86^{\circ} 59'E$ with a total area 539.64 square km. The total population is recorded as 1,53,381 with a density 284/square km.

The socio-economic scenario and the state of food security of the Block show an altogether different picture. The status of nutrition of the people is not encouraging with 65 % U5 children suffering from malnutrition and 15 % of them are subjected to third-degree malnutrition. Considering the administrative units, the Block is composed of 13 Gram Panchayats and there are 33,229 job card holder families, whereas only 11,318 card holders have so far demanded for jobs.

Initially, a survey was conducted to gather the information of the study area regarding MGNREG Schemes. It is concluded after several discussion with local people and other conditions that priority of the sectors should be on Sector 2—Drought Proofing, and then to Sector 1—Water Conservation and Harvesting, and lastly to Sector 4—Irrigation facility to SC/ST Land. In this model, other sectors are not considered on any priority.

Table 1 represents sectorwise asset value in the target area. For getting such values, in each GP schemes were taken as samples representing all the sectors of activities. Direct intervention by the members of survey team aided by the concerned Block and GP level functionaries helped estimating the asset value for each

Table 1 Sectorwise asset estimation based on NPV

Sl. No	Sectors	NPV (Rs. lakhs) per Unit
1	Water conservation and water harvesting (WCWH)	0.164 Per '000 cu. m
2	Drought proofing (DP)	2.68/ha
3	Micro irrigation works (MIW)	20.64/km
4	Irrigation facility to SC/ST land (IFL)	0.77/ha
5	Renovation of traditional water bodies (RTWB)	1.42 Per '000 cu. m
6	Land development (LD)	3.90/ha
7	Flood control and protection (FCP)	75.75/km
8	Rural connectivity (RC)	21.62/km

Table 2 Sectorwise potential and requirement per unit work

Sectors	Unit of work	Man-days per unit work	Total fund per unit work	Approximate potential
Water conservation and water harvesting (WCWH)	'000 cu. m	693.48	67053.78	2320.44
Drought proofing (DP)	ha	721.50	85317.70	566.64
Micro irrigation works (MIW)	km	1443.00	168883.38	384.81
Irrigation facility to SC/ST land (IFL)	ha	763.94	79105.14	680.61
Renovation of traditional water bodies (RTWB)	'000 cu. m.	600.24	63505.64	1552.44
Land development (LD)	ha	717.88	70734.98	568.29
Flood control and protection (FCP)	km	1930.50	247692.68	91.32
Rural connectivity (RC)	km	2197.80	276823.67	658.58

scheme representing a specific sector. Using the above-mentioned methodology sectorwise asset value is estimated based on NPV.

In Table 2, Potential of each sectors is collected from Block office, whereas man-days, fund required per unit of work is collected from field survey and information from GP offices for ongoing works.

Jhargram is a backward resource rich Block though it has all prospects of development in the fronts of wastelands, forests, wetlands, animal resources, and abundant raw materials for processing and value addition. Interventions for all these resources can be done with creation of unskilled and semi-skilled work opportunities and this can be realized adequately only with the realization of NREGA and implementation of NREGS activities under the stipulated eight sectors.

5 Result and Discussion

Sectors not taken up earlier are included since its potential exists and it has the capacity to boost up the absorption rate. Absorption rate is fixed beforehand and in this result it is given 100 days for all demanded card holders, whereas so far it is not more than 20 % in the Block. It is noticed that demanded job card holders are much less than the total registered card holders. The results reflect that man-days used per thousand rupees are also increased. The absorption rate (days/year) should be fixed after making a thorough iterative exercise. In this case, 100 days for all demanded job card holders are considered. To accommodate other card holders, this absorption rate can be changed in the model. To get the output for successive years, the potential can be reduced from existing to previous years output. This model is enough flexible to consider such change and give year to year output for completion of the potential with stipulated time period. In any

Table 3 Sectorwise growth of present to optimized allocations

	Present	Minimum fund	Max man-days	Max asset	Compromised solution
WCWH	34.60	38.00	38.00	38.00	739.52
DP	13.78	15.16	15.16	15.16	15.16
MIW	7.41	8.15	8.15	384.81	8.15
IFL	0.00	7.00	7.00	7.00	7.00
RTWB	29.95	32.95	32.95	32.95	32.95
LD	21.82	24.01	24.01	24.01	24.01
FCP	0.34	0.37	0.37	91.32	0.37
RC	76.68	84.35	473.03	145.84	84.35

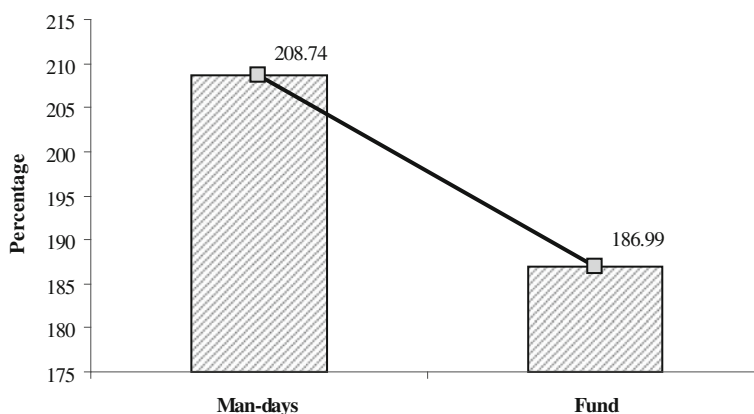
Table 4 Variation of output with changing objective functions

Sl No.	Objectives	Present	Min fund	Max man-days	Max asset	Compromised solution
1	Man-days (in Thousand)	247.46	277.55	1131.8	1131.8	763.998
2	Assets (Rs. lakh)	2006.64	2212.58	10615.9	18205.77	2327.618
3	Fund (Rs. lakh)	278.91	330	1406.04	1361.7	800.43

situation, if a new sector is included or excluded from the existing, it can also be incorporated in the model and run to get the desirable output.

The sectorwise growth from present to proposed alternatives for allocation of works for a year is presented in Table 3. The values of objective functions to achieve different objectives and compromise solution are presented in Table 4.

It is also observed that except rural connectivity work per job card holder increased more than 10 times for each sector. Figure 1 shows that on compromise solution man-days increased 208.7 %, whereas fund increased only 187 % for proposed allocation of sectors in a year under existing potential.

**Fig. 1** Percentage growth in man-days and funds

6 Summary and Conclusion

The model used in this study can be applied to any new Block and it is evident from the above result that the output will be more economically viable and acceptable on the basis of purpose of MGNREGA. In fact, the achievements of NREGA programmes at different Blocks in terms of generation of man-days and creation of assets largely depend on many physical factors and social constraints, besides importance and preference of sectors in the area of operation. It is also confirmed that the output of work per unit investment widely varies depending on several locally significant physical conditions. Of course, it varies from sector to sector and naturally preference and likeliness of sector selection significantly influence the dimension of achievements. Meticulous supervision and efficient management of programme execution may do a lot in attaining the planned targets. Blocks and specially GPs often suffer from inadequacies in this respect and hence necessary actions are required to be taken to meet such deficiencies. To obtain real output for any Block, information on the variables and parameters must be realistic and precise to their level best. Using the output from the model for work allocation, each Block must prepare their MGNREGA schemes in the coming years for implementation and operate the same model for validation in respect of previous few years to learn the lapses.

There is no supply-side selection of beneficiaries. This requires in-depth understanding of region-specific labor demand and its seasonality so that a demand-based scheme of projects can be implemented at a frequency matching with the demand for work instead of supply-side provisioning. Failure to do this may result in imprudent use of funds, as inability to provide employment on demand will impose the burden of compensation, in the form of unemployment allowance, to the state government. Random sampling method can be applied after getting allocation of man-days from the above model to avoid biased on selection of beneficiaries and possible to restrict the number of days for each beneficiary to uniformly distribute the job to all demanding job card holders. Planning considering 53 defined Sub-schemes with their specific characteristics is also possible.

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