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"Sustainability of microcredit in rural areas: a case study in India."

*"Sostenibilità del microcredito nelle aree rurali: un caso di studio in
India."*

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ABSTRACT

Il microcredito nasce per consentire l'accesso al credito formale a quella parte più povera della popolazione che tipicamente non presenta adeguate garanzie. Il microcredito o il credito rurale ha origini remote ed è diffuso in diverse comunità, ma è solo a partire dagli anni 70 del secolo scorso che nascono le Istituzioni di Micro Finanza (MFI). Tali istituzioni mirano a ridurre la povertà tramite l'accesso al credito come mezzo per l'avvio di iniziative economiche in grado di migliorare le condizioni di vita dei beneficiari.

Negli ultimi anni il dibattito sull'effettivo contributo del microcredito alla lotta alla povertà si è ampliato fornendo talvolta risultati controversi e contraddittori. Le perplessità infatti sono molte, a partire dall'evidenza sugli elevati tassi di interesse solitamente applicati dalle MFI per arrivare a situazioni di sovraindebitamento.

Gli studi svolti evidenziano un maggiore successo dei modelli di credito di gruppo rispetto a quelli individuali e uno scenario eterogeneo nei diversi paesi.

Questo lavoro presenta un caso di microcredito cooperativo e di impresa sociale, in Tamil Nadu, India, basato sul modello di credito di gruppo, avviato grazie a un progetto italiano di cooperazione internazionale per lo sviluppo. La cooperativa Sontham, formata da 14 donne, si occupa della produzione, conservazione e vendita di zucchero di palma ed opera nel mercato dal 2014.

Il sistema di microcredito adottato dalla cooperativa si basa su un prestito personale a ciascun membro all'inizio dell'anno di produzione (in settembre). Questo prestito è fruttifero di interessi ad un tasso più basso (compreso tra il 6% e il 12%) rispetto a quello del mercato locale del denaro che presenta tassi di interesse superiori al 40%. Il meccanismo di restituzione del prestito si basa sulla consegna della produzione alla cooperativa che la rivende quando il prezzo è maggiore (per effetto della stagionalità del prodotto).

La cooperativa ha quindi un duplice business:

1. il microcredito (interessi sui prestiti),
2. l'attività commerciale di rivendita del prodotto (margine dato dal differenziale di prezzo di acquisto dai singoli operatori e rivendita sul mercato).

Ad oggi, la cooperativa Sontham ripartisce i profitti tra i soci. Alla luce del monitoraggio delle attività e dello studio condotto è emerso che:

- durante i primi due anni alcuni membri non sono riusciti a ripagare il debito contratto,
- la capacità di rimborso dipende principalmente dal numero di piante utilizzate e la loro produttività,
- sono presenti casi di sovraindebitamento che hanno portato alcuni membri a non ripagare il proprio debito.

Questo lavoro ha quindi ipotizzato due opportunità per la cooperativa:

- acquistare la terra e rivenderla in leasing ai propri membri comprensiva di almeno n. 100 alberi in modo che il reddito generato consenta il pagamento periodico del canone e al termine del contratto il riscatto della terra, conseguendo così un definitivo miglioramento della qualità della loro vita (senza debito e con proprietà dei mezzi di sostentamento),
- reinvestire gli utili della gestione per finanziare nuovi membri e allargare il numero di beneficiari ampliando così gli effetti positivi sulla comunità locale.

Ciò che emerge dal lavoro infine è la sostenibilità sia economica sia sociale del programma di microcredito e dell'attività della cooperativa. Il progetto è quindi un caso di successo: nel tempo di un anno ha completato le attività in programma affidando la sua continuazione al partner locale in un contesto di sostenibilità.

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INTRODUCTION

Microcredit is born with the aim to give access to all people to formal financial services despite the lack of guaranties. Some types of microcredit have ancient origins, and have always existed in different human societies. Today lots of microcredit realities operate all over the world with different models and rules.

In the recent years microcredit has become a very discussed topic into the international debate because of some negative effects brought by it. In particular in India, where microcredit had a huge success in term of rapid development of microfinancial products, a deep crisis of this sector started in 2012 and led to a worsening on people life conditions.

The failure of some MFIs pushed researchers to understand the determinants of this phenomenon in order to understand critical elements and possible corrective actions. Literature shows that some lending models work better than others, for example group lending has higher repayment rates than individual.

A very critical microcredit issue is interest rates charged by MFIs that are usually higher than the ones charged in formal credit. This phenomenon has brought distortion effects in some countries, for example in Latin America, where MFIs charged more than a 70% interest over microloans.

These situations show how microfinance cannot be considered as the panacea of poverty reduction but it is also true that many countries and communities benefitted microcredit programmes that drove improvements in life conditions.

The work run analyses some different types of microcredit, focusing its attention on the cooperative model that appears as one of the most successful models of microcredit.

The case study analyses effects of a microcredit programme in a rural area in Tamil Nadu on the basis of a research run on the field during the monitoring of an international cooperation project.

The case shows effects and potentials of a microcredit programme implemented by a rural cooperative involved in palm cake production. Sontham cooperative is formed by a self help group of 14 women which work seasonal and receive microloan by the cooperative to support all the expenses linked with life and production needs.

The case presented is interesting according to many points of view:

- first of all is an example of success of an international cooperation project that respects all the characteristic of independence of activities by international financing,

- secondly it represents an example of good practice in using microcredit instruments and social business idea with the aim to emancipate poor women from informal credit,
- at last it presents lots of possibility to understand economic, cultural and behavioural barriers to reach the success of microcredit programmes and possible corrective actions.

This work sheds light on microcredit potential in its best form, human centred and driver of development.

Chapter 1: MICROCREDIT AND SOCIAL BUSINESS

1.1 What is microcredit?

History and features

In statement of Microcredit Summit of February 1997 microcredit is defined as “all programmes extend small loans to very poor people for self-employment projects that generate income, allowing them to care for themselves and their families¹”.

Several studies show that the phenomenon of resources accumulation and saving is ever existed in the history of man. The *tontines*, rotating saving and credit associations (ROSCA), existed in poor communities since earlier than the advent of money in different countries as Mexico, India, Ethiopia and many others. ROSCA consists on the creation of a found by a defined group of people that save money and every year use the found to lend money to one member that has to pay back in a well-defined time allowing the group to lend money to another member the following year and so on. In the 60's he anthropologists Clifford Geertz and Shirley Ardener “had elaborated a pre-economic evaluation of equilibrium and balance of ROSCAS”². ROSCAS is considered as the first form of microcredit.

Modern microcredit is generally considered to have been originated by the Grameen Bank founded in Bangladesh in 1983 by Muhammad Yunus. Yunus fundamental idea is named “the three C's of credit” that he considers the main necessary components of credit:

1. Character: how a person has handled past debt obligations, in term of credit history and personal background.
2. Capacity: how much a borrower can handle for real.
3. Capital: current available assets of the borrower that could be used to repay debt in absence of income.

¹ Definition from “The Virtual Library of Microcredit”

² Andrea Lasagni, *Tontines/Rorca* in “Dizionario di Microfinanza”, Milano, Carocci Editore, 2013, p.768

Nowadays one billion people live on less than 1,25 dollar per day and 75% of them live in rural areas. More than 90% do not have access to financial services and very few people have access to savings accounts, loans, insurances or any convenient way to transfer money³.

Microcredit idea born from the belief that financial services play a critical role in reducing poverty and permanent access to financial services can help indigent people to take control of their lives. The crucial aspect is the good management of very small assets for people living in precarious conditions of survival. Moreover to overcome poverty, they need to be able to borrow, save, invest and protect their families against risk. Direct access to financial services can allow very poor people to progress from a situation of survival living to planning for the future, acquiring physical and financial assets, investing in better nutrition, health and education.

Through microcredit institutions such as credit unions and some non-governmental organizations, poor people can obtain small loans, receive remittances from relatives working abroad, and safeguard their savings. With access to small amounts of credit at reasonable interest rates, poor people can set up small businesses.

Microcredit inserts itself in the more vast area of the microfinance which includes the main basic financial service normally offered by every bank such as loans, transfer services, collection of saving, insurances. Microcredit is different in beneficiary since it is addressed to poor people.

In 1995, Sam Daley-Harrys, the administrative manager of the NGO Results⁴ thought to organize an important campaign in order to attract the global attention on microcredit, collaborating with Yunus and a member of the Charitable Microfinance Organization (FINCA).

The first Microcredit Summit took place in Washington in 1997, the presidency of the convey was committed jointly by Hilary Clinton the first lady of the United States of America, queen Sofia of Spain and the Japanese ex-prime minister Tsutumo Hata. Almost three thousand people coming from 137 different countries participated to the event including some of higher exponent of international politics like the president of the World Bank and other representatives of international organizations. Following the Microcredit Summit the Secretary-general of the UN presented a report on the issue of microcredit and eradication of poverty. This report, after the General Assembly Resolution 52/194 of December 18, 1997,

³ Data from *Mapping Pathways out of Poverty, The State of the Microcredit Summit Campaign Report, 2015*, MSC 2015

⁴ “Results” is an NGO born in United States of America as a reaction to the problem of poverty worldwide. It promotes umanitarian programmes and since 1985 collaborates with Muhammad Yunus’ project.

states that “people living in poverty are innately capable of working their way out of poverty with dignity, and can demonstrate creative potentials to improve their situation when an enabling environment and the right opportunities exist⁵” evidencing that microcredit is a tool in freeing people from poverty.

The 1997 was declared “The international year of microcredit”. During the Summit was set the goal to join one hundred millions of poor families within the 2005 was set. This goal was profusely reached. Moreover microfinance programmes have led to an increase of participation by poor in the mainstream economic and political process of their society. These programmes have especially benefitted women and have resulted in the achievement of their empowerment in a world where more women than men live in absolute poverty with an ever growing disparity.

The social business idea

Social business is a form of business that is between a profit-maximizing organization and a non-profit organization based on the idea to pursue its social objectives through a self-sustained plan.

A Social Business does not dependent on donations or on private or public grants to survive and to operate, because, as any other business, it is self-sustainable. Furthermore, unlike a non-profit organization, funds in a Social Business are invested to increase and improve the business' operations on the field on an indefinite basis.

It is a no-dividend company that sells goods or service and repays investments to its owner with the primary purpose to serve society and improve the fight against the poverty.

Yunus defined a Social Business as “A non-loss, non-dividend company created and designed to address a social problem. It is financially self-sustainable and profits realized by the business are reinvested in the business itself (or used to start other social businesses), with the aim of increasing social impact, for example expanding the company’s reach, improving the products or services or in other ways subsidizing the social mission.”⁶

A Social Business lays on seven principles:

⁵ United Nations, *General Assembly Resolution 52/194 December 18, 1997*

⁶ Yunus Muhammad, Moingeon Bertrand, Laurence Lehmann-Ortega, *Building Social Business Models: Leschildren from the Grameen Experience*”, Hec Paris – working paper 913, february 2009, p.5

1. It must to have the aim to overcoming poverty, or problems which threaten people and society; it will not be profit maximization;
2. It is financial and economic sustainable;
3. Investors get back their investment amount only; no dividend is given beyond investment money;
4. When investment amount is paid back, company profit stays with the company for expansion and improvement;
5. It has to be environmentally conscious;
6. Workforce has to get market wage with better working conditions;
7. It has to do with joy.

Yunus theorized two different type of social businesses. The first is “the no-profit and no-loss company to which the initial investment is paid back and investors can not receive dividends”⁷, the second is “a company owned by the clients it seeks to serve”⁵. The idea of the ownership is fundamental in these types of mutually reinforcing institutions.

Benefit corporations and Just Banks

In the recent years the social business principles influenced the for-profit world and even more company’s and business’ realities have started to recognize the importance of economy impact into local and social development.

A benefit corporation (B-Corp) is a for profit corporate entity that addresses positive impact on society, workers and community environments as legally defined goals. The more important differences from traditional corporates are in purpose and transparency.

The CEO of the B-Corp Patagonia, said that “The B-Corp movement is one of the most important of our lifetime, built on the simple fact that business impacts and serves more than just shareholders, it has an equal responsibility to the community and to the planet”⁸

The Benefit Corporation idea is born at the beginning of 21st century and become a juridical status in Maryland, USA, in 2010 for the first time. At the present stage B-Corps are legally recognized in 30 U.S. states and in December 2015 the Italian parliament has

⁷ Reed L. R., *Resilience The State of the Microcredit Summit Campaign Report*, 2014, Published in 2014 by the Microcredit Summit Campaign (MCS), p.30

⁸ Rose Marcario, CEO of Patagonia, *Why B Corps Matter?*, www.bcorporation.eu

introduced the for-profit corporate entity “Società Benefit” into the Italian regulation. This is a big step because this way Italy is the first country in the world to recognize the B-Corp legal status of its entire territory.

The B-Corp ratio is that also the for-profit enterprises would be act in a responsible way, using the highest standards of verified social and environmental performances, legal accountability, public transparency and use power of the economic market to face social and environmental problems. This collective global movement recognized itself in the Declaration of Interdependence that promote a “global economy that uses business as a force for good” and “a new type a corporation driven and creates benefit for all stakeholders, not just for shareholders”⁹.

This view is also shared by some banking institutions called “Just Banks” which are committed in address social and environmental change in the territory they operate. Some of those “Just Bank” run microcredit programmes for their clients, offering non-standardized financial products that take into account all the individual characteristic of the person.

One of those banks is the BRAC Bank in Bangladesh, the largest development NGO, which reaches over 126 million clients and started operating in 1974 with microfinance activities providing financial services for the poor. Today BRAC operates in fourteen countries as a Bank and it is present in seven countries with microfinance programmes. This bank responds to all the requirements to be considered a Benefit Corporation for its values and core activities.

Another example of “Just Bank” is the Italian Banca Popolare Etica, founded in 1999, that provides both traditional financial services and microcredit services. Banca Etica is run with the idea that “being member-owned isn’t enough to ensure that it is truly an ethical bank” and that there is the necessity to “host unconventional processes and policies to ensure that it remains transparent, honest, and true to serving the needs of its members and society”¹⁰.

All those positive and innovative realities represent a step forward in social business idea, addressing social responsibilities not only to non-profit organizations but also to markets enterprise. This mechanism creates a total involved economy where every actor might be

⁹ B Lab Inc, *Declaration of Interdependence*, www.bcorporation.net

¹⁰ Houghton M., *Banca Etica: Social & Environmental Evaluations*, Just Money: Banking as if Society Mattered, Massachusetts Institute of Technology, <http://www.courses.edx.org/courses/course-v1:MITx+11.405x+1T2016/courseware>, 2016

called to respond to social and environmental problems of its community and of the whole world.

1.2 Milestones of microcredit: the Grameen methodology

Lending to women

Since the establishment of the Grameen Bank, Yunus decided to focus on women both as work force and as clients, and for this reason 97% of the bank clients are female. This happened for many reasons: first of all in relation with the original place of the project, the state of Bangladesh, where the woman condition and social role are strongly discriminated. The Grameen was born with the aim to fight this gender discrimination and in a second moment only to respond to pure economic reasons. It was demonstrated that credit is able to bring more changes in the hands of women, knowing how to manage money better than men for the fact they are more conscious of the needs of the family and be more constant and solid in working.

At first it was very difficult to contact women and make them conscious of their potential. This happened because of a strong opposition by men regarding the possibility for women to have working relationships and financial projects; this is due to the historical role covered by men that have in caring financial situation of the family and, more generally, in taking every decisions. This system is precious for the improvement of women condition in several countries.

The power of the group

Grameen Bank gives to poor people the possibility to have access to credit but this possibility is not offer to single people. On the contrary it is offered to a group formed by five members that have to accord previously on the basis of a mutual knowledge and a need for credit. We can say that the constitution of the group and the group itself represents the only one guarantee required to potential clients. This condition had the result to assure a big success to the initiative in term of return rates of loans. Yunus thought that “people alone tend to be unpredictable and irresolute; with the support and the incentive of the group their

behaviours grows in stability and become consequently more reliable”¹¹. There are only two conditions for the formation of the group: first it can't contain members of the same family and secondly components have to share aspirations and social and economic condition. These restrictions are functional to the building of a good climate of trust and respect into the group.

Out of the family, between neighbours, the respect of rules is bigger in order to maintain good relations and reputation in front of community. This theory is based on the supposition that the group system creates a virtuous circle which pushes single people to do their best.

Moreover considering the shared context by the members of the group, this system encourages a mechanism of solidarity also due to the evaluation of the group at the end of the end of the period. This way the repayment of every single credit becomes important for all the member of the group, and in case of difficulty by a member in the restitution of money, others members will be motivated in helping him to maintain the possibility to receive credit in future. It is important to remember that the group is thought as a pure form of guarantee, and that all credits are individual to every person. In addition the group has to approve the request of credit of every member and after the internal agree it has to receive an inner instruction about principles and rules of the Grameen Bank and every member has to pass a personal exam about credit conditions, deadlines and modality of repayment.

In every village in which the Grameen Bank operates there are summits which aggregate up to eight groups and set meetings with the bankers for discuss restitutions, new answers and every eventual subject.

Small credit in small time: The restitution method

Until 2002 the credit conditions were equal for everyone:

- all loans are valid one year;
- payments are weekly with always the same quantity;
- repayment starts one week after the concession of the credit;
- interest rate is 20%,
- rate of repayment is 2% per week, for 50 week;

¹¹ Yunus, M., *Creating a World Without Poverty: Social Business and the Future of Capitalism*, Public Affairs, 2008, p. 104

- clients may have access to another loan only when the previously is entirely repaid.

The system of small and frequent repayment allows borrowers to effort the day by day income and consumption. Moreover is very quick to default. In case of insolvency the approach of the Grameen is completely different from the other banks: none legal procedure is activated because the relationship is not based on a contract but only on trust. The Bank is strongly interested in understanding the reasons of late repayments and and it can help its clients by extending the repayment time if its delay is motivated by a real economic problems. Thus creditors are not encouraged to fail in repayment for the reason that they would not able to receive other credits or access to financial services in the future.

Since 2002 this mechanism is partially changed. The Grameen Bank created an emergency fund for eventual crisis and become more flexible offering new kind of loans with different interest rates.

At the present stage Grameen Bank offers four type of loans with four different interest rates:

1. classic loan (see before);
2. housing loan (interest rate of 8%);
3. loan for student (no interest during the studies, 5% after the degree);
4. loan for begging or “partner in first line” (15 euros with no interest rate, possibility for the debtor to repay the quantity he wants where he wants).

Today Grameen Bank serves 8,6 millions of clients, 97% of them are women. It has 1.020 subsidiaries worldwide and offer financial services to 97% villages of Bangladesh. It is completely auto-sufficient and self-sustainable and the repayment rates are grown up from 90% in 1995 to 98%.

1.3 Theories and models of microcredit

Microcredit as valorisation of “poor” segment of the market in Prahalad theory

The microcredit institute is perfectly integrated in the complex system of the global economy and is addressed to the new segment of the market, that previously was completely ignored, the poor people.

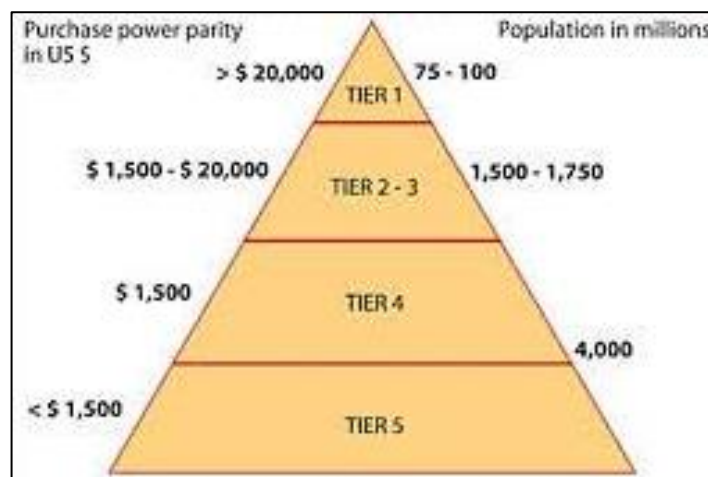
Microcredit bring with itself a new idea of market in which poor population all over in the world is an integrant part.

The important 21th century economist Coimbatore Krishnarao Prahalad deals with these ideas about a new phase of economy with their models.

One of his main theories is called “*The Fortune at the Bottom of the Pyramid*” and states that poor people have to be seen as resources and not as victims and moreover it is possible to pursue the double goal to improve the society and to realize profits.

The economist starts to the idea that the “market of the poor people” has ever been neglected by the firms which doesn’t consider people that compose it as potential clients. But this conviction is wrong. These people, that are innumerable, have indeed minimum incomes. If we sum up all these incomes we obtain an enormous potential market, even bigger to occidental’s one. Over 7 billion of total world population, there are 4 billions of people that live with less of 2 dollar per day. Despite a buying power limited the total capacity of this market is surprising with millions of potential clients having needs that had never been satisfied by no one.

Figure 1.1: The Prahalad’s economic pyramid



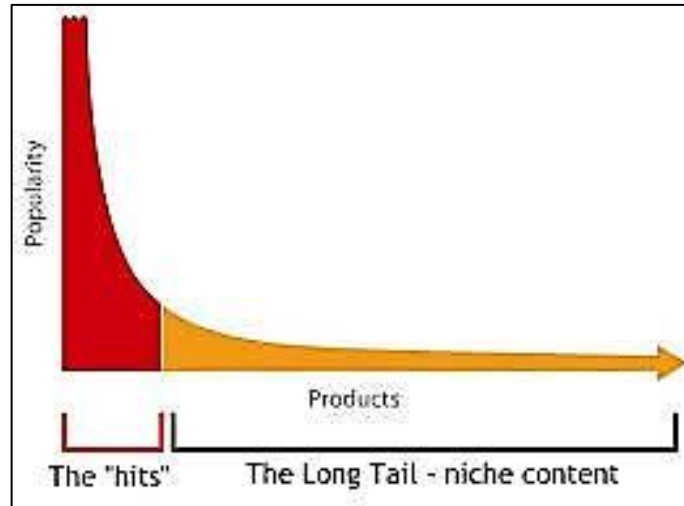
The previous image shows the world distribution of income. Considering different income capacities and number of people that are part of every bracket, we obtain a pyramid distribution where poorest people are on the bottom. Today firm’s competition is situated on the top of the pyramid but exists an enormous latent market that represents a big business opportunity for the private sector. Obviously it is a very different sector comparing with the traditional and it has many features that substantially diverge from the usual. It is easy to

image that there will be a strong need to correctly deal with the cultural contest, the costumer habits and needs and the pricing system to apply. For this reason it is necessary to adapt all strategies to the new “poor market”.

A great example of this adaptation process is the case of the Mexican firm Cemex whose offer consists on supplying DIY products for housing, promoting the private saving among families. Also some big multinational firms such as Procter&Gamble and Unilever have undertaken a similar way for their body care products advertising specific lines, different in prices and characteristics, thought for poor people. Another example is the change in the packaging of the products by offering to people the possibility to buy products in single doses day by day in reason of a low buying capacity. Microcredit perfectly suits this idea of business addressed at “the bottom of the pyramid” offering financial products reduced in size and timing.

Microcredit as valorisation of niche segment of the market in Anderson’s “long tail” theory

Figure 1.2: The “Long Tail” distribution



The starting point of the successful “Long Tail Theory” by Chris takes into account that microcredit can be considered as a niche born into the financial sector and it would appear as a very profitable one. This innovative theory states, in 2004, that the digital world represents a big opportunity for firms to expand their own market. Studying sails data of some big e-commerce company such as Amazon, Netflix, eBay and I Tunes Anderson noticed that the sails are distributed in way to form a “head” of few products, called “hits”, sold in big

quantity and a “tail” composed by lots of products, the “niches”, sold only in few units. The real discover it is that this tail seems to be never-ending.

The tail represents a low statistic frequency that never reaches the zero because even the less popular product in the web is chosen by someone. This is the graphic representation of the new phenomena of the “infinite choices market”. The most interesting discover in “Long Tail” theory is the evidence that “the bigger incomes are into smaller sales”¹² and this happens because “a very big number (the products on the tail) multiplied for a number quite small (the sales of each product) continues to give a very big number”¹³. This theory can be applied to the sale of every kind of product; consequently we can use it to the financial products distribution. Therefore is possible to consider a “Long Tail” graphic in relation to the potential request of credit in the case of microcredit would be a consolidated practice in all countries. Into this view the “hits” are represented by the credit allowed by traditional banks while the microcredit, still not so diffused, represents the “niches” with a high potential profitability that is now discovered by economists. The “long Tail” is composed by a mass of loans even smaller in quantity allowed by the microcredit institutions to “the bottom of pyramid”. These microloans would not be relevant individually but the potential request is so extended that, summed up, they form a big market. Anderson states that the winner strategy is “Selling less of more” and this rule can be applied to the financial market focusing in sell a minor quantity of a greater number of loans.

Credit Landing Models

Today microcredit institutions work following various Credit Landing Model. The first difference is between individual or group methodology:

1. **INDIVIDUAL LENDING:** loans are given directly to the borrower without peer pressure to ensure repayment. Is usually part of a larger credit plus programme where other socio-economic services are provided.

¹² Anderson C., *The Long Tail: Why the future of Business is Selling Less of More*, New York, Hyperion, 2006, p.12

¹³ Anderson C., *The Long Tail: Why the future of Business is Selling Less of More*, New York, Hyperion, 2006, p.13

- Bank Guarantees: form of capital guarantee arranged internally or externally.
 - Intermediates: the intermediary, that is a credit lending position between the lenders and borrowers, plays a critical role of generating credit awareness and education among the borrowers.
 - Small Business: the role of SMEs is changing emancipating from the vision of the informal sector. Microcredit has been provided to SMEs directly, or as a part of a larger enterprise development programme, along with other inputs.
2. GROUP LENDING: collective coming together assures responsibility and security to purposes as educating and awareness building.
- Associations: target community forms through which microfinance activities are initiated creating support structures for microenterprises and other work-based issues.
 - Community Banking: the whole community is one unit and there are formal institutions through which microfinance is dispensed.
 - Cooperatives: autonomous and voluntary association of people united for common economics characterized by jointly-owned and democratically-controlled enterprises.
 - Credit Unions: unique member-driven self-supported financial institution where members agree to save their money together to make loans to each other at reasonable rates of interest.
 - Grameen: model emerged from the poor-focussed Grameen Bank, based on step by step approach with a preliminary study of prospective borrowers, in an area of 15-20 villages, attributing collective responsibility of the group as collateral on the loan.
 - Non-Governmental Organizations: NGOs are key player in the field of microcredit. They have played the role of intermediary in various dimensions creating awareness of the importance of microcredit in the community, as well as various national and international donor agencies. They have developed resources and tools for communities and microcredit organizations to monitor progress and identify good practices.
 - Peer Pressure: use of moral and other linkages to ensure participation and repayment in microcredit programmes.
 - Rotating Savings and Credit associations: group of individual that make regular cyclical contributions to a common fund, which is then given a lump sum to a member each year.

- Self-help group: mutual help group formed by 15-20 people for access to credit, peer lending guaranty, very diffused in rural zones of Asia (especially Indian rural areas)
- Village Banking: community-based credit and savings associations typically constituted by 25 to 50 low-income individuals who are seeking to improve their lives through self-employment activities. The loans are backed, not by goods or property, but by a moral collateral promise that the group stands behind each individual loan.

1.4 Focus on group lending methodology: Self-help group and Cooperative Models

The group lending and SHG model

As seen before, microcredit services can be based on two different operative methodologies which are individual lending and the group lending. Group lending allows to people considered “not bankable” to join together and borrow money collectively. This way all group members are responsible for the debt, and the incentive to repay loans is high because where community values are strong the non-fulfilment of the duty would produce a social exclusion effect.

All group lending model methodologies have its solidarity group or community which main characteristics are:

- target: clients, more often women that joint to share a specific path focus on saving or credit;
- context: basically rural or suburban, sometimes urban for supporting and promoting economic activities;
- client-credit operator relationship: it varies depending on type of credit model used;
- strength: models based on trust between members, solidarity into group, pride in group identity that allow to get personal information about members;
- weakness: system rigidity of credit mechanism proposed that is equal for all members and does not taking into account differences in needs;
- guaranties: real guaranties are not requested but exist guaranties of members toward group are existing;
- saving: saving is a basic element for almost every group lending models, in some of them is required in others is optional but expected.

The Self-help group model (SHG) is based on associative and mutual mechanisms and is very common in Asia. In India SHG have assumed a specific form, they are linked to the formal credit sector (MFIs and Banks). Generally SHG are promoted by NGOs with the aim to support programmes for poverty fighting, female emancipation and improving poor life conditions.

In the Indian model, SHG are usually formed by 20 people joined to share a focused path to face common problems. The members of the group bring spontaneously and regularly their own saving and with this little cumulated amount they give small loans to the others. This mechanism creates a sort of financial strictness which has made SHG very interesting for banks which have started to support these groups with additional funds, with market interest rates, without guaranties. The group remains the manager of the fund and the peer pressure dynamics ensures that resources are managed in an efficient way.

This model had a huge success because it has been spreading out in poor and highly populated areas of rural India and it created a connection between informal and formal microcredit sectors. Nevertheless entry of banks in the field of a microcredit system based on solidarity has radically modified the sector by distorting the informal nature and weakening the internal strength as trust and peer pressure mechanisms.

The cooperative model

The cooperative model is based on the central role of co-operator partners, they are owners and have share in equity capital. Moreover the major decisions are taken after the agreement of all members. Other important features of financial cooperative are at first the administration responsibility entrusted by who are democratically elected by all the members and second the sharing of profits through members or the new investment of them as equity capital of the cooperative.

Cooperatives are run on social motives and have low cost structures and low profit aspiration, in addition they are managed by local professionals providing an immediate and easy access to the rural poor for their financial needs.

Cooperative institutions utilize the local economic resources and are very instrumental in mobilizing micro-savings and micro-lending. A further advantage concerns micro loans, especially in the rural areas which can be managed more effectively if they are provided by locally based institutions such as cooperatives which can make the supply of microfinance services more suitable and effective in these areas.

Since cooperatives are locally based using the local economic resources and are less dependent on external financing they are more resilient to current economic shocks as compared to other bigger financial institutions. Thus cooperatives are well equipped to meet the rising demands of the Microfinance sector.

The advantages of the implementation of the cooperative model of micro financing are several:

- Welfare motive: cooperatives are totally focused on the welfare motive, providing financial services to uplift the economic life of their members, unlike the other financial institutions which mainly operate for profit.
- Effective organization at grass root level: the primary credit cooperatives are rooted in the local communities and use local resources and are fully aware of the financial needs of their members.
- Internal financing: credit cooperatives use the member savings and deposits and are therefore less dependent on external sources of funds.
- Lower cost of borrowing: compared to other microfinance institution the cooperatives charges lower rates of interest rates on loans to their members.
- Cooperative structure conducive to the needs of microfinance sector: often the cooperatives (the bigger ones) operate on three levels, the apex bank at the state level, the district cooperative societies at the district level and the primary credit cooperatives at the local and rural level. The microfinance clients especially in less developed and emerging economies are spread over a large part of the country. The cooperative structure involves a wide network catered to the needs of its members all over the regions.

By emphasizing their role in meeting the financial needs of the marginalized and poor sector, the cooperatives can play an important role in financial inclusion and achieving the millennium development goals. A report on “Cooperatives in Social Development” by the Secretary General of the UN endorses the need for promotion of financial cooperatives to meet the goal of inclusive finance by providing access to financial services to all and to declare the 2012 as the “International Year of Cooperatives”

Co-operative facts and figures

The International Co-operative Alliance defines cooperative as “an autonomous association of people united voluntarily to meet their common economic, social, and cultural needs and aspirations through a jointly-owned and democratically-controlled enterprise”¹⁴. Cooperative’s work is inspired to values of self-help, self-responsibility, democracy, equality, equity and solidarity that they put into practice follow concretely seven principles:

1. Voluntary an open membership,
2. Democratic member control,
3. Member economic participation,
4. Autonomy and independence,
5. Education, training and information,
6. Co-operation among cooperatives,
7. Concern for community.

In 2014 the Department of Economic and Social Affairs, Division of Social Policy and Development, of the United Nations run the “Global Census on Co-operatives”¹⁵ to measure the impact of cooperative economy worldwide. The study shows that in the world there exist 2.6 million of cooperatives having over one billion people which are their members or clients, together cooperatives employ 12.595.501 person (0.2% of the world population). Moreover cooperatives generate US\$ 2.98 trillion in annual revenue and have an asset base of US\$ 19.6 trillion.

The census creates a measure of economic and social impact of cooperatives, the Cooperative Economy Index that takes into account three kinds of data referred to one country:

1. The ratio between membership and clients of cooperatives and the total population
2. The ratio between the employment by cooperatives and total population
3. The ratio between the annual gross revenue of cooperatives and the GDP

¹⁴ ICA, International Co-operative Alliance, *Co-operative identity, values & principle*, www.ica.coop/en/whats-co-op/co-operative-identity-values-principles

¹⁵ Dave Grace and Associates, *Measuring the Size and the Scope of the Cooperative Economy: Results of the 2014 Global Census on Co-operatives*, For the United Nation’s Secretariat, Department of Economic and Social Affairs, Division for Social Policy and Development, April 2014

From these measures emerges that one or six people in average in the world has membership or is a client of a cooperative.

The “Cooperatives and Employment Global Report” run by the International Organisation of Industrial and Service Cooperatives (CICOPA) estimates that cooperative employment (both full time and part time positions) involves at least 250 million people in the world, the 12% of the entire employed population of the G20 countries. Cooperative reality is widespread in Europe and Italy is the first Alliances European country with 22.4 million individual cooperative members represented by their organizations.

1.5 Goals of microcredit world system

The Microcredit Summit Campaign

“The purpose of the Microcredit Summits organized by the Microcredit Summit Campaign is to encourage practitioners and other stakeholders to use microfinance as a means towards ending extreme poverty, especially within the region, as well as to spur progress towards fulfilling the Campaign's goals.”¹⁶

In February 1997, Results Educational Fund (REF) convened the first Microcredit Summit, launching a nine-year Campaign to reach 100 million of the world's poorest families, especially the women of those families, with credit for self-employment and other financial and business services by the end of 2005.

Since 1997 the Summit started organizing a series of Global and Regional meetings in order to monitoring the microcredit situation around the world. They have attracted more than 15,000 delegates from over 140 countries. From 1997 to the present, the Microcredit Summit Campaign has relentlessly pursued its goals and it is the global effort to restore in people their control over their own lives and destinies.

The Microcredit Summit Campaign has the objective to lead, support, and guide the microfinance field to address failures in reaching the very poor. The success of the first phase of the Campaign, considering the relevant increase of members obtaining a micro loan from 7.6 millions in 1997 to 100 millions in 2007, fueled the decision to extend the Campaign. The Microcredit Summit Campaign is the only global network linking all actors in microfinance sector that sets and regularly measures progress toward bold goals for using microfinance to end poverty.

¹⁶ About the Summit, www.microcreditsummit.org

The MSC report of 2014 highlights some important steps done by MFI's worldwide in term of problem solving activities towards the goal of the eradication of poverty in 2030. In this report the key role is played by the financial services which are considered as fundamental instruments to fight poverty. From the report emerges that:

- microfinance and health providers can partner for greater results;
- commercial and social businesses can expand value chains to include those in poverty;
- mobile network operators can build systems that reach the poorest and most remote;
- regulators and policymakers can build a national ecosystem for inclusion social;
- support payments can become a bridge to financial inclusion.

A very important aspect pointed out is the need to be accountable for result. In 2013 the summit started to advertise "Truelift", a global initiative to promote accountability in pro-poor development and social business.

"Truelift will collect and share effective practices of these practitioners and, in so doing, will promote a learning community of practitioners, networks, donors, investors, policymakers, regulators, researchers, and others who want to see measurable progress for poor families. All stakeholders stand to benefit by being able to identify and learn from those that are acting in the service of clients experiencing the conditions of poverty. Truelift represents the first major initiative to focus on client outcomes and is complementary to the efforts of Smart Campaign, SPTF, MIX Market, and others working on accountability in the industry."¹⁷

The goal is to set a new vision that prioritizes effective poverty outreach and quality data collection and analysis. The Truelift framework creates accountability and credibility, focuses on the importance of learning and measuring outcomes, promotes the adoption of new practices, and facilitates the replication of scalable innovations across a large number of service providers.

- ¹⁷ Reed L. R., *Resilience The State of the Microcredit Summit Campaign Report*, 2014, Published in 2014 by the Microcredit Summit Campaign (MCS), p.49

In 2013 Truelift recognized 7 MFI's in the world as "Truelift Milestone Institutions" because they have made measurable progress toward positive client outcomes proving that microfinance is fully capable of creating positive and enduring change for people living in poverty.

Figure 1.3: Data Point as December 31, 2013

Data points	Reported to the Campaign	With MIX data added
Total borrowers	204,372,897	211,119,547
Total women	150,956,904	157,695,359
Total poorest borrowers	110,172,154	114,311,586
Total poorest women	90,332,516	94,388,701
Number of poorest family members affected*	550,860,770	571,557,930
Number of MFIs reporting since 1998 ^	3,725	3,098
Number of MFIs reporting in 2014	172	439
Percent of poorest borrowers represented by MFIs reporting in 2014	82%	83%

The Millennium Development Goals

The Microcredit Summit Campaign added two more goals at the millennium beginning, in 2000 for 2015, data that coincides with the deadline of "The Millennium Development Goals" decided by the United Nation organization. These objectives are:

1. to assure that 175 among the poorest families in the world, and especially the women of these families, can have access to credit and other financial services;
2. to assure that 100 millions of families cross the poverty threshold, this forces them to live with fewer 1 dollar per day.

Regarding these goals the "The Millennium Development Goals Report 2015", published in July by the United Nation, states that:

- "Extreme poverty has declined significantly over the last two decades. In 1990, nearly half of the population in the developing world lived on less than \$1.25 a day; that proportion dropped to 14% in 2015.

- Globally, the number of people living in extreme poverty has declined by more than half, falling from 1.9 billions in 1990 to 836 millions in 2015. Most progress has occurred since 2000.
- The number of people in the working middle class—living on more than \$4 a day—has almost tripled between 1991 and 2015. This group now counts half the workforce in the developing regions, up from just 18 per cent in 1991.
- The proportion of undernourished people in the developing regions has fallen by almost half since 1990, from 23.3 per cent in 1990–1992 to 12.9 per cent in 2014–2016.”¹⁸

In order to evaluate the second goal of the Summit it is possible to notice that the number of people living in extreme poverty (less than 1,25 dollar per day) is dropped form 1,751 million at the beginning of the millennium to 836 million in 2015.

Figure 1.4: Extreme poverty rate in developing country

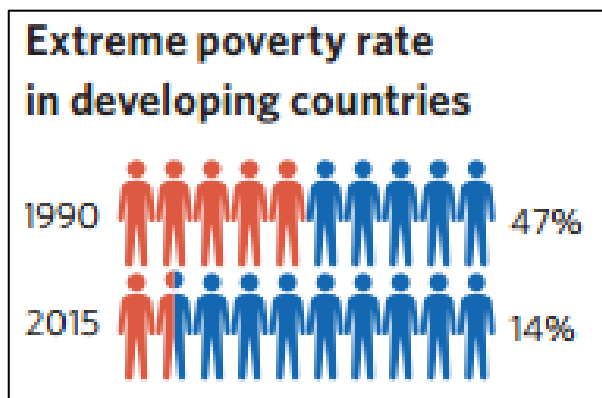
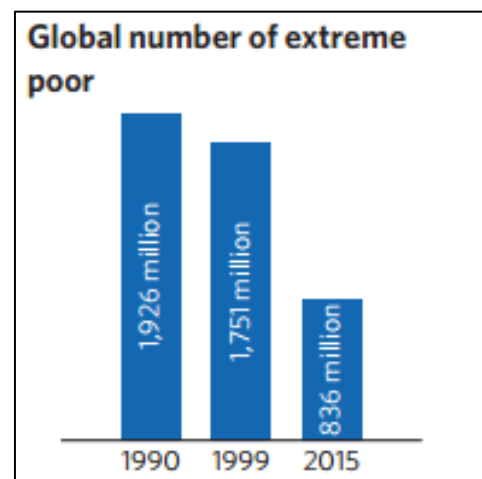


Figure 1.5: Global number of extreme poor



Worldwide Micro Finance Institutions

A Micro Finance Institution (MFI) is an organization that provides financial services to low-income clients who lack access to traditional banking. MFI refers to a large and various ranges of organizations which can be private or public and can have the status of:

- ¹⁸ United Nations, *The Millennium Development Goals Report 2015*, New York, 2015, p.4

- NGOs,
- Credit Unions,
- Cooperatives,
- Private Commercial Banks,
- Non-bank Financial Institutions,
- State-owned Banks.

According to MIX Market's data the number of MFIs that operated worldwide providing financial services to poor at the end of 2015 was over 3.700¹⁹ including networks. The total number of MFIs is even increasing even if many of those have financing and economic sustainability problems.

The Summit Campaign Report 2015²⁰, using data from 2014, identifies the ten largest MFIs in term of total poorest borrower reached. The National Bank of Agricultural Development (NABARD) in India, is the largest MFI in the world and is organized as a network with a starting point of 54.561.000 total borrowers, of which 43.649.000 represent poorest. Following NABARD, the biggest institutions are all located in Asia and are, in order of total borrowers at the beginning of 2014: Grameen Bank, another network from Thailand ACCU, Bank Rakyat Indonesia, the Vietnam Bank for Social Policies, SKS Microfinance Ltd from India, Bandhan Financial Services Pvt. Ltd from India, BRAC from Bangladesh, SKDRDP from India and Share Microfin Limited from India.

1.6 Threats and weakness of microfinance

The discussion about interest rates: some evidences

Microfinance in the recent years has been widely discussed by the experts of credit divided in two main views: somebody state that the generation of profit is the essential element for the microcredit sustainability, on the contrary others claim that the logic of profit is in contrast with the microcredit idea itself.

It's clear that the profit that the intermediary seeks It is the main element affecting the formation of interest rate price. It's easy to understand that higher profits mean higher interest rates.

¹⁹ Data from "MIX MFI Data Set – Full", www.mixmarket.org/profiles-reports

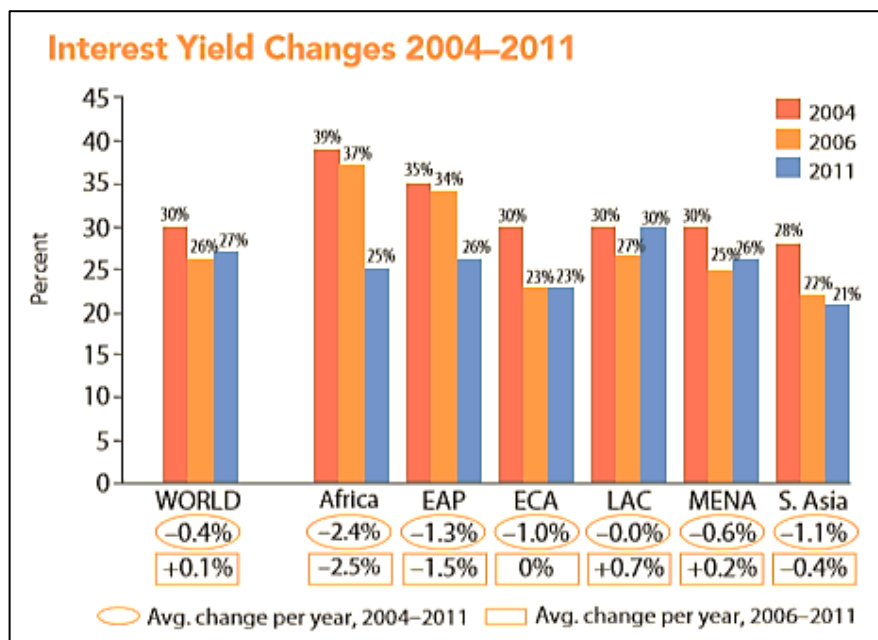
²⁰ Reed L. R., *Mapping Pathways out of Poverty The State of the Microcredit Summit Campaign Report, 2015*, Microcredit Summit Campaign (MCS), 2015, p.13

Actually only a few numbers of MFIs can be defined as “social businesses” and the main criticism to them concerns the excessive interest rates. From 90^s the instrument of microcredit has been acquired an enormous success and a consequently diffusion all over the world. The real doubts regarding microcredit have emerged in 2007, when the Mexican MFI “Compartamos” provoked a scandal in the financial world for the very high interest rates applied to its clients. The interest rate was around the 85% of the landed capital with a return on profit of 55%.

Thanks to the constant study by the Consultative Group to Assist the Poor (CGAP), it is today established that self-sustainable MFIs apply an average interest rate of 28,1% and proved that the interest rates applied by “Comportamos” represent the only 1% of the total.

The interest rates required by the MFIs remain higher comparing to traditional bank’s interest rates because the banks can bear lower costs. A big number of smaller loans has higher costs than the same amount loaned to a single client. A microcredit activity is more expensive than a traditional credit activity. This is due to the need to have a greater staff to ménage a personal relationship based on trust with each client and more information regard the clientele.

Figure 1.6: Interest yield changes in the world from 2004 to 2011



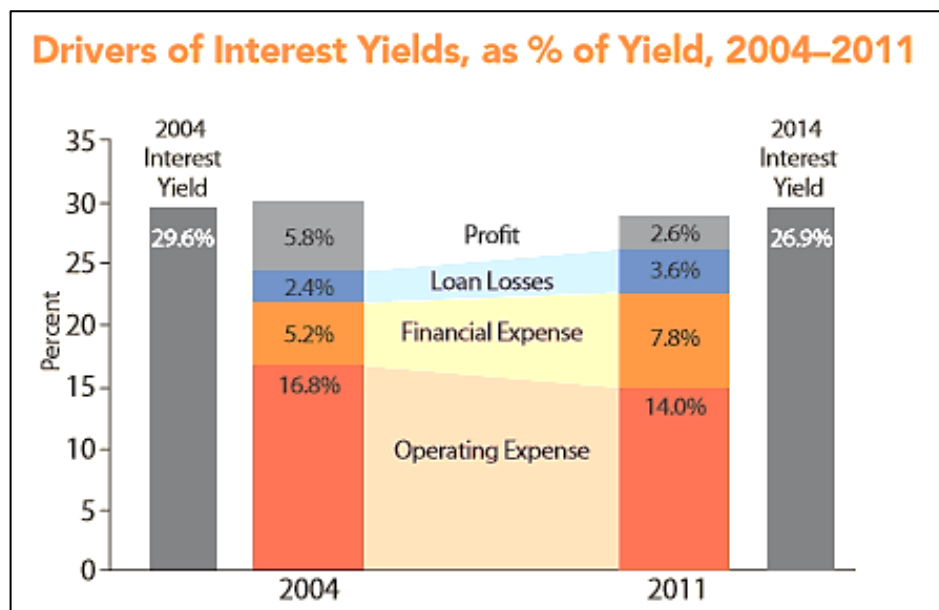
Actually world average interest rates are about 27% increasing with a soft negative trend started since the period 2007-2011.

This happened because rates have been rising for microlenders focused on low-end borrowers and for NGOs and other unregulated microlenders but dropped for banks and other regulated institutions. The determinants of interest yield are:

$$\text{Income from loans} = \text{Cost of funds} + \text{Loan loss expense} + \text{Operating Expense} + \text{Profit}$$

- operating expenses: that are declined as microlenders became more efficient,
- financial expenses: that grew significantly as microlenders took on more commercial funding,
- loan losses: that increased (probably by more than the unadjusted amount shown here),
- profits that dropped,
- interest yield: dropped by 2.7% points over the period driven by profits.

Figure 1.7: Drivers in interest yields calculation as percentage of total Yield from 2004 to 2011



Interest rates calculation is formed by some determinants (profit, loan losses, financial expense and operating expense) that can be further decomposed in five elements. In this way the annualized effective interest rate (**R**) results as a function of the rates of:

$$R = \frac{AE + LL + CF + K - II}{1 - LL}$$

1. Administrative expenses (**AE**) that include all annual recurrent costs, except the cost of funds and loan losses, like salaries, benefits, rent, utilities, costs of every donated commodities or services (such as training, technical assistance, management). The administrative expense of efficient institutions is ranged between 10%-25% of average loan portfolio.
2. Loan losses (**LL**) are the annual loss due to uncollectable loans. The better institutions rate is around 1-2%.
3. Cost of funds (**CF**) that is a projection of the future market in the medium term calculated by assets, liabilities and equity. It is of about 21%.
4. Capitalization (**K**), is the net real profit the MFI decides to target. The advisable rate is at least 5–15% of average outstanding loan portfolio.
5. Investment income (**II**) expected from the financial assets other than the loan portfolio (such as cash, checking deposits, legal reserves, certificates of deposit), usually about 1.5%.

This accounting method can be useful for MFIs to calculate the annual effective yield they need to cover all the costs. More important is the aspect of monitoring the expected yield with actual interest income shown on the books accounting how much interest income its portfolio would theoretically be yielding. Sometimes a large gap appears, and it can be a result of various factors such as delinquency, fraud, and delay in depositing payments or accounting failures.

This method can give an important overview in the debate over high interest rates of MFIs but an element must be borne in mind “There is overwhelming empirical evidence that huge numbers of poor borrowers can pay interest rates at a level high enough to support MFI sustainability.”²¹

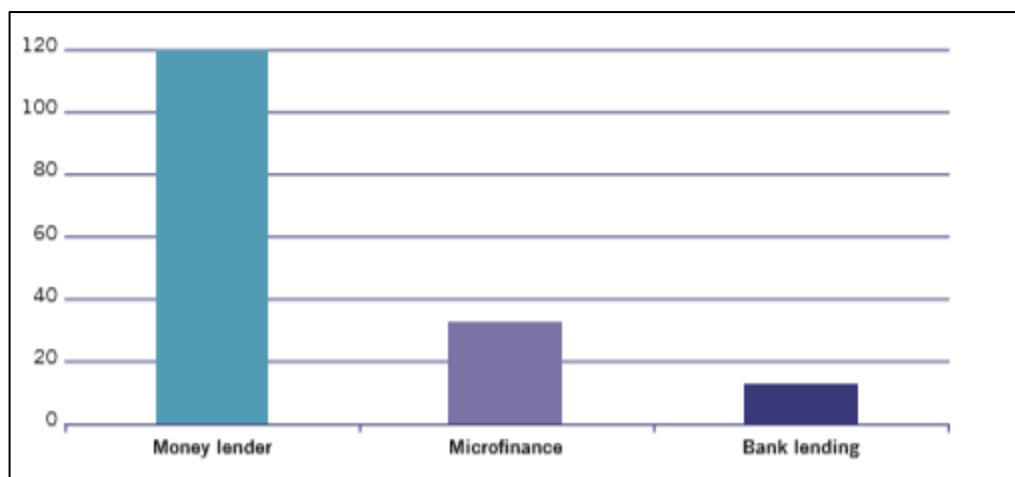
Many researches have been conducted about microfinance interest rates and the possibility to reduce them for MFIs. It is certain true that microfinance loans cost more than traditional ones but despite this evidence some researchers state that is possible to reduce interest rates

²¹ Rosenberg R., *Microcredit Interest Rates*, Occasional Paper No.1, revised November 2002, p.10

thanks to supporting policies. Several MFIs benefit of supporting policies focused in reduce the gap between financial and operative expenses and the portfolio return.

Moreover according to a study by CGAP²² MFIs charge higher interest rates than traditional bank lending but they offer rates incredibly lower of informal money lender which previously represent for poor people the only way to have access to credit.

Figure 1.8: Comparison between lending interest rates in emerging and developing economies



A very huge problem about microcredit interest rates started on the first years of 2000 when it became evident that they varied strongly between countries. In 2006 the global average rate was about 35% but the average in Uzbekistan was above 80% and in Mexico around 70%. This situation grew until the 2012 global crisis of microcredit that highlighted the strong need of “an appropriate regulatory environment”²³ of the sector.

Finally a research by ResponsAbility, “Research Insight Efficiency is the key to lower interest rates in microfinance”²⁴, registered that in the last six years the majority of MFIs operate to increase their operating efficiency by reducing operating costs by 23%. This progress is related to the whole development of the microfiance sector in term of regulation, healthy competition and innovations in products and processes.

²² Renberg R., Gonzalez A., Narain S., *The New Moneylenders – Are the Poor Being Exploited by High Microcredit Interest Rates?*, Occasional Paper No. 15, February 2009, p. 20

²³ Kneiding C., Rosemberg R., *Variation in Microcredit Interest Rates*, Brief, CGAP, 2008, p.

²⁴ Hug C., *Research Insight, Efficiency is the key to lower interest rates in microfinance*, ResponsaAbility Invesment AG, 2014, p. 8

Repayment problems an loan-default global crisis

For a long time microcredit programmes had very low levels of delinquency and default that determined a sort of repayment positive record. As previously mentioned one of the most important theme about success in repayment is the gender question. All the studies highlights how women have a lower portfolio at risk in all countries and in addition they are more responsive to coercive enforcement methods applied by MFIs²⁵. This evidence has brought to an increasing focus on women of MFIs lending programmes because they are recognized as good borrowers and good payers. For example a study on Malaysian repayment problems states as first determinants the gender variable: “loan repayment problem was higher for males than for females [...] male borrowers were less responsible and disciplined in repaying their microcredit loans than female borrowers”²⁶.

Other important determinants in loan repayment are mainly of two types: internal as willingness, ability and other characteristics of the borrowers and external such as economic, political and business environment in which the borrower operates. An important aspect in internal determinants is the fact that individual borrowers can either repay their loans or choose to default so defaults may be this intentional or unintentional.

Speaking about default, since 2009 there is some studies that inspect the loan-default crisis happened in different countries: Malaysia, Morocco, Nicaragua, Bosnia Herzegovina, Pakistan, and Andhra Pradesh in India. These studies are all sectorial because are focused in a specific and limited territory but all try to highlight the aspect that the loan default is not such big problem for MFIs while for the clients.

In 2011 CGAP tried to make an overall picture about over-indebtedness experiences round the world on the basis of singular studies. The “Survey of the Evidence on Over-Indebtedness”²⁷ pointed very important evidence: the loan-default problems around the world shows that microcredit programmes have been so successful in some countries that the supply of them has catch up the demand for causing market saturation. According to the macroeconomic market rules when a competitive retail credit market gets saturated the over-indebtedness is inevitable. This mechanism represented a big risk for clients and it was a

²⁵ D’Espallier B., Guerin I., Mersland R., *Women and Repayment in Microfinance**, Working Paper, Institute of Research for Development, 2009, p. 24

²⁶ Mokhtar S. H., Nartea G., Gan C., *Determinants of microcredit loans repayment problem among microfinance borrowers in Malaysia*, Department of Social Science, Faculty of Agriculture and Food Sciences, Universiti Putra Malaysia, 2011, p. 7

²⁷ Schicks J., Rosenberg R., *Survey of the Evidence on Over-Indebtedness*, Working paper No.19, CGAP, 2011

dangerous prospective for the microcredit institution that would had the client welfare as core goal.

This loan-default situation related to market saturation among counties has started to be faced with a formal regulation of market and institution by the governments of some countries.

In 2013 a study²⁸ about repayment of microloan by micro entrepreneurs in Tanzania suggested some interesting reflections: in Tanzania, considering a female target of microcredit clients, more than 19% of borrowers occurs in repayment difficulties, the major part of borrowers do not face any repayment difficulty and they also are those possessed business skills or have participated trainings in business skills.

The evidence shows the strong necessity to create microcredit programme integrated with training in entrepreneurship development and management. This is possible by the increasing of policies that address gender issues to ensure women empowerment.

The impact of microcredit programmes

Speaking about impact of microcredit is necessary to take a step back to do a brief introduction about the different methodologies for impact measurement. First of all the main impact measurement is about what is called “social impact”. The Asian Development Bank defines impact evaluation by these words: “quantitative impact evaluation isolates the welfare effect of a specific project by comparing the actual observed outcomes of project participants with counterfactual outcomes, i.e., the hypothetical outcomes that would have prevailed in the absence of the project. Since people are either in or not in the project and can not be both, these hypothetical counterfactual outcomes can not be observed. The central objective of quantitative impact evaluation is to estimate these unobserved counterfactual outcomes.”²⁹

The best counterfactual assessment can be obtained only through the use of a control group as similar as possible to the studied group (technically treatment group). This is an experimental method usually called randomized controlled trial (RTC) and is considered the most efficient one.

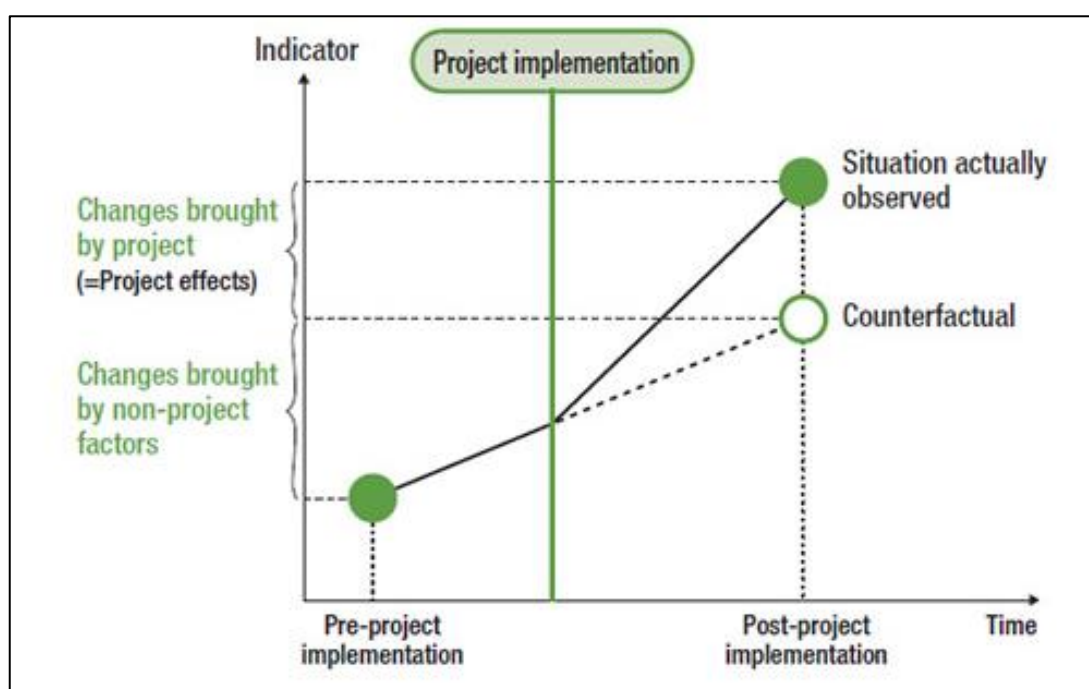
²⁸ Tundui, C., Tundui H., *Microcredit, Micro Enterprising and Repayment Myth: The Case of Micro and Small Women Business Entrepreneurs in Tanzania*, American Journal of Business and Management, Vol. 2, No. 1, 2013, pp. 20-30

²⁹ Asian Development Bank, *Impact Evaluation: Methodological and Operational Issues*, www.adb.org/sites/default/files/impact-analysis-handbook.pdf, 2006, p.3

The other method categories are characterized by less internal validity and accuracy, they are:

- the non-experimental methods, where analysis are qualitative and there are not treatment and control groups,
- the semi-experimental methods, where statistic strategies are used to reduce the selection distortion.

Figure 1.9: Conceptual diagram of impact evaluation



Some randomized studies, as the first and famous one³⁰ run by the Centre for Microfinance (CMF) at the Institute for Financial Management Research (IFMR- Chennai and Spandana) in 2010 on Spandana one of the MFIs involved in the Andhra Pradesh crisis, shows the evidence that in some cases microcredit programmes have no impact in the real improvement of beneficiaries life conditions. Other successive randomized studies have showed the same evidences.

Nevertheless Spaggiari and Costancias in “Dizionario di Microfinanza”³¹ support the thesis that according to the more recent impact evaluation studies microcredit itself appear to be not a miracle or a disaster. After the big crisis in reputation microcredit could be ready to improve

³⁰Banerjee A., Duflo E., Glennerster R., Kinnan C., *The miracle of microfinance? Evidence from a randomized evaluation*, www.economics.mit.edu/files/4162, 2014, p.5

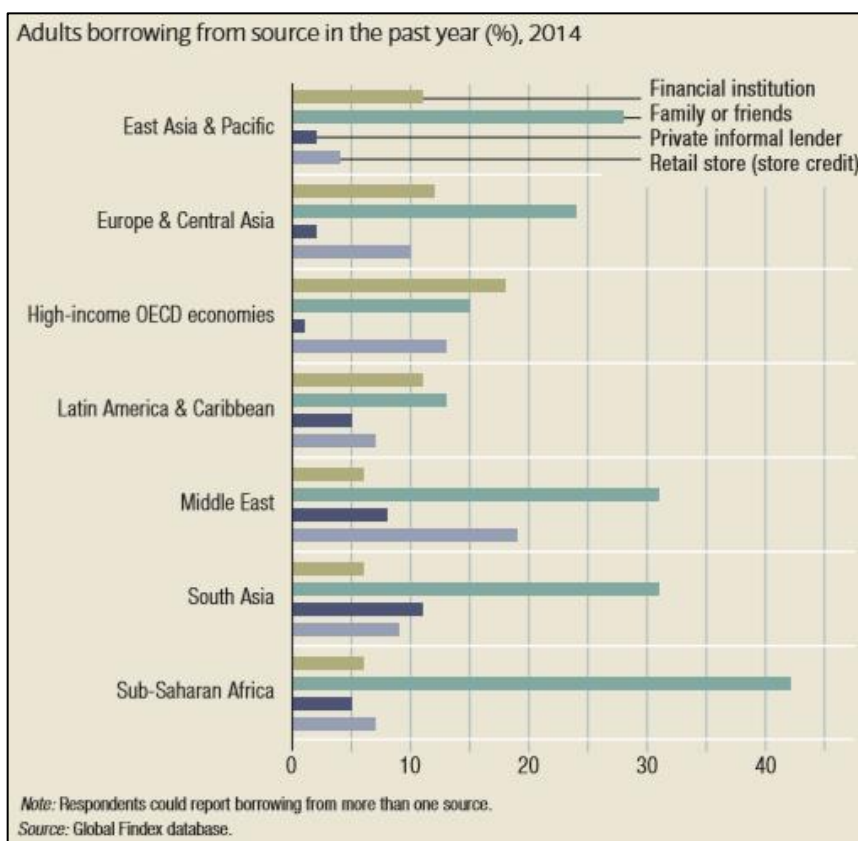
³¹ Spaggiari L., Costancias E., *Impatto sociale in Dizionario di Microfinanza, Le voci del microcredito*, edited by Pizzo G., Tagliavini G., Carocci Editore, Roma 2013, pp.607-611

impact transparency on the basis of different ways it is practised. Moreover these author assert that the circumscribed nature of the available researches do not allow to have a clear and complex analysis also in reason of the variety of models through which microcredit is supplied in the world and by institutions.

For all these reasons it can be said that impact evaluation is an important tool to understand the way microcredit programmes affect the life of population on the basis of the pyramid but it is not the only one.

Another important issue speaking about social impact of microcredit is the theme of “financial inclusion”. Financial inclusion is defined by Finclusion Lab of MIX as “the access, quality, and usage of financial services for excluded communities at national and sub-national levels”³². Financial inclusion is the first goal that the microcredit idea wanted to reach, the possibility for poor to have access to financial services and credit.

Figure 1.10: Sources of new formal and informal loans



³² Finclusion Lab, *Finclusion Lab State of the Data Report 201*, www.themix.org/sites/default/files/MIX_State-of-the-Data-2015.pdf, 2015, p.2

Figure 1.11: Organization of new formal loans 2011-2014



The Global Financial Inclusion (Global Findex) database World Bank in 2015 reported that “between 2011 and 2014, 700 million adults became account holders while the number of those without an account—the unbanked—dropped by 20 % to 2 billion. Globally, 62 % of adults have an account, up from 51 % in 2011.”³³ However the account ownership increasing access to financial services continues to vary around the world, it goes from the almost universal access (94%) in the high income OECD economies to a range between 14% and 69% in East Asia and Pacific, only the 12% in Sub-Saharan African countries.

In addition 42% of adults, globally, borrowed money in 2015. Overall in developing economies, the 9% of people borrows from financial institution, the 29% borrows from their community informal network (family, friends), only the 5% from financial institution.

Moreover microcredit programmes born with the idea to address a positive impact in poor people life condition. An interesting study run in Bangladesh asserts that “participation in group-lending reduces health inequities by addressing social exclusion”³⁴, in other words microcredit attempts to combat the exclusionary factors inherent the traditional norms that conduct women in wealth and development inequalities both in urban and rural contest. In addition the study highlights the strong impact in relationship between the microcredit poverty reduction strategy and the health outcomes even if they are not planned in the design of microcredit specific programme.

³³ Demircuc-Kunt A., Klapper L., Singer D., Van Oudheusden P., *The Global Findex Database 2014 Measuring Financial Inclusion around the World*, Policy Research Working Paper 7255, WORLD BANK GROUP, Development Research Group, Finance and Private Sector Development Team, 2015, p. 2

³⁴ Schurmann A. T., Johnston H. B., *The Group-lending Model and Social Closure: Microcredit, Exclusion, and Health in Bangladesh*, International Centre for Diarrhoeal Disease Research Bangladesh, 2009, p. 9

Finally there is a negative evidence on impact of microcredit to be mentioned: the over-indebtedness problem occurred in some countries. Over-indebtedness was previously argued in term of risk for clients to not being able to sustain the repayment actually worsening the own situation instead increasing it.

DETERMINANTS OF MICROCREDIT – REVIEW REFERENCES		
Key issues	Positive	Negative
<i>Interest rate</i>	<ul style="list-style-type: none"> - World, Rosemberg 2002, 2011 - Bangladesh, Yunus 2010 - ResponsAbility, Hug, 2014 - ResponsAbility, 	<ul style="list-style-type: none"> - India, Guerin 2012 - Latin America, Campion, Ekka, Wenner 2010
<i>Repayment</i>	<ul style="list-style-type: none"> - Women, D’Espallier, Guerin 2009 - Tanzania, Tundui, 2013 - Sri Lanka, Rathiranee, Semasinghe D.M, 2016 - Worldwide, Rosemberg 2012 - India, Vaibhav A, 2013 (response to Guerin) 	<ul style="list-style-type: none"> - Malaysia, Mokhtar 2012 - India, Schicks 2012 - India, Guerin 2013
<i>Social impact</i>	<ul style="list-style-type: none"> - World, Rosemberg 2012, 2014 - Tunisia, Nègre , Chegade 2015 - Financial Inclusion database 2015 - MIX annual report 2015 	<ul style="list-style-type: none"> - India, Schurmann, Johnston 2009 - India, Guerin 2012 - India, Banerjee, Duflo, Glennerster, Kinnan 2014 - World, Gonzales, 211

Chapter 2: CASE STUDY

2.1 Local context

Microfinance in India

Figure 1.1: India political view



India is the seventh country for geographical extension (3.287.263 km²) and the second most populated in the world (1.276.267.000 inhabitants). It is a federal Republic that reunites 29 states, and it is the twelfth largest economy in nominal term and the second speediest in growth so India is one member of BRICS countries.

Microfinance in India has today two records: the biggest number of active costumers (about 144 million of credit on going) and the highest growth of last years (around 87% between 2003 and 2010). However since 2006 also in India microfinance sector had become to suffer a period of crisis too, worsened in 2010. The reasons of this crisis, as in other part of the world, are a too fast and uncontrolled growth of the sector that has pushed a fragile population towards indebtedness. Only in the last years, starting from 2010, the Indian

Government has stated to take some emergency measures and to promote a real regulation of microfinance sector.

Indian microfinance has two main form: MFIs (Micro Finance Institutions) spread all over the territory and SGHs (Self-help groups), a specific Indian reality, more present in the south of the country. Microfinance activity is born in the south of India and then it has spread towards the other territories, but still today more than half of all activities linked to microfinance are concentrated in the three southern states of Andhra Pradesh, Tamil Nadu and Karnataka.

In 1992 the SHG programme were initially financed by RBI (Reserve Bank of India) and NABARD (National Bank of Agriculture and Rural Development) with the help of governments of Andhra Pradesh and Tamil Nadu. In few years the programme has given big results and the number of SHG has exponentially grown up to the creation of the SHG Federations in different countries having the role of intermediary between SHG and Governments.

India is also the country of NGOs, today there exist between 1 and 2 millions of reality such as foundations, associations and societies that can be considered NGOs because of the lack of a specific statute for these organizations.

Since the 80s many small MFIs were born with the juridical status of NBFC (Non-Banking Financial Companies) which use SHGs as channel to provide credit reducing costs. The most important and famous of these MFIs is the SKS (Swayan Krishi Sangam) that in 2010 has turned itself in a private limited company and has enter in the Bombay Stock Exchange.

In few words microfinance in India had a very rapid and successfully development for basically four reasons:

1. the strong government intervention,
2. the banking regulation system,
3. the multiply of actors involved into,
4. the demand dynamism.

But this initial strong investment in microcredit has brought banks to reduce the effort in agriculture with the consequences of the starting of the agricultural crisis. Moreover it creates a new model of urban consumption and an incentive to indebtedness.

In 2011 a default crisis started in Andhra Pradesh that has involved all microfinance Indian sector. The main reason of this crisis is not linked to microcredit lend to poor people but to loan given to a population over the poverty rate and to the middle class.

From the same year the Indian government started some regulation programmes of microfinance sector trying to preserve the innovative potential of the sector.

In addition to this, especially in the southern regions, the informal economy is still today a large market. It is very common, for people which have not access to formal credit institutions, to borrow money from intermediaries with high interest rates. This phenomenon in India assumes different faces:

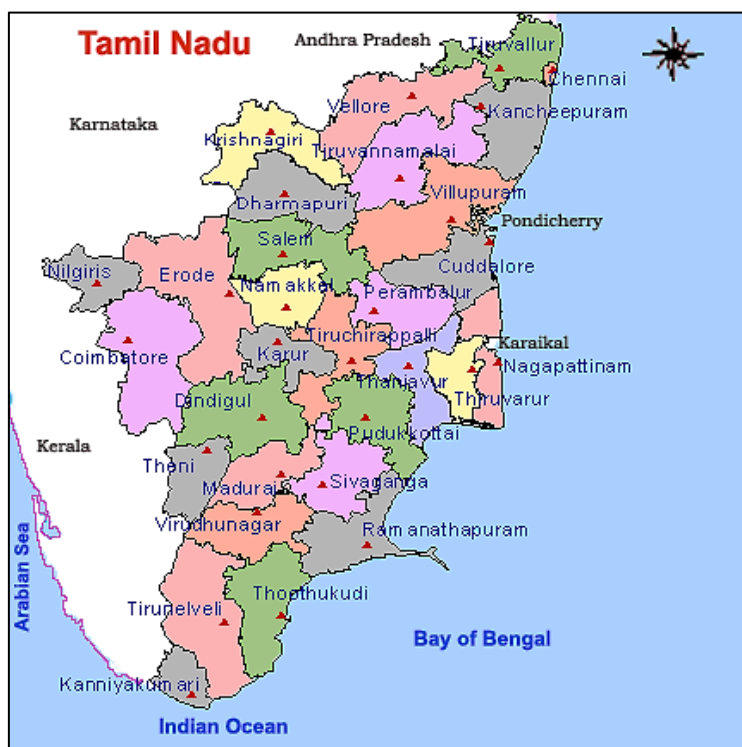
- Moneylenders: traditional moneylenders who lend only to people with whom they have a long-term credit relationship, the amount they borrow is usually up to 2 lakh (200.000 Rs) with an interest rate of 36-120% per annum.
- Weekly moneylenders: these lenders are not locals from the village, they usually borrow 2,000-10,000 Rs with an interest rate of 160-225% per annum.
- Middlemen: Traders of farm products who provide agriculture inputs to farmers and buy their harvest, they borrow 5,000-30,000 Rs (sometimes credit is in kind, like seeds, fertilisers, pesticides, etc) with an interest rate of 48-75% per annum.
- Pawn brokers: local jewelers who lend money against gold securities, the amount varies with value of gold pledged and the interest rate applied is 30-36 % per annum.³⁵

The bigger part of microfinance programmes aim to fight this informal economic system but despite the large microfinance diffusion in the country the reality of moneylenders is still very powerful and widespread.

³⁵ Data from Business Standard, Chakraborty S., Sokhi P., *Moneylenders back in AP with jumbo lending rates, Micro-borrowers pay as much as 225% interest*, www.business-standard.com/article/finance/moneylenders-back-in-ap-with-jumbo-lending-rates-112080400039_1.html, 2012.

Tamil Nadu and rural areas

Figure 2.2: Political view of Tamil Nadu



Tamil Nadu is a state in South-east of India, it is the eleventh largest state by area and the sixth by population. It is ranked sixth among states in India according to the Human Development Index.

It is the second largest economy in India with a high contribute to total GDP by having the highest number of business enterprises (10.56%) and total employment (9.97%) in the Country. According to the Raghuram Rajan panel report of 2013, Tamil Nadu was ranked as the third most developed state in India based on a "Multidimensional Development Index". Moreover, according to the 2011 census, Tamil Nadu is the most urbanised state of India with a share of 49%.

The population of Tamil Nadu forms 6.07% of the whole indian population with a literacy rate greater than 80%, respectively 87.77% for males and 73.14% for females.

Out of total population of Tamil Nadu, 48.40% of people live in urban regions, and the urban population in the last 10 years has increased by 48.4%. The average literacy rate in Tamil Nadu for urban regions is 87.04%.

Around 51.60% of the total population of Tamil Nadu live in the villages in the rural areas. Total population of rural areas of Tamil Nadu is 37,229,590. The population growth rate

recorded for the last decade was 51.60%. Child population forms 10.51% of total rural population. In rural areas literacy rate for males and female stood at 82.04% and 64.55%. Average literacy rate in Tamil Nadu for rural areas was 73.54%.

The living conditions in rural areas are very different from urban areas especially for the composition of the population in terms of gender and age. At the present stage in those areas there is a high presence of children and women. For this reason the Tamil Nadu government created the Department of Rural Development and Panchayat Raj that is responsible for the implementation of rural development, welfare schemes and facilities. This government is committed in providing all the basic amenities in the rural areas for housing, health care, reducing poverty, conserving the natural resources, minimizing the urban-rural division and ensuring improvement in the quality of life of the rural people of Tamil Nadu.

Microfinance issues in rural Tamil Nadu

The low social status of women in India can be considered as long-term structural problem. Indeed the virtual lack of access to credit means the impossibility of improving women incomes, where they make an essential contribution to their family's survival, especially among the poorer classes. Rural women are estimated to be the sole family income providers in 20-25% of homes, it is clear that they are a work force with a high economic potential.

Concerned about providing effective economic support to these women and making them aware of their rights, the Indian Government approached IFAD for assistance in 1987. Building on the experience of some NGOs that had been working with poor rural villagers, IFAD's Tamil Nadu Women's Development Project (1990-1998) recruited 27 NGOs to work with women self-help groups. They spent the first six-twelve months building group cohesion and familiarizing the members with savings and borrowing procedures.

Once women overcame the fear of borrowing money and found they were able to repay their group-based loans, they were assisted in requesting formal loans from the Indian Bank's own resources. The women's groups also managed to save money and set up a system for small emergency loans among members. The savings generated by women themselves had important implications on confidence building among and empowerment of women, which in turn has an impact on the sustainability of the initiative.

In Tamil Nadu average amount of loans received per poor people is 21.602 Rs, in whole India the average of loan amount for member of SHG is 8.438 Rs.³⁶

Microfinance in Tamil Nadu is much diffused through several small organizations, working with ground realities, which consider microcredit the answer to chronic poverty. There are many Indian non-profit microcredit institutions following the Grameen Bank (GB) methodology.

As previous said Microfinance in rural Tamil Nadu is focused on women because lending to them improves both their social standing within patriarchal societies and the conditions of their children.

On the other hand some argue that Tamil Nadu is affected from the phenomenon of “Liquidity defaults” which occurs when clients are not able to repay their loans. Many clients are chronically indebted and some of them are caught in a spiral of debt. Debts coming from microcredit represent only around 10-20% of the outstanding debt. The bulk of the debt comes from other sources, often informal as pawnbrokers, local moneylenders (local elite of highest caste or landowners) relatives and friends, and private financial companies. However, the repayment of loans to micro-lenders may be more problematic than loans from other sources. Microcredit is often rigid, forcing clients to borrow from other sources which might be more expensive, and which could be extremely flexible and negotiable.

Some studies lead by Isabelle Guérin, an accredited researcher from the Sorbonne University, evidence that rural households are increasingly indebted, including among the poor. This happens because real incomes are increasing on average, but lifestyles is tending to urbanize and needs are growing faster than wages. Therefore, it would be wrong to consider microcredit as solely responsible for households’ over-indebtedness but it would be also wrong to assume that microcredit can substitute informal finance and help people escaping from vicious circles of informal debt. For a large part of borrowers microcredit is seen as an additional source of liquidity which do not generate direct income.

On the other hand in Tamil Nadu the "Strategic defaults" is also present and occurs in cases where clients are able to pay but they do not want to do it.

Guérin raises a very interesting question: “To what extent can microfinance utilize existing local practices and social networks in an appropriate manner to build trust and encourage responsible lending and borrowing, without reinforcing inequality?”³⁷

³⁶ Data from MixMarket (2013), http://www.mixmarket.org/mfi/indicators-country-India&mix_region

³⁷ Isabelle Guérin, *Loan Defaults Versus Over-indebtedness in Rural Tamil Nadu*, www.cgap.org/blog/loan-defaults-versus-over-indebtedness-rural-tamil-nadu

2.3 The Ramanathapuram district and Sayalkudi area

Ramanathapuram district

Ramanathapuram district lives still today an undeveloped economic situation with almost 52% of population living under the poverty rate. Several factors have made opposition to the development of this area:

- climatic adversities,
- lack of an adequate system of provisioning of water,
- lack or bad quality of basic infrastructure, communication system and transportations,
- lack of mineral resources and raw industrial materials.

The local economy is essentially based on fishing, manufacturing of palm derivatives, bricks and ceramics. The bigger economic group is represented by little farmers exploited by mediators, got into debts and damaged by the seasonal unemployment.

Palms for sugar production are cultivated in specific orchards where after about four years is possible to start the juice harvest. The palm cake is used as a sugar for coffee, tea, cakes and other backer products and traditional medicines (“siddha medicines”). There is a big market of this product in Madurai, Theni, Coimbatore, Kanyakumary and Kerala.

The society is organized in castes as in the rest of the state and the whole India. The three higher castes (Kallar, Maravar and Agamudayar, jointly named ‘Mukulathor’) represent the 32,8% of the total population and exercise a strong decision-making power into villages.

The oppression of the low castes Dalit and Nadars, which represent around the 38% of population, is decreased thanks to the educative and economic processes of recent years. Despite this, the social structure is still the same and is not possible to see any substantial modification.

The national programmes to fight poverty, and to reduce bureaucracy and corruption are not put into effect. In this district the strong condition of women discrimination remains even if some steps towards woman emancipation have been done in recent times.

A very relevant programme is “Mahalir Thittam” (programme for woman), started by the TNCDW, Tamil Nadu Corporation for Development of Women, that was instituted by the government with the aim of making concrete the economic and social participation of women

in the society. This programme is based on microcredit and on internal self-financing through the organization of self-help groups.

At sanitary level the whole region presents high indexes of childhood malnutrition and diffusion of diseases caused by nutritional deficiency as anemia. There are many cases of pneumonia and tuberculosis. In the two districts of Sivagangai and Ramanathapuram there exist 92 basic sanitary centers, 452 medical dispensary and 27 hospitals but the main part of these centers are situated in the cities and not easily reachable by the majority of village's population.

Sayalkudi area

Figure 2.3: Saylkudi in Ranamathapuram district



The area of Sayalkudy is situated in the Ramanathapuram district and is composed by eleven villages, in which 13.500 inhabitants live.

This rural area is very poor so that 52% of the population live under the poverty threshold, which is one dollar per day, and there is a female unemployed rate of 62%. This fact is worsened when considering that many families count on women as sole provider of income.

In the area, the widowhood rate is very high due to the genocide of Tamil population in the 90's in Sri Lanka and in the Ramanathapuram coasts.

Despite the local economy is based on fishing and palm products, it is still not safe fishing on the coasts between Tamil Nadu and Sri Lanka.

Sole women have the necessity to work because they are frequently emarginated by the society because vulnerable and without a man providing for them and their children.

The Sayalkudi area is based on a sort of feudal system where fields are property of the land-owners who sells to local people the possibility to work on.

Workers, especially women, have not access to any form of traditional credit so they have to ask money to intermediaries, which are loan sharks and ask them very high interest rates. As a consequence local people work all the year in order to repay debts selling the palm cake (the sugar produced by the manufacturing of palm's resin) to intermediaries which sale it on the market.

This mechanism does not allow people to earn nothing more than subsistence by creating an even increasing over-indebtedness condition of local families.

In addition this type of work is seasonal (6 months per year) and finished the working period there are no other ways to earn. So after the seasonal working period a great part of adults migrate towards other areas looking for labor and often leaving their children alone for a long time.

Social needs analysis

On the base of a research run by SMSSS, Sivagangai Multipurpose Social Service Society, regarding the study of the vulnerable women condition on the Sayalkudi area, there were highlighted the follow results:

- The 62,97% of the women interviewed are not employed, the 17,25% are committed in occasional jobs, the 13,29% are get involved on the palm juice production and the 6,49% on the fish selling.
- Three out of four working women get an annual income between 10.000 Rs and 16.000 Rs (around 150/250 euro per year).
- About one of four of families depend on female income. The high rate of scholar abandonment, the high number of child worker and women, often still child, that whore themselves are the main consequences of the big economic hardship of the families.
- Reached the puberty, the bigger part of girls becomes family servants, caring younger brothers and sisters and domestic works.
- In family composed by at least 5-6 people, one of five the women live in straw houses, one of five in huts and three of five in little walling houses. Lots of these families do not have hygienic services into their houses.
- The Nadar communities are strongly involved in palm juice extraction work but the property of the land is concentrate on the hands of few big landowners. Families rent

the land and trees for a limited period (from 3 to 5 years) turning to loans with very high interest rates to stocking the raw materials for the production of palm cake.

- The committed families do not have the possibility to store the products so they are forced to sell them for low prices to the middlemen that resell goods for higher prices.
- The work is seasonal (6 months) and the biggest part of families are not active for the rest of the year, only few families are committed in the peanut production too and work during all the year. In the working season women and men often have to migrate towards far areas, leaving children at home, often alone and with serious repercussions on their health status (diarrhoea, chikunkuniva, malaria, flu, etc.).
- The access capacity to traditional credit of these families is very limited.
- The lack of competences is the reason of frauds of women, since they have not basic knowledge in economy and administrative. They have not the capability of negotiating fair prices in buying and selling materials and products, of claiming for right salaries.

2.3 Palm Cake Production Project

The project implemented

The project “Promotion of vulnerable women at Sayalkudi through training, social health education and start income generation activities” is born with the goal of supporting the social and economic promotion of 100 women in the Saylkudi area through training, social health education and the starting of income generating activities.

The main issue is the creation of a social cooperative for the production, storage and selling of palm cake. The beneficiaries are the vulnerable women of the area as widows, abandoned, disabled and members of low-castes (Nadar and Dalit) which have been already committed in the traditional palm cake production activity. The project has the goal to improve life conditions of women making possible the their emancipation from the informal economic system of the intermediaries.

Technical and professional training is a core activity of storing and selling of palm cake. The project complements with the family traditional activities of harvest and manufacturing with the cooperative activities of storage, selling commercialization and training.

The operative phase is started in 2013 with the sanitary and technical training and the erection of the storage building. In the same year the local partner identified 14 women, into

the 100 which had received the sanitary and technical education to create the self-help group and the cooperative.

Figure 2.4: Sontham palm cake storage in Sayalkudi



The choice to create a small group of beneficiaries was forced in reason of economic needs. Since the project is inserted in a rural economic system fully based on indebtedness, there was the necessity to create a microcredit system giving a revolving credit to members of the social cooperative every year.

Partnership

DONOR:

San Zeno Foundation (Brescia)

The project was main financed by San Zeno Foundation that is active since 1999 and supplies contributions to institutions and associations for the realization of development projects with the aim of education, professional training and development of economic activities in Europe, Africa, Asia and South America.

The mission is to create an own economic autonomy through the evaluation of financial contribution for the institutions that propose projects.

ITALIAN PARTNERS:

Tovini Foundation (Brescia)

Tovini Foundation was born in 1957 and deals with every aspect of educational field. It performs activities of training for education, scholastic, cultural and social professionals. The first initiatives in cooperation started in 1961 with the mission of stimulate the creation of social consciousness and participation of local communities to development process of auto-promotion.

Sipac Foundation (Brescia)

Sipac Foundation was born 1989 from the engineering group Sipac SPA and in 1993 was recognized as NGO. The fields of intervention of Sipac are appropriate technologies, professional training, income generating activities, energy production form renewable sources, social housing and scientific research.

Medicus Mundi Italia ONLUS (Brescia)

Medicus Mundis Italia in an NGO founded in 1968 with the mission of promoting sanitary education and sharing sanitary technologies and medical know-how with limited resources countries. MMI realizes sanitary programmes of structural development for promoting base community medicine, realizing services of diagnosis, caring on the territories and training medical staff.

LOCAL PARTNERS:

Sivagangai Multipurpose Social Service Society SMSSS (Paramakudi)

SMSS is a legal registered ONG, responsible of the social action into the territory of the Sivagangai diocese that is composed by the administrative districts of Sivagangai and Ramanathapuram. SMSSS started its activities in 1985 and still today is committed in actions that aim at the human promotion and the full development of the local populations oppressed and vulnerable. It deals with poor women, vulnerable children, youngs on risk, little farmers, emarginated people and families in need.

ST. Joseph's Hospital (Puliyal Village)

Since 1964 St. Joseph Hospital provides sanitary assistance, prevention activity, education and health promotion for about 60.000 people of 35 different rural villages from the most emarginated and needy areas of the Sivagangai district. The hospital provides its services of sanitary assistance to poor people without discrimination of caste or religion.

Aims and scope

The project was organized for reaching four expected results and linked activities:

- 1- The creation of the infrastructures for starting production and stock of palm products. In 2013 was realized a stocking unit for palm cake with a surface of 200 m², equipped with racks for stocking products, air conditioner and dehumidification system for the optimal conservation of the product.
- 2- The supply of specific professional training for 100 women to support them in starting income generating activities. A professional training about production, conservation and commercialization of palm product has been provided to 100 women and at the same time the technic professional training on modality of palm juice extraction has been provided to 100 men too. In addition women received training on micro firm, cooperative work and IGP (income generating programmes) activities for palm cake production.
- 3- The engagement of 100 families in palm cake production, storage and selling by the integration between family work (plantation and harvest) and cooperative work (stocking, selling, commercialization, training and technical assistance). This result was reached by the training by the management committee members in accountability, administration, logistic, marketing, human resources management. Moreover it was created the Sontam Working Cooperative for palm cake production in Sayalkudi.
- 4- The improvement of opportunities for target population of villages in terms of education, socio-sanitary prevention and promotion of basic services in the rural area. The activities promoted were the awareness and promotion of SGH (Self-help group) about good practices of basic health, domestic hygiene and sanitary local services. In addition the project provided social trainings in water and waste management, environmental protection, women rights, domestic violence and right to have an

education. Prevention and education programmes were also realized regarding family health and planning, HIV/AIDS and other sexual transmittable diseases.

2.4 Social and economic issues

Beneficiaries: the “Sontham self-help group”

As previously said the beneficiaries of the project preliminary activities were 100 families (both men and women) of the Sayalkudi area. These families were already working in the palm cake production activity giving the entire product to the moneylenders as repayment of the debt incurred for the payment of the rent of the palm field from landowners.

Into these families, the local partner had selected 14 women, which seemed to be the more affordable, to create a new SHG and the cooperative. These women have been chosen into the original larger group of 100 that have received the technical training and were being selected in order of their reliability and family condition.

So the beneficiary of the “income generating activities” part of the project is the “Sontam self-help group”. Sontham group was formed in 2013 for starting the cooperative business activity. It was originally composed by 14 vulnerable women of the Sayalkudi area that were already producing palm cake as a family business.

These women belong to the two lower castes present on the territory, in addition most of them are widows. This bad social condition is worsened by the chronic indebtedness situation that is a structural factor of the local economy.

The self-help group modality is widespread in Tamil Nadu where the women condition is far from gender equality. SGH are usually formed by about 20 members that meet up at least once a week for speaking about problems and necessities and looking together for solutions.

In the case of the Sontham cooperative SGH the function of the group is also to provide a kind of guarantee for the loans. All the loans are given personally to each woman but are the whole group that responds for the duty of repayment.

Sanitary education programmes

The sanitary programmes were implemented by Medicus Mundi and St. Joseph’s Hospital Staff. They consisted in two-years programmes in which different activities and trainings

were organized. These trainings were addressed to 100 women of the villages of the Sayalkudi area.

The activities happened in four days in the first year and eight days in the second year and they concerned the prevention of the main disease and the basic hygienic and sanitary standards. These activities aspired to create an increasing consciousness in the population through the sharing of the knowledge acquired.

In particular, during the second year, the project organized more specific programmes about water, waste management, environmental protection, women's rights, domestic violence and right to education. Moreover some activities happened into the villages on some community themes such as the prevention of sexual transmittable and other infective diseases, the importance of the familiar planning, and the adoption of good a lifestyle into the family. This programme occurred in 8 days in the first years (2013) and 12 days in the second year (2014).

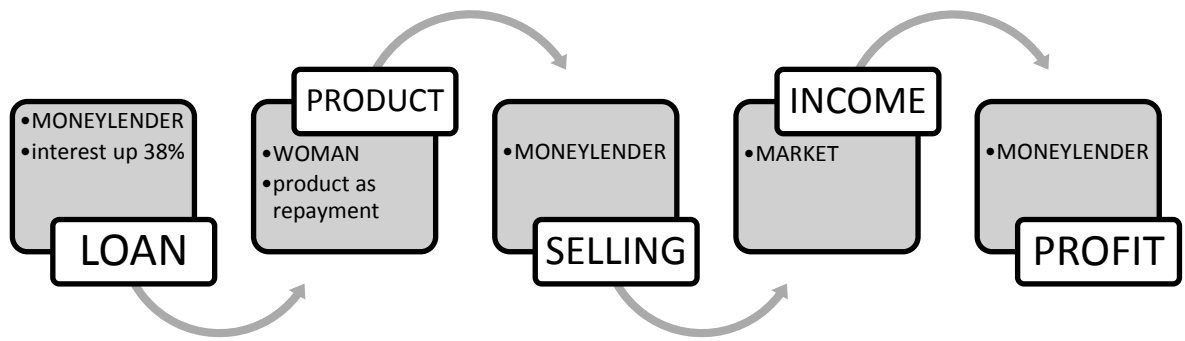
In addition, to complete the whole programme, 10 meeting about social and cultural entertainment were organized with the aim to inform and sensitise the population about the importance and the social consequence of the activities managed by the project.

Microcredit system

The lending model implemented with the project is cooperative and provide a loan of 100.000 RS per year for each workers aimed to give them the possibility to negotiate directly with the land-owner avoiding the relation with the figure of the moneylenders. The amount of the loan at first sight might seem high as a "microcredit" but this is fully suitable to the rural context (the Indian average of amount borrowed by moneylenders is up 200.000 Rs for one year loans³⁸).

³⁸ Data from Business Standard, Chakraborty S., Sokhi P., *Moneylenders back in AP with jumbo lending rates, Micro-borrowers pay as much as 225% interest*, www.business-standard.com/article/finance/moneylenders-back-in-ap-with-jumbo-lending-rates-112080400039_1.html, 2012

Figure 2.5: Informal lending system with moneylenders

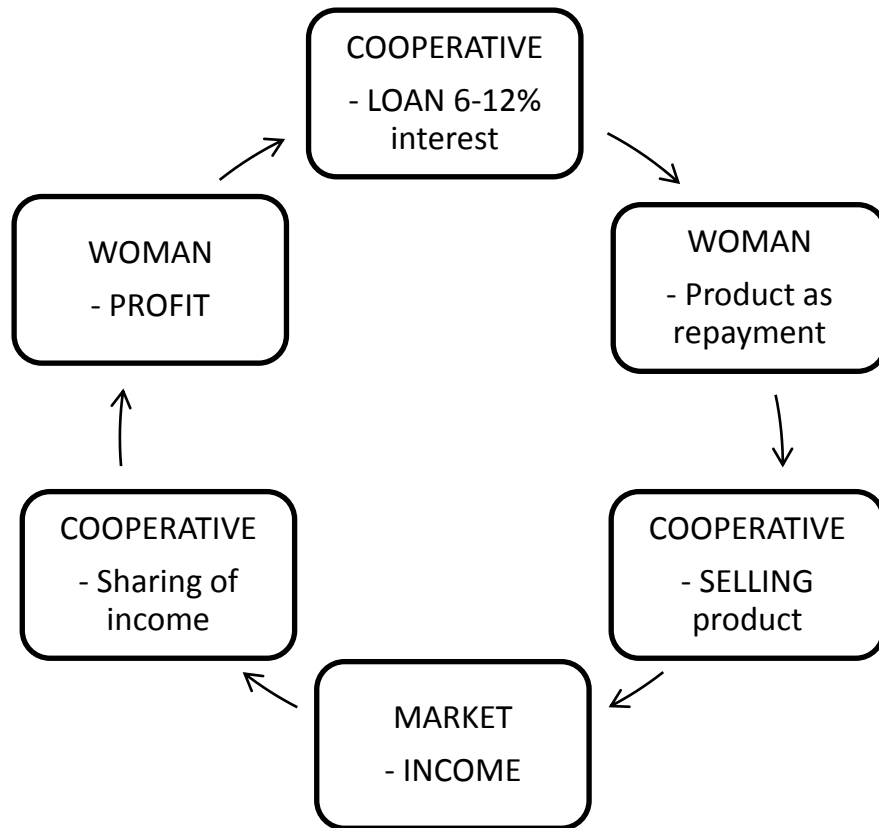


Before starting this programme women borrowed money from the moneylenders to rent the palm fields for working on. Middlemen applied high interest rates so women (and family with them) needed to give all the products to the moneylender in kind of loan repayment.

The cooperative project wanted to avoid this situation of dependency trying to make women self-sufficient in production and selling the products directly on the market.

Women, organized in the Sontam SHG, receive a big loan on the beginning of the production year (that starts in September and end in August) as previously happened in order to rent the land and to face all the family expenses. The interest rate of this loan is variable from 6% up to 12%, the variation occurs because in the month of effectively production the interest has stopped. According to this system the maximum interest rate is the 1% per month (summed up 12%) against the interest charged by moneylenders that is up to 38% per annum (as said above). The moneylenders in Sayalkudi are both traditional moneylenders and middlemen, they borrow money asking harvest as repayment (capital and interest are fully repaid by production).

Figure 2.6: Micorcredit system with Sontham Cooperative



Beyond this first loan, during the time of production (generally from March to August), the women often receive a revolving fund that consists in some weekly small loans for needy situations. These further credits are borrowed by the cooperative without interest on them.

Every year each woman has to repay her debt (including interests) through the palm cake production creating all the condition for repeat loans the following year. This mechanism permits to the cooperative to emancipate the members from the chronic indebtedness with moneylenders and also to be the one who borrows itself the money.

The Sontam SGH becomes in this way a social-cooperative that would be self-financed and jointly-owned by workers giving microloans to each member year after year.

Income of cooperative comes from two components:

1. profit coming from interests over loan,
2. profit coming from surplus realized by high margin of selling product.

Income of members comes instead from:

1. reduction of cost in borrowing money (interest rates),
2. sharing of income realized at the end of the selling period.

2.5 Palm cake production and selling structure

Production

Palm Cake is a one of most typical product of Saylkudi area that lives essentially on pal product and dry fish selling. Palm Jaggery is made from de extract of Palm tree and the process of its making does not involve any chemical agents or preservatives one. It is meant to have various medicinal properties and other health benefits. It is a good source of B vitamin and contains ascorbic acid indeed.

The palm cake production often involves whole families committed into this job. People rent fields and palm trees from the big landowners and usually have 40-50 trees to work on. Men have the duty of climb trees for extracting the juice, they make some incision on the base of the palm leaf and there they position a receptacle in which the juice trickles slowly. Every day a men has to climb every tree three or four times for collecting the full receptacle.

All this operation is very unsafe for men that often risk falling down by the tree with high damages for their health.

Figure 2.7: Man picking palm juice



Figure 2.8: Man climbing a palmyra tree



After every collection operation, that was already said is repeated three or four time a day for every palm tree, men pour all the juice in a big bucket and bring it to the hut that is situated in the palm field and where the whole family living during the production season.

There women, and often children especially girls, make the juice boiled in a big pot situated into a hut with a big brazier.

Figure 2.9: Workers in the palm field



Figure 2.10: Family living in the palm field



Here the juice is boiled for about two hours under the women supervision, this operation allows to dry the juice making evaporated all the water included into the juice.

When the juice is boiled and dried it appear as a cream that women puts into half coconut skins to cool it and give it form. When the palm cake is solidified assumes the form of half ball with the diameter of about 10 cm and it is ready to be brought into the store to be conserved.

Figure 2.13: Evaporation of palm juice



Figure 2.14: Finished product



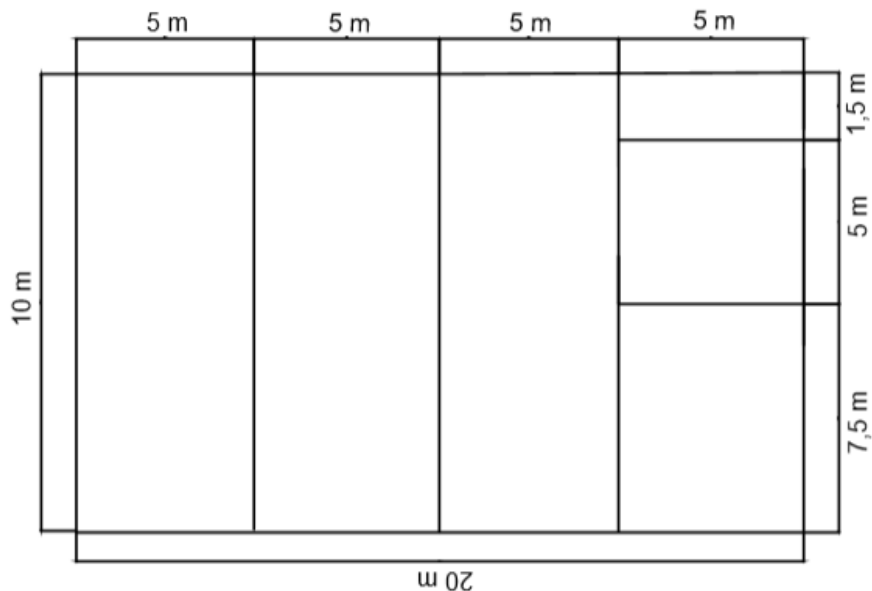
Storage and selling

Previously, selling product to the middlemen as repayment was the only solution for for these workers because they were not able to store and preserve palm cake. Middlemen store the product acquired for low prices by people in their warehouses and they use to light little fires there to try to dehumidify the place and avoid the palm cake crumbling.

The main issue of the project consists on the technologic innovation in storage and conserve palm cake. The store built for the Sontham cooperative consists in 200 m² divided in different rooms:

1. three warehouses with air conditioner and dehumidification system, each one can contain 10 tons of palm cake,
2. an anteroom where palm cake is weigh on a weighing machine,
3. the accountant office with a private restroom.

Figure 2.12: Plant of Sontham Storage in Savalkudi



During production season women bring the palm cake produced to the storage every day, there the product is weighed and stored and every time the accountant notes the quantity given

(in Kg) and the respective repayment of the loan in term of money. The repayment market price paid to the women is variable because the palm cake market price can change every day.

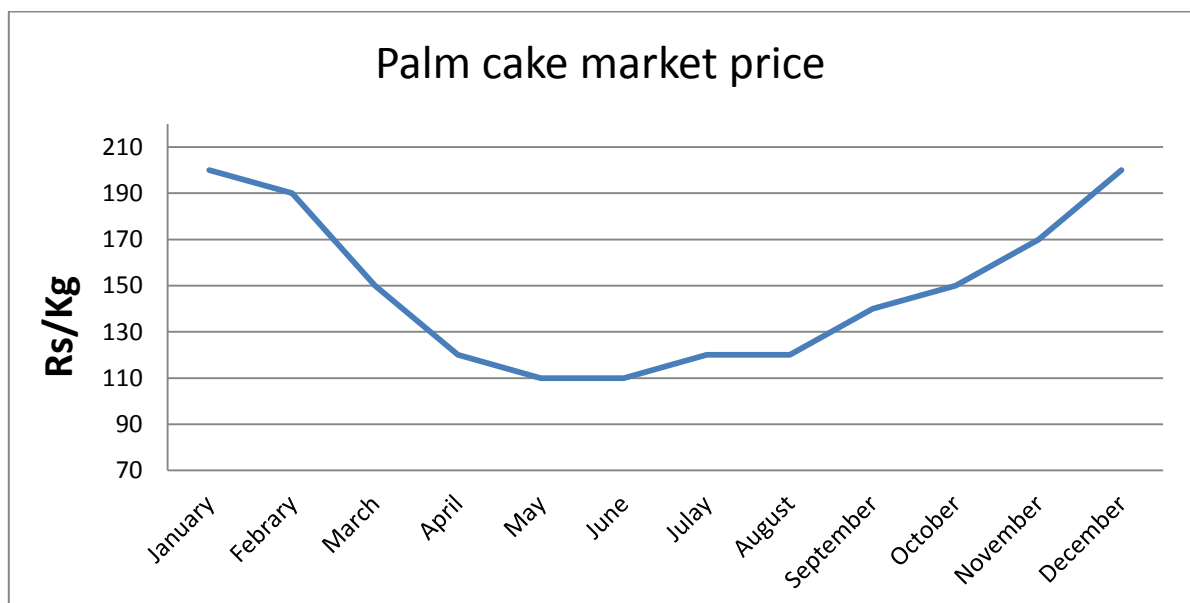
In this period (March to august) the market price is the lower of the whole year and can vary from 90 Rs per Kg up to 120 Rs per Kg. Every day the product is stored to be sold on the end of the season when the market price is higher.

Figure 2.15-16: Warehouse room of Sontham Storage



The local partner SMSSS has lead a market research on variation of palm cake market price identifying a U trend, the price is high on the first months of the year, quickly decreases at the beginning of the production time and starts to grow again at the end of the production period. This strong difference in price appens because traditionally there is not the possibility to conserve the product and middlemen have to sell the product in the less time possible.

Figure 2.17: Palm Cake Market Price Variation during the Year



Budget

The project started in July 2012 with 24 months duration. It was mainly financed by the donor San Zeno Foundation that invested 123.500,00 euro of the 226.965,44 of the total budget. The rest of the project was coo financed by the three Italian partners and the two local partners with different efforts as below.

N.	COST ITEM	SAN ZENO FOUNDATION	TOTAL
1	Cost of workers	19.096,46	40.937,00
2	Training and staff	16.104,19	22.104,19
3	Building	37.540,55	59.803,77
4	Equipment	23.316,46	28.344,89
5	Consumption materials	19.648,56	24.648,56
6	Current costs	-	7.951,15
7	Microcredit fund	-	20.000,00
8	Monitoring and evaluation	4.136,09	9.636,09
	SUB-TOTAL	120.000,00	213.425,64
9	Administrative costs (7% of sub-total)	3.500,00	13.539,79
	TOTAL	123.500,00	226.965,44

PARTNERS COFINANCING	
Tovini Foundation	34.410,54
Medicus Mundi Italia MMI	10.000,00
Sipac Foundation	7.000,00
Sivagangai Multipurpose Social Service Society SMSSS (local)	50.480,57
St. Joseph's Hospital (local)	1.574,33
TOTAL	103.465,44

2.6 Energetic efficiency through solar system installation

The project implemented

The project “Energetic Sustainability of Sontham association of women producer of palm cake in Sayalkudi – Tamil Nadu, India” was implemented in 2015 by Sipac Foundation, Brescia, which previously was a partner in the “Promotion of vulnerable women at Sayalkudi through training, social health education and start income generation activities” project. The local partner was SMSSS (Sivagangai Multipurpose Social Service Society) of Paramakudi that is the guaranteeing entity for the Sontham cooperative.

The Donor that financed the project was the Fondazione della Comunità Bresciana ONLUS, which is a community foundation born in 2011 in Brescia with the aim to promote philanthropy activities on the territory directing resources towards project oriented to improvement in quality of life.

Actually Sipec implemented this second intervention to compensate for problems given by the intermittence of electricity supply, combined to a high energetic expense of the cooperative's storage. The production experience of Sontam cooperative highlights three evidences:

- a deficit in term of thermal efficiency,
- discontinuity in energy supply,
- high managment costs.

The project had three goals:

1. the fulfilment of an overshadow system of the roof in order to increase the thermal efficiency,
2. the use of renewable and sustainable energy for an energy management costs reduction,
3. to pledge the continuity in energy supply, previously intermittent and not able to grant the full production and store cycle.

The intervention of strengthening was necessary to support the income generating activities started by the cooperative and both to guarantee the efficient execution of production, transformation and stocking work.

The beneficiaries of the project were Sontham women who were also involved in technical training about operation and maintenance of photovoltaic system. Other beneficiaries were the village families that sell their product to the cooperative storage.

The activities implemented were:

1. buying, shipping, paying customs tax and transportation of equipment to the project place,
2. installation and test of the system,
3. technical training of 15 workers on maintenance, operation and safety management of photovoltaic system and equipment.

4. Monitoring and communication

Intervention: the system installation and testing

The storage building area is 200 m² divided in 5 ambient, three storage rooms, an entrance and one office. The project considered the installation of a photovoltaic system that covers an area of 55 m² of the building roof. The entire photovoltaic system had to support the air conditioning and dehumidification activity in two of the tree warehouses. Initially the system is thought to respond also to the other small energetic needs of the building: lights, scale, small supplementary devices and services.

The system is provided with a group of batteries to respond to the operation of conditioning and dehumidification system that work in an intermittent way, harder on day time (when there is the solar irradiation) and lower on night time (when the energy is provided by batteries).

The energy production is supplied by 30 photovoltaic panels of 260 wp which can daily produce 32 Kwh connected to 8 batteries of 250 Ah that can collect 24 Kwh. The system is realized in two different and independent sections in order to easily face eventual breakdowns.

Moreover the system is provided with automatic commutators for the connection with the nat

ional electrical net for supplying the possibility of energetic integration on periods of low exposure to the sun.

The system was installed in May 2015 and it was tested for a period of 30 days by the Sipec specialist that also managed the training sessions with the local partner.

Figure 2.17: Photovoltaic panels on the roof of the storage



Technical determinants and budget

The photovoltaic whole system is composed by 30 solar panels connected to an inverter and 8 batteries. This system is divided into two different and autonomous systems of 15 solar panels connected to an inverter and 4 batteries. This solution allows managing the two systems separately as necessary (for example the quantity of product stocked).

The technic determinants and components of the whole system are the following:

Photovoltaic

Nominal power of module Sunage 96/5	260Wp Voc 61V Isc 5,4 A
Number of modules	30
Total nominal power	7800 kWp
Total surface covered by modules	55mq

Charge regulator

Nominal power out of charge regulators	5760 W
Exit potential difference	48V

Batteries

Technology	Free acid-lead for photovoltaic system
Number of batteries	8
Exit voltage/battery capacity	12V / 250Ah = 3 kWh

Inverter for power source in electricity alternated

Enter voltage in CC	48V
Exit voltage in CA	220V
Number of inverter	2
Maximum exit voltage of n.1 inverter continuous operating	3 KW

Other components

Cables CC	Classification FG21M21
Modules supporting structure	Aluminium/iron
Electrical protections CA	Termo-magnetic and differential switches, overvoltage dischargers
Electrical protections CC	sectioners CC and fuses, overvoltage dischargers
Monitoring tools	Ammeters CC e CA, voltmeters, batteries CA, Wattmeter CA
Authomatic commutators	N. 2

The project budget was of 28.160,76 euro coo financed by Fondazione della Comunità Bresciana ONLUS, Sipec Foundation and SMSSS.

PARTNERS COFINANCING	
Fondazione della Comunità Bresciana ONLUS	12.000,00
Sipec Foundation	5.701,56
Sivagangai Multipurpose Social Service Society SMSSS (local)	10.459,20
TOTAL	28.160,76

N.	COST ITEM	TOTAL
1	Equipment	6.9000,00
2	Staff	9.106,07
3	Logistic and transfert	6.002,82
4	General expenses	4.501.88
5	Communication and dissemination	1.650,00
	TOTAL	28.160,76

Chapter 3: MONITORING AND IMPACT EVALUATION

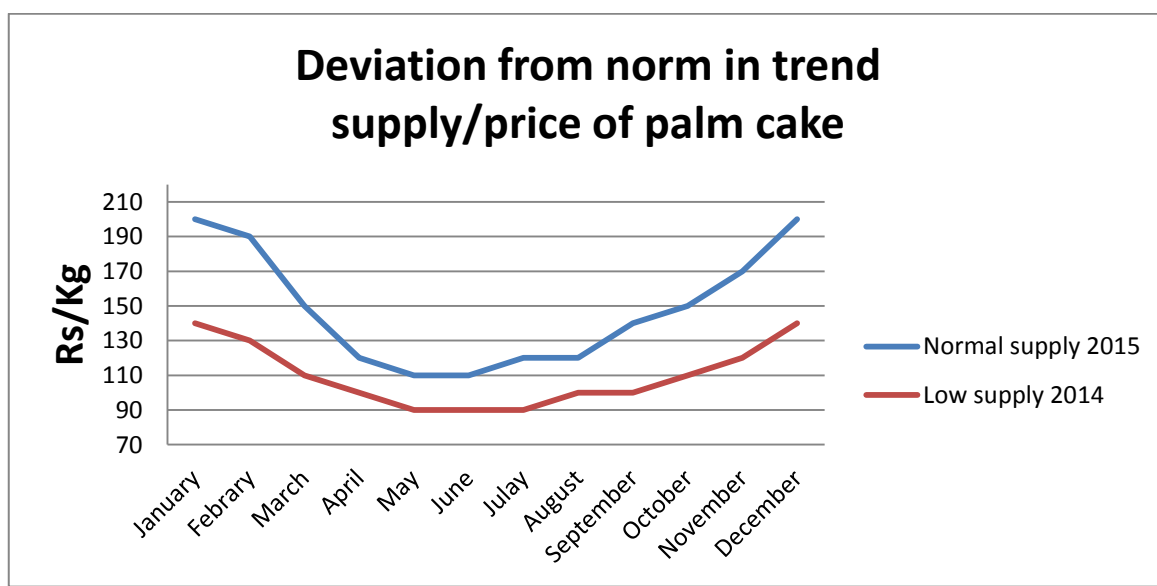
3.1 Case study background

Sontham cooperative activity

The Sontham cooperative started producing in March 2014, the first year production was 5.788,9 kg, lower than expected and only one of 14 women was able to produce a quantity sufficient to repay her debt to the cooperative.

In fact, in the first year the climate factor was determinant because rainfall was very low in respect to normal in the South West Monsoon (June to September) with 73.1 mm instead of average of 149.3 mm and in North East Monsoon (October to December) with 333.1 mm instead of 491.7 mm. Moreover in Winter Season (January and February) and in Hot Weather Season (March to June) it rain more than normal (55.7 mm instead of 51.3 mm and 183.8 mm instead of 115.5 m) creating big problem for all harvests of the district zone.

Figure 3.1: Trend and 2014 deviation in palm cake market price



Moreover the situation was aggravated by the fact that during the first year the market price of palm cake had an unexpected trend: production in all the region was low for climatic reasons and price of the product was low too. This suggests that palm cake is perceived as a secondary good because it has a flexible demand. Contrary to prediction with a low supply, price has decreased: in average 90 Rs/Kg to workers and 140 Rs/Kg by costumers. But the

next year with a high supply the price has increased again. The 2015 trend of prices was consistent with normal trends highlighting the same direction trend of supply and price.

This phenomenon does not find correlation to the trend of another goods (for example tea) but shows that palm cake is not a primary good (the demand would be unvaried in this case). This anomaly in the market is solved either by sector studies run by SMSSS.

In 2014 cooperative earned sufficiently only to cover expenses and refinancing members that worked during the year. During the first year some people doesn't work for problems related to difficulties in rent palm land or because they use the money to close previous debts. For these reasons the cooperative activity started very slow.

In 2015 climate conditions were normal and the production was 14.853,7 kg almost tripled in respect of the previous year.

Actually this improvement in production depends on climate condition but there is also a human component in increasing productivity. Thanks the second year production cooperative could repay the loan received from APSI trust, a financial service supplied from the local partner SMSSS, refinancing members for the year 2016.

During the second year the cooperative benefitted managerial help of the supervising authority, the local partner SMSSS, which started to correct errors and improve participation and responsibility of members. This positive attitude strongly influenced member behaviours creating evident advantages for the cooperative operation.

At global level the activity of Sontham cooperative in 2014-2015 is positive and it has reached the main prevised goals even if it presents some critical points.

Sontham Swot analysis

The Sontham cooperative presents strengths and weaknesses. The core activity of cooperative is not new, palm cake is one of the most traditional production in the Sayalkudi area. So the product is known and demanded. In addition the cooperative continues to use traditional method of production and innovation in technology was inserted only into stock and conservation activities. This allows cooperative to respond to a real environmental challenge in production.

Secondly Sontham cooperative, thanks to air-cond technology is able to preserve the product for a long period in the best way conserving all the nutritional characteristics of palm cake 100% pure without adding other type of sugar to maintain the product dry. This

competitive advantage has allowed Sontham to become a leader in the market for product and practices.

At last, regarding the financial services offered to members, the cooperative has emancipated its members from the informal borrowing relationship with the moneylenders, providing loans with lower interest rates. This lead moneylenders to low their rates adapting them to the cooperative one in order to avoid the risk in loosing clients that would like to join the cooperative. So this leadership in fixing interest rates had lead a benefit for the whole community.

On the other hand, speaking about weaknesses, the cooperative did not have the prevised results during the first year of production and this caused an economic deficit in starting the second year that was not totally recovered at the end of 2015. This situation is caused by the climate conditions but also by the high attitude in indebtedness of members. Having debts is a structural component of the economic system (both formal and informal) of the rural area and the whole palm cake production system is based on debt because landowners ask people to pay in advance big amounts of money to work their fields.

In addition the guarantee level is middle-low and only based on peer pressure, it has also to be mentioned the fact that members (all vulnerable women) for different reasons have not sufficient business skills to manage autonomously the cooperative and constantly need supervising by the designed authority SMSSS.

Regarding external opportunities and threats for the cooperative, it has the possibility to involve more people as members with positive effects in the community. In addition Sontham could become the leader retailer in the Sayalkudi market increasing profit to share between members. Finally it could realize the permanent emancipation of members from local informal economic system.

The external threats for the cooperative are represented by the strong dependency of the harvest and production in climatic conditions, the high pressure operated by moneylenders to distance members from the cooperative to get back clients and the risk of repayment default in the microcredit system driven by a possible negligence of members.

Figure 3.2: SWOT analysis of Sontham cooperative

	HELPFUL to achieving the objective	HARMFUL to achieving the objective
INTERNAL ORIGIN (attributes of the organization)	<p>STRENGTHS</p> <ul style="list-style-type: none"> - Strong link with territory and tradition - Best product in pureness - Competitive advantage in technology (stocking) - Market leader in product and practice - Broken relationship with informal money lenders - Low interest rates - Market leader in borrowing price (setting of interest rate) 	<p>WEAKNESSES</p> <ul style="list-style-type: none"> - Economic difficulties in first year activity led a deficit situation - Low level of guarantee (peer pressure) - Low level of business skills of members and need of help by the supervision authority SMSSS - Relationship with land owners - Indebtedness structural in local society - High propensity to debt of members
EXTERNAL ORIGIN (attributes of the environment)	<p>OPPORTUNITIES</p> <ul style="list-style-type: none"> - Involvement of more members of the local community - Increasing profit to share - Become the leader retailer in the market - Permanent emancipation of members from local informal economic system 	<p>THREATS</p> <ul style="list-style-type: none"> - Harvest strong dependency in climatic condition - Pressure of money lenders to distance member from cooperative - Risk of repayment default for negligence of members

Marketing strategies

The marketing strategy implemented by the cooperative changed during the two years. The first year the cooperative has chosen to sell the entire production to a merchant having a big shop for the fix price of 140 Rs per kg. This decision was not positive for three reasons:

1. The merchant was also the middleman (and moneylender) that previously exploited some members of the cooperative borrowing money with a 30% interest rate, in this way the dependency of people on informal economy is not broken.

2. The merchant store is placed into the Sayalkudi village that is the main zone of production of palm cake, so the abundance of supply keeps price lower than in other places all over the year.
3. The selling price and the profit could have been higher selling directly to final costumers during the non-production period of the year (October to February 150/200 Rs per kg).

According to the help of SMSSS for the second year the cooperative chose to change its behaviour creating a real marketing strategy based on “4P of marketing”:

1. Product: Sontham in 2015 started to focus in the high quality of this product that is the purest and the best preserved in the market.
2. Place: the cooperative chose to sell its product direct to final costumer, thing that allows selling to a higher price. The first places individuuated were the parishes of Sivagangai Diocese, women sold cooperative product with the help of the SMSSS structure. In 2016 the SMSSS will also open a retail shop where it will sell its products and the cooperative one too.
3. Price: the price set in 2015 is 150 Rs per kg, it is just over the middle-higher part of possible price (in an annual range that goes from 100 Rs/kg to 200 Rs/Kg) because it is a promotional price to give to the new costumers the possibility to taste the product.
4. Promotion: the main promotion takes place in the parishes during the mass, but Sontham also uses newspaper insertions and informal channels.

This new marketing strategy implemented has brought good results, first of all the product was sold for a higher price than the previous year, secondly the cooperative has started to create loyalty in its costumers because they recognized the high quality of the product offered.

The new strategy required a higher effort of cooperative’s members and SMSSS structure in term of time and resources (previously the selling with a sole clients was very quick) but allows to the cooperative to have higher margins and to create a solid reference market.

In conclusion the transition from a B2B (business to business) strategy to a B2C (business to consumer) has been a winning choice for Sontham.

Figure 2.3: Sontham women selling palm cake in the parish



3.2 Economic indicators

Statement of financial position

Having a deeper look into the financial condition of the cooperative it can be noticed a whole positive situation.

The first year, 2014-2015, the cooperative started the activity giving the first loan to the members for an amount of 1.355.000 Rs from the initial capital financed by the project of 1.770.000 Rs (Tovini Foundation). But this microcredit fund arrived to the Sontham only in 2014, so the cooperative had to borrow money from the local partner SMSSS microcredit fund APSI trust. It borrowed 1.495.000 Rs with a total predetermined interest of 60.000 Rs that it paid in 2014 when microcredit fund arrived from Italy.

In March 2014 the cooperative started producing and despite low harvest and huge repayment default it was able to support production expenses. The cooperative borrowed money from Motham trust in order to give revolving funds during production time. Income of selling gave to cooperative enough money to refinancing all members for the next year.

At the end of the productive season, in August 2014, cooperative had a net profit of 657.154 Rs to reinvest, after it has paid its debts, refinanced members that have worked during the year production and shared income of 50.000 between members.

The credit versus members not realized by the cooperative was of 1.806.800 Rs and the total assets of the cooperative was 2.463.954 Rs.

Figure 3.4: Statement and balance sheet of Sontham years 2013-2014

Economic Accounting 2013-2014			Balance sheet 31.08.2014		
	Incomes	Expenses	Current assets	Assets	Liabilities
Cost of production					
electricity		7.126,00	cash	657.154,00	
water		1.600,00	credit vs members	1.806.800,00	
building tax		8.000,00	inventories	-	
accountant salary		36.000,00			
bonus on salary		500,00			
storage rent		72.400,00			
others		4.550,00			
bank		40.000,00			
Subtot A	-	170.176,00			
Income of production					
palm cake selling	845.170,00				
Subtot B	845.170,00	-			
Microcredit cost					
loan APSI trust (for microcredit)	1.495.000,00				
1st loan given to women		1.355.000,00			
repayment APSI trust for loan		1.495.000,00			
interests over loan (APSI)		60.000,00			
second tranche 1st loan		140.000,00			
loan MOTHAM trust (for revolving fuond)	182.840,00				
revolving found given		182.840,00			
repayment Motham trust for loan		182.840,00			
sharing of income		50.000,00			
Subtot C	1.677.840,00	3.465.680,00			
Cash					
Microcredit fund (SMSSS)	1.770.000,00				
Subtot D	1.770.000,00	-			
Tot	4.293.010,00	3.635.856,00			
Net profit	657.154,00				

In 2015 production was triple than the previous year. In this year cooperative chose to sell the production directly to final costumers during the non-production season when prices are higher, for this reason at the end of 2015 it has sold only around seven tons, the half of total production, because this type of selling requires more time respect of selling all the production to a merchant.

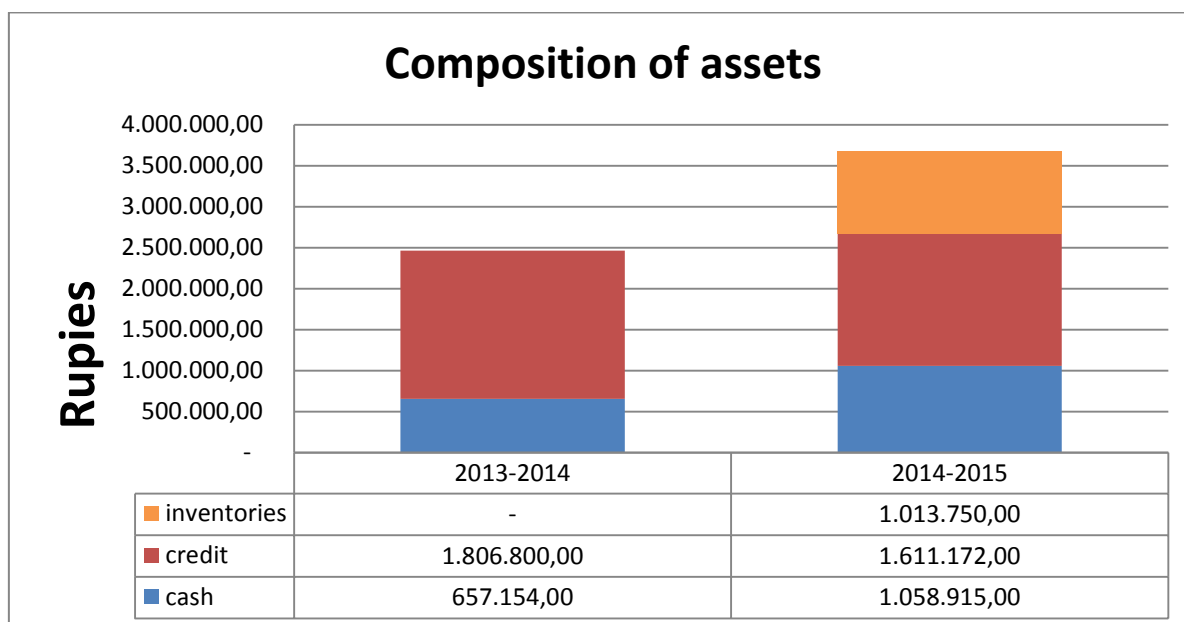
The credit versus members not realized is 1.611.172 Rs and it includes also the new refinancing for the working season 2016, at global level debt of members is reduced. Total active of cooperative amount to 2.810.997 Rs. Inventories is calculated at market price (150 Rs/Kg).

In September 2015, at the beginning of the third year of activity, cooperative has refinanced its members for 690.000 Rs.

Figure 3.5: Statement and balance sheet of Sontham years 2014-2015

Economic accounting 2014-2015			Balance sheet 31.08.2015		
	Incomes	Expenses	Current assets	Assets	Liabilities
Cost of production					
electricity		14.373,00			
water		800,00			
building tax		7.928,00			
accountant salary		54.000,00			
others		9.197,00			
subtoa A	-	86.298,00			
Income of production					
palm cake selling (as loan repayment)	1.199.950,00			1.058.915,00	
subtot B	1.199.950,00	-			
Microcredit cost					
new loan		330.005,00			
revolving funds		527.323,00			
payment over production (3X)		37.403,00			
Subtot C	-	894.731,00			
Cash					
cash in hand	839.994,00				
Subtot D	839.994,00	-			
Tot	2.039.944,00	981.029,00			
Net profit	1.058.915,00			3.683.837,00	-
			(A-L)	3.683.837,00	

Figure 3.6: Composition of Sontham assets in 2013-2014 and 2014-2015



Comparing the assets composition is possible to note in 2014-2015 the positive fact of the outstanding debt reduction (credit of cooperative) and the lack of profit given by the presence of inventories that count almost the half of the whole year production.

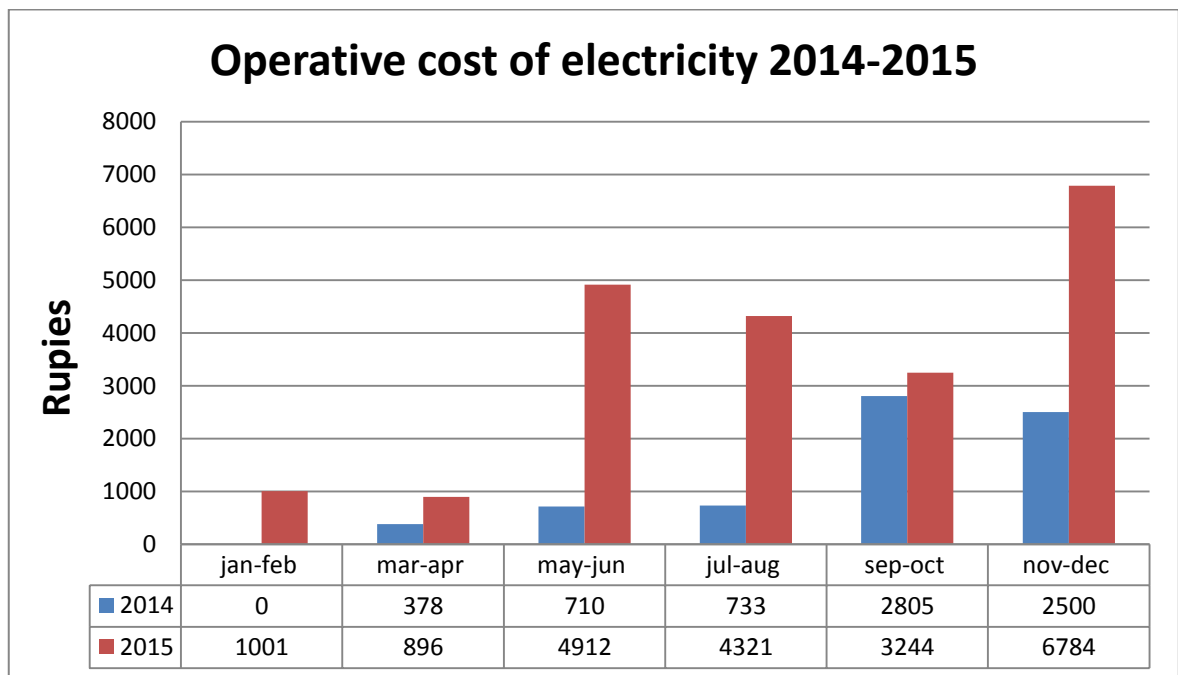
The growth of assets is clearly a positive component in the balance sheet of the cooperative that in 2014-2015 starting to produce enough to prospect sustainability and growth possibilities.

Energetic self-sufficiency data

The photovoltaic system has been installed in May 2015 and started to work in June 2015. The system aims to support the energy supply of warehouse guaranteeing the stabilization of a continuous supply of electricity.

The storage is designed to maintain the temperature in the range 22°-26° and the humidity level under the 60% for the optimal conservation of the product. The external temperature can vary from 24°C in January (the coolest month) to 38°C in May-June (the hottest months) and that the annual average humidity is around 70% in a range between 60% and 80% during the whole year. For this reason the system works 24 hour, with different energetic needs in respect of both the period of the year and the hour of the day.

Figure 3.7: Sontham cost for electricity in years 2014-2015



In 2014 the cost for electricity was of 7126 Rs for the year. The first year production was of 5788,9 Kg that was all stoked in the first warehouse and from march to December only an

air-conditioner and a dehumidification machine have worked. The energy supply of the net was not stable and often there are interruptions that can be lasted for hours.

In the second year the production was of 14853,7 Kg almost tripled the previous year. The cost of electricity including the period the system started to work was of 21158 Rs, again almost tripled.

It might be considered that the 15 tons produced were stoked into two warehouses and so this year two air-conditioner and dehumidification machines were working. So the cost of electricity would be double in 2015 in respect of how it effectively was.

The cost of energy is higher in 2015 than in 2014 but all lacks of supply are faced successfully tanks to the photovoltaic system. Moreover it can be noticed that the bigger expense related to the previous year (seven times more) was in the months May and June during the period of installation and testing.

In the hot season the air-conditioner and the dehumidification machine work in high speed and this do not allow to the battery to recharge themselves for the night. During the period from March to August the photovoltaic system support only the day time need of energy. In the months of September and October there was the best efficiency of the solar energy provided because the climatic condition were optimal with a bit lower temperature around 30°C and sunny days. In these months the data recorded shows that the energy supplied by the net has been used only during the night time when the need is smaller. During the rainfall season (November and December) the expense for electricity increased again because of the cloudy weather did not allow to use the system properly and the panel had problem in produce enough energy for charge batteries.

Repayment rate

First year production 2013-2014

In September 2013 1.355.000 Rs was borrowed from the cooperative to the 14 members to finance the 2014 palm cake production. The interest rate varied between the 6% and the 12%, interests start on October with a rate of 1% per month but its calculation stopped during all the period a member actively work for the cooperative repaying his debt. In the first year all people received a loan in average of 96.785,71 Rs, four of them asked to receive their loans in two tranches and in February 2014 the cooperative gave these second tranche for 140.000 Rs

in total in average 35.000 Rs per person. The average interest rate for this first loans was of 9,8%.

In addition during the productive season two-thirds of members asked for a revolving fund, a little weakly amount of money borrowed without interest rates to face unexpected expenses, totally 182.840 Rs, in average 13.060 Rs per person during the whole season. After all the loans and the interest's calculation the members had a whole debt of 1.820.040 Rs versus the cooperative, in average 130.002,86 Rs per person.

The repayment was by the restitution of palm cake produced during the season paid in average 90 Rs/Kg (in a range from 80 to 110, the low price range was caused by the low quality of the production of those year) and total amount of it was 536.766 Rs. Only one member produced enough to repay all its debt (and actually she had a cash payment for the Kg overproduced), two members reduce their debt under the 70.000 Rs, four members under the 100.000 Rs and two over the 100.000. Five members did not work in the first year season production for different reason and they were not refinanced in 2015. The other nine people have been refinanced in 2015 for 330.065 Rs in total in average 23.576,07 Rs per person. The total debt, interest included, at the end of 2014 versus the cooperative was of 1.806.800 Rs in average 112.925 Rs per person (16 people, two more in respect of 2014). Globally even if the production was not sufficient to completely repay debt members reduced their initial debt versus the cooperative.

Second year production 2014-2015

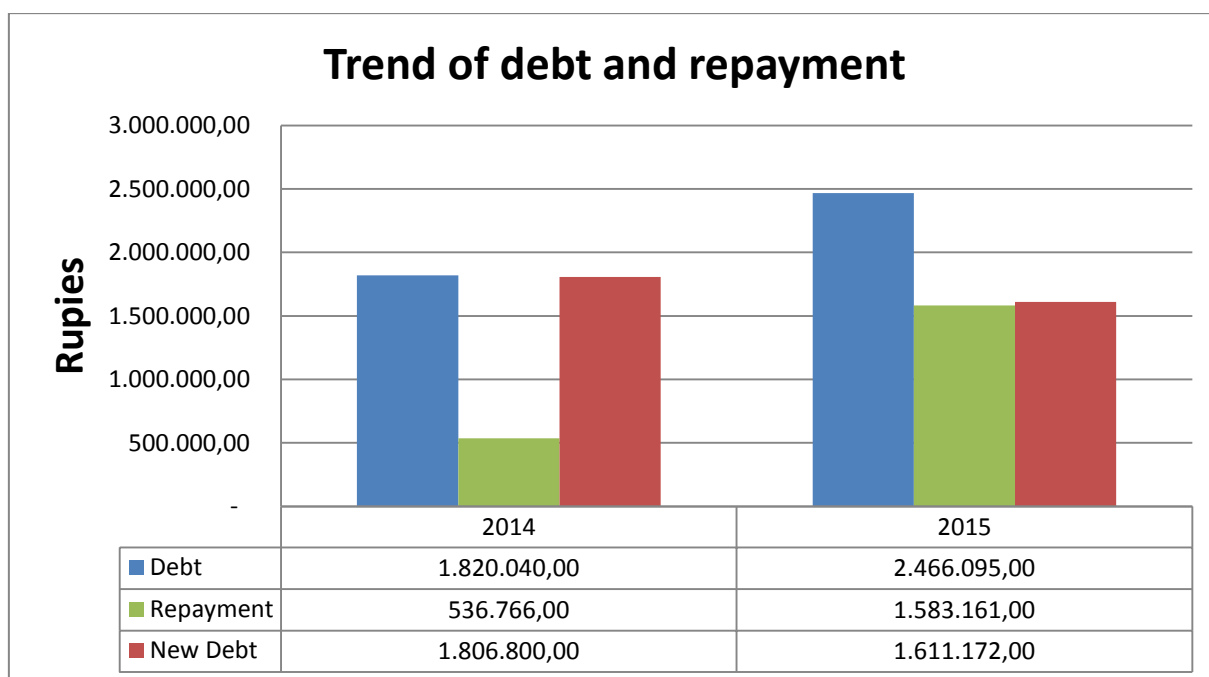
In September 2014 two more members joined the cooperative bringing the starting number of production season to 16 workers. At the beginning of the season (March 2015) the initial debt of the cooperative's members was of 1.806.800 of capital Rs with 131.972 Rs of total interests with an average of a rate of 7,44% charged over capital. In this second year one woman which has been financed left the cooperative and started to repay her debt by cash with an interest rate of 23%. As a consequence if this outlier data in interests calculation is eliminated the average of interest rates calculated in reason of non-working months is 6,4%. Only slightly greater to the optimal situation of 6% interest rate, charged only during the 6 months of non-productive season.

The total debt of members in 2015 (capital + interests + revolving funds given) was of 2.466.095 Rs, around 600.000 Rs bigger of the previous year.

In 2015 the cooperative produced 14.853,7 Kg of palm cake that were paid to members in average 105 Rs/Kg. The total repayment of debt through product was of 1.583.161 Rs with a whole outstanding debt of 882.934 Rs. In 2015 five people, one-third of members, fully repaid their debt and three of them received a cash payment for the over production, four people did not repay all their debt but kept the balance under 60.000 Rs and seven people (included the woman that exit the cooperative and did not work during the production season) still had a debt between 70.000 Rs and 144.000 Rs. These six “bad payers” were not refinanced in September 2015 but only received a little new loan of 5.000 Rs in January 2016.

At the end of 2015 after having refinanced the 5 fully repaying members the total debt of members towards cooperative was 1.611.172 Rs. In 2015 the debt of members was reduced in respect of the 2014 so the good way on reduction of debt was chased.

Figure 3.8: Trend of debt and repayment at cooperative level



3.3 Focus on repayment at individual level

Member’s repayment histories

All repayment histories of member very differ one to another in reason of both exogenous and endogenous elements. In this section every single case is deeply analysed to explain differences in repayment behaviours through members.

It is possible to categorize members by three types: (12) fix members, (2) exit members and (2) new members.

Fix members:

1. Marya Selvi Arulanandam: is 45 years old, married and graduated at primary school, she has four children all involved in palm cake production family activity. Her family rented 300 palmyra trees. In 2014 she borrowed 50.000 Rs with 9% interest and asked for a revolving fund of 30.610 Rs during the production season. In 2014 she had a total debt of 85.110 that fully repaid and she earned 20.461 Rs in addition for the over production. In 2015 she was refinanced for a double borrow, her total debt after interests (6%) and revolving fund (69.021 Rs) was 175.021 Rs. Through the production she repaid all her debt and was refinanced for 170.000 Rs for 2016.
2. Alphonse Mary: is 50 years old and married, she did not complete primary school but she can write and read, she has ten children all involved in palm cake family activity. Her family rented 100 palmyra trees. In 2014 she borrowed 100.000 Rs with 7% interest rate, she had a revolving fund of 14.010 Rs during the season and she repaid 55.540 Rs of her debt. In 2015 she was refinanced only for 34.530 Rs to have again a borrowed capital of 100.000 Rs. In 2015 her total debt after interests (6%) and revolving fund (66.021 Rs) was 172.021 Rs. In 2015 she fully repaid her debt earning 1.384 Rs for the over production and she was refinanced for 100.000 Rs.
3. Kalamani: is 46 years old, married, she can read and write and she has five children all involved in family palm cake production activity. She rented 150 palmyra trees. In 2014 she borrowed loan in two tranches, the first 70.000 Rs with 9% interest and the second 30.000 Rs with 5% interest. During the season received a revolving fund of 19.710 Rs for a total debt of 127.510 Rs. She repaid her debt for 53.056 Rs and was refinanced in 2015 for 25.546 Rs (to gain 100.000). In 2015 she had the highest production repaying her total debt (179.721 Rs) and earning 27.613 Rs for the over production. She was refinanced for 150.000 Rs for the 2016 working season.
4. Annakilli: is 50 years old, married, she can write and read, she has five children all involved in family palm cake production activity. In 2014 her family did not be able to rent palmyra trees for reasons linked to climatic adverse conditions. So in 2014 she borrowed 75.000 Rs with 12% interest, her total debt was 84.000 but she did not work and consequently she did not repay her debt. In 2015 she was not refinanced but she

- rented 100 palmyra trees and started to work and her total debt after interests (10%) and revolving fund (8.000 Rs) was 100.400 Rs. Through the production she repaid only 18.916 Rs with a outstanding high debt of 81.484 Rs and she was not refinanced in 2016.
5. Richard Malar: is 39 years old and married, she did not complete primary school but she can write and read, she has seven children which all go to school, so she need to pay someone to work with her and the husband in the field. Her family rented 60 palmyra trees. In 2014 she borrowed 100.000 Rs with 9% interest rate, she had a revolving fund of 8.010 Rs during the season, a total debt of 117.010 Rs and she repaid 29.556 Rs of her debt. In 2015 she was refinanced only for 12.546 Rs to have again a borrowed capital of 100.000 Rs. In 2015, her total debt after interests (7%) and revolving fund (24.671 Rs) was 131.671 Rs. In 2015 she repaid 50.729 Rs of her debt that remained of 80.942 Rs, for this high debt she was not refinanced in 2016.
 6. Jeyarani Jessammal: is the oldest of the group and she is 70 years old, she is married, she can write and read, she has eleven grown children two of them are involved in family palm cake production activity. She rented 200 palmyra trees. In 2014 she borrowed 150.000 Rs in two tranches with 9% and 5% interest rates, she had a revolving fund of 22.010 Rs during the season, she had a total debt of 183.510 Rs and she repaid 93.888 Rs of her debt. In 2015 she was refinanced for 60.378 Rs to have again the initial capital. In 2015, her total debt after interests of 7% and revolving fund of 11.521 was 172.021 Rs. In 2015 she repaid only 29.279 Rs of her debt that remained of 142.742 Rs that is very high and she was not refinanced in 2016.
 7. Packiyamani: is 52 years old, married, she can write and read and she has eight children involved in family palm cake production activity. She rented 100 palmyra trees. In 2014 she borrowed 90.000 Rs but she did not work for climatic reasons so the interest was 12% she had a total debt of 100.800 Rs. In 2015 her total debt after interests of 9% and revolving fund of 10.521 was 120.393 Rs. In 2015 she run the lowest repayment, only 24.483 Rs and of her debt remained 95.910 Rs. She was not refinanced in 2016.
 8. Mankayarkarasi: is 46 years old, married, she is graduated at primary school, and she has seven children all involved in family palm cake production activity. She rented 100 palmyra trees. In 2014 she borrowed 140.000 Rs in two tranches with 9% and 5% interest rates, she had a revolving fund of 30.610 Rs during the season, she had a total debt of 181610 Rs and she repaid 75.053 Rs of her debt. In 2015 she was refinanced

for 33.443 Rs to have again the initial capital. In 2015, her total debt after interests of 6% and revolving fund of 28.521, was 176.291 Rs. In 2015 she repaid 115.122 Rs of her high debt outstanding with 61.799 Rs of debt.

9. Mariya Seeniayammal: is 60 years old, widow, she can read and write, she has seven children all involved in family palm cake production activity. She rented 150 palmyra trees. In 2014 she borrowed 100.000 Rs but she did not working because of the climatic conditions and the additional difficulties in finding a worker climb trees. The interest was 12% and her total debt 112.000 Rs. In 2015 she had an interest rate of 6% because she worked all the season and she repaid 126.206 Rs of her total debt of 169.841 Rs diminishing it at the low amount of 43.653 Rs.
10. Savariyae: is 47 years old, widow, she is graduated at primary school and she has one son that contributes in family palm cake production activity. She rented 100 palmyra trees. In 2014 she borrowed 100.000 Rs but she did not working. The interest was 12% and her total debt 112.000 Rs. In 2015 she had an interest rate of 6%, received a revolving fund of 38.021Rs and she had a total debt of 156.741 Rs. She repaid 66.787 of her debt but remained with a debt of 89.954 Rs and was not refinanced in 2016.
11. A. Rosari: is 47 years old, married, she can read and write and she has eight children that all contributes in family palm cake production activity. She rented 150 palmyra trees. In 2014 she borrowed 140.000 Rs in two tranches with 11% and 7% interests. She received 18.860 Rs as revolving fund and her total debt was 173.460 Rs. She worked only one month during the production season and repaid 37.400 Rs. She was refinancing of the amount to get again the 140.000 Rs capital. In 2015 she had an interest rate of 6% and a revolving fund of 54.021 Rs. Her total debt was 202.421 Rs. She fully repaid it and was refinanced for 170.000 Rs for 2016.
12. Anthoniammal: is 58 years old, married, she can read and write and she has ten children that all contributes in family palm cake production activity. She rented 100 palmyra trees. In 2014 she borrowed 150.000 Rs but she did not work. In 2015 she had a starting debt of 186.000 Rs with an interest rate of 7% and a revolving fund of 19.500 Rs. Her total debt was 199.260 Rs. She repaid 55.387 Rs but her outstanding debt was the highest one (143.873 Rs). She was not refinanced in 2016.

Exit members:

1. Kamalam: was 48 years old, she cannot read and write and she had five children and her family rented 150 palmyra trees. In 2014 she borrowed 100,000 Rs with 6% interest and got a revolving fund of 13,210, her total debt was 119,210 Rs. In 2014 despite the adverse climatic condition she had a quite rich production and she repaid 74,914 Rs of her debt. At the end of the working season she was refinanced for 55,704 Rs. In 2015 she had an interest rate of 6% and a revolving fund of 6,621 Rs for a total debt of 112,612 Rs. Unfortunately she worked only three months because of her death in July 2015 during the production season. She repaid almost the half of her debt through harvest and the rest will be paid by the family by cash.
2. Mariya Selvi Arulraj: is 38 years old, married, she can read and write and she has five children all going to school. She rented 150 palmyra trees. For the 2014 productive season she borrowed 100,000 Rs with 9% interest and she received a revolving fund of 25,810 Rs. Her debt was 134,810 Rs and she repaid only 38,788 Rs. She was refinanced for 3,978 Rs for 2015. In 2015 the interest rate applied to the 100,000 Rs debt was 23% because the woman decided to leave the cooperative after being refinanced for the working season. Mariya Selvi had to repay by cash the full debt. In 2015 she gave back 50,000 Rs and her debt will be settled in 2016.

New members:

1. Thankathai: is 50 years old, married, she can read and write and she has six children all involved in family palm cake production activity. Her family rented 150 palmyra trees. She joined the cooperative in 2015 with a loan of 100,000 with an interest of 3% and a revolving fund of 28,021. She started with a total debt of 131,021 Rs that she fully repaid earning 9,241 Rs as payment for overproduction. She was refinanced again for 100,000 Rs for 2016.
2. Oorsila Boy: is 60 years old, widow, she can read and write and she has three grown up children involved in the palm cake production activity. She rented 100 palmyra trees. She received a loan of 100,000 Rs with 5% interest and a revolving fund of 38,021 Rs. She had a total debt of 143,021 Rs. She repaid 84,196 Rs and her outstanding debt was of 58,825 Rs and she was refinanced with only the second tranche loan in January 2016.

Focus on defaulted cases

Starting from the fact that repayment totally depends on individual productivity during the working season the determinants of defaulted cases might be related to it.

The outstanding debt determinants are:

- number of palmyra trees,
- tree's productivity calculated as Δ monthly production/number of palmyra trees,
- price paid for production.

An hypothesis might be that who rented more trees should have higher repayment rates.

In order to explain all the possible scenarios based on different trend of these three variables the sensibility analysis, based on the average data in normal climatic condition, show some evidences.

According the relation between quantity and price the following table shows that with the average quantity produced by successful members (1.500 Kg) and the average price paid (100 Rs/Kg) members might repay their debt earning 10.600 Rs more. The starting debt is the average loan of 100.000 Rs with 7% interest rate plus 32.400 Rs of revolving fund, totally 149.400 Rs. The model also shows that going 10% under the average in both variables the production is not enough to repay the debt that is very likely.

Figure 3.9: Sensitivity analysis of outstanding debt at individual level (quantity/price)

Outstanding debt, end of the period		Quantity (kg/season)				
		1.200	1.350	1.500	1.650	1.940
Price (Rs/kg)	80	43.400	31.400	19.400	7.400	- 15.800
	90	31.400	17.900	4.400	- 9.100	- 35.200
	100	19.400	4.400	- 10.600	- 25.600	- 54.600
	110	7.400	- 9.100	- 25.600	- 42.100	- 74.000
	120	- 4.600	- 22.600	- 40.600	- 58.600	- 93.400

The best case scenario totalling 1.940 Kg/season represents +1.00 standard deviation (i.e. 595,29) above the mean (1.344,71). According to real data, 2/14 women are in this scenario in 2015 (14,28%). On the contrary, 3/14 women (21,43%) fall below the value of -1.00 standard deviation under the average.

The evidence earlier simulated suggests that renting enough trees is the most important determinant in repayment. This happens because the production increases at the increasing of trees rented.

The following table simulates the outstanding debt scenarios according number of tree and their productivity. The table shows that decreasing of 10% both variables the outstanding debt is still negative (they are generating a profit). This means that the sensibility of these variables is smaller than the previous. An interesting results is that with the average productivity but increasing the number of trees to 200 members might be able to earn enough to refinance themselves for the next year without the cooperative loans.

Figure 3.10: Sensitivity analysis of outstanding debt at individual level (n. trees/productivity)

<i>Outstanding debt, end of the period</i>		Tree productivity (kg/m)				
		2,0	2,3	2,5	2,8	3,0
Nr. Of palmyra tree	100	33.685	20.471	7.256	- 5.958	- 19.173
	110	23.114	8.578	- 5.958	- 20.494	- 35.030
	125	7.256	- 9.262	- 25.780	- 42.298	- 58.816
	150	- 19.173	- 38.994	- 58.816	- 78.637	- 98.459
	200	- 72.030	- 98.459	- 124.888	- 151.316	- 177.745

Having inspected the theory of operation of repayment and its determinants it is possible to examine repayment rate as outstanding debt at individual level.

As previously said, during the first year, the high rate of default can be explained by this exogenous factor. According to this theory it can be noticed that the only one woman who entirely repaid her debt was the one who borrowed the smallest loan, so she need lees harvest to repay the debt. This evidence shows that the small production was caused by climatic conditions and in most cases it was not linked to bad or irresponsible behaviours of members. In addition for this influent external factor 5 of 14 members of the cooperative were not able to rent palmyra fields and consequently to work.

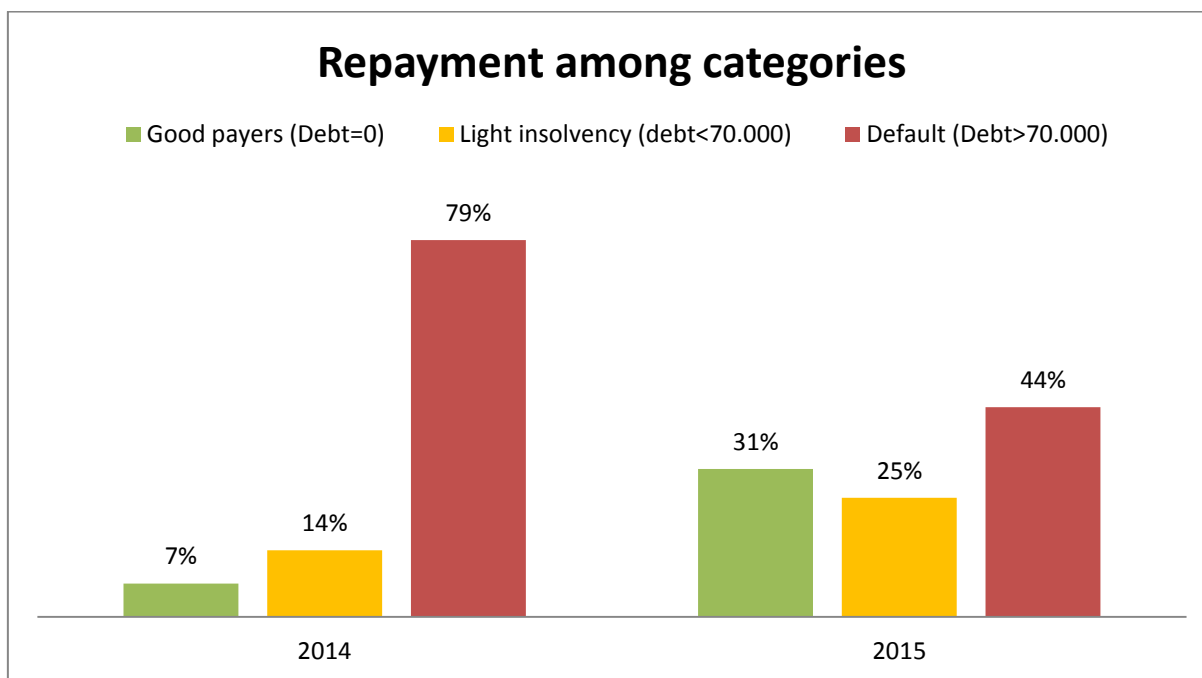
Monthly production of members 2014 (Kg)												
	Apr	May	Jun	Jul	Aug	Sep	Tot	Rs	Debt	Δ Debt	palm	Δ debt/trees
Marya Selvi Arulanandam	49,8	12,3	22,9	376,7	450,6	163,6	1075,9	105.571,00	85.110,00	-20.461,00	300	283,7
Kamalam	31,3	21	139,9	193,9	294,9	83,7	764,7	74.914,00	119.210,00	44.296,00	150	794,7
Alphonse Mary	66,9	29,1	17,9	120	206	132,3	572,2	55.540,00	121.010,00	65.470,00	100	1210,1
Kalamani	11,6	10,3	15,4	109,7	185	202,4	534,4	53.056,00	127.510,00	74.454,00	150	850,1
Annakilli	0	0	0	0	0	0	0	0	84.000,00	84.000,00	100	840
Richard Malar	33,1	39,2	137,4	104,1	0	0	313,8	29.556,00	117.010,00	87.454,00	60	1950,2
Jeyarani Jessammal	71	15	149	319	268	139	961	93.888,00	183.510,00	89.622,00	200	917,5
Maria Selvi Arulraj	71,9	33,9	5	159,4	120,7	15,6	406,5	38.788,00	134.810,00	96.022,00	150	898,7
Packiyamani	0	0	0	0	0	0	0	0	100.800,00	100.800,00	100	1008
Mankayarkarasi	147,4	100,4	24,2	232,3	175,7	114,1	794,1	75.053,00	181.610,00	106.557,00	100	1816,1
Mariya Seeniyammal	0	0	0	0	0	0	0	0	0	-	150	0
Savariyaae	0	0	0	0	0	0	0	0	112.000,00	112.000,00	100	1120
A. Rosari	0	0	13,6	177	129,8	53,6	374	37.400,00	173.460,00	136.060,00	150	1156,4
Anthoniummal	0	0	0	0	0	0	0	0	186.000,00	186.000,00	100	1860
Total	483	261,2	525,3	1792,1	1830,7	904,3	5796,6	563.766,00	1.726.040,00	1.162.274,00	1.910	1050,4

The situation is different and more interesting going deeper into 2015 repayment rate, where real defaulted cases emerge, being not influenced by exogenous factors. In 2015 all the external conditions (climate, market prices, and competition) were normal.

Into this view is possible to divide members among three categories: five cases of good payers, four cases of light insolvency and seven cases of default.

According with the theory of high importance of number of trees rented the evidence shows that four good payers over five rented more than 150 palmyra trees (more than average).

Figure 3.11: Repayment of Sontham members among categories in years 2014-2015



About the four cases of light insolvency:

- One of them is the case of Kamalam, the woman who died in July 2015 after contracting malaria, according of her repayment history probably would have been a good payer producing enough to completely repay her debt.
- Two of them are quite similar per working time (both 6 months) and Kg produced (around 1.200 each one), amount of debt (around 170.000 Rs) the women are Mariya Seeniyammal and Mankayarkarasi, both helped by seven people of the family in production. The only differences are the educational level and the fact that the first one Mariya Seeniyammal had a lower outstanding debt of about 20.000 Rs because rented 50 trees more.
- The last one refers to one of the new members, Oorsila Boy, that have a considering lower production (760 Kg) but it can be explained by the fact that she is widow and her three children all go to school so she need to pay a worker who climb the trees for her. She has only one worker and she is alone during the drying process of palm jackery. Moreover she rented 100 trees that is the just sustainable number possible to have a sufficient production to repay the debt.

About the seven cases of default:

- One of them cannot be considered because it is the case of Mariya Selvi Arulraj, the member who left the cooperative in 2015 and did not work during the production season. She started to repay her debt by cash.
- One of them is the case of Richard Malar, the youngest woman of the group, one of the few that have seven children all going to school. She and her husband are the only workers in the field and they rented the smallest number of trees (60 palmyra). Trees were not enough to have an enough production for repaying debt.
- One is the case of the oldest woman member of the cooperative, Jeyarani Jessammal, who is 70 years old. She has a very low repayment rate that is connected to her difficulty in working. She is also one of the members with higher debt and she produce few kg despite she rented 200 palmyra trees. This woman borrowed a loan too high for her repayment possibility and her debt was very high during both years. In this case, and in the following four, the default is related to the over-indebtedness problem.
- The other four cases can be treated together because all the four women were into the group of five people that did not work in 2014. Annakilli, Savariyae. Packiyamani and Anthoniammal are between 47 and 58 years old, all married and they have more than five children which do not go to school and are involved in the family activity except for Savariyae that has only one son and that is graduate at primary school. All the four women rented 100 trees. They have both a high starting debt because they did not repay anything in 2014 and they had a very low production in 2015. How is it possible? Also in these cases is possible to speak about over-indebtedness because people have different debts and used part of production to repay other debts. In particular Annakilli and Packiyamani brought product as repayment to the cooperative only during the month of august that is the last month of production. It is probable that these two woman used harvest to repay other debts and gave to cooperative only the exceeded part at the end. This behaviour clearly damages the cooperative because people subtracted harvest and income to the cooperative to repay before informal moneylenders.

Monthly production of members 2015 (Kg)											
	April	May	June	July	August	Tot	Rs	Debt	Δ Debt	palm	Δ debt/trees
Kalamani	234,4	248,2	321,5	576,1	563,2	1943,4	207.334,00	179.721,00	-27.613,00	150	1198,1
Thankathai	606,4	702,8	0	0	0	1309,2	140.262,00	131.021,00	-9.241,00	150	873,4
Alphonse Mary	239,1	59,6	315,4	442,6	440,6	1497,3	173.405,00	172.021,00	-1.384,00	100	1720,2
A. Rosari	330,9	329,2	411,9	651,9	316,3	2040,2	202.421,00	202.421,00	-	150	1349,4
Marya Selvi Arulanandam	237,3	218,6	210,7	518,5	255,4	1440,5	175.021,00	175.021,00	-	300	583,4
Mariya Seeniyammal	204	103,4	181,4	452	294	1234,8	126.206,00	169.841,00	43.635,00	150	1132,3
Kamalam	132,6	105,7	213,1	155,5	0	606,9	63.613,00	112.621,00	49.008,00	150	750,8
Mankayarkarsi	304,5	246,8	186,6	221,2	173,6	1132,7	115.122,00	176.921,00	61.799,00	100	1769,2
Oorsila Boy	92,6	82,1	51,1	370,4	163,8	760	84.196,00	143.021,00	58.825,00	100	1430,2
Richard Malar	35,2	35,2	121,9	176,8	80,6	449,7	50.729,00	131.671,00	80.942,00	60	2194,5
Annakilli	0	0	0	0	100,1	100,1	18.916,00	100.400,00	81.484,00	100	1004
Savariyaae	195	73,8	83,9	154,2	150,5	657,4	66.787,00	156.741,00	89.954,00	100	1567,4
Packiyamani	0	0	0	170,6	73,4	244	24.483,00	120.393,00	95.910,00	100	1203,9
Jeyarani Jessammal	0	43,2	3,6	0	211,9	258,7	29.279,00	172.021,00	142.742,00	200	860,1
Anthoniammal	0	44,1	63,6	239,7	192,4	539,8	55.387,00	199.260,00	143.873,00	100	1259,7
total	2612,00	2292,7	2101,1	4129,5	3015,8	14214,7	1.533.161,00	2.343.095,00	809.934,00	2010	1259,7

Determinants and reasons

Summing up the determinants of defaulted cases in 2015 it is possible to highlight different situations: some determinants, especially in light insolvency cases, are related with personal difficulties, as the fact to be widow or to the dramatic case of death. In the other two cases the main reason in difficulties is related to the harvest and low repayment of the year 2014. Mankayarkarsi in 2014 worked only 3 months and she had one of the higher total debt of the cooperative, despite she produced almost 800 Kg (actually a high production related to the average of that year that was 413 Kg) it did not be enough to face her huge debt.

Regarding the case of Mariya Seeniyammal which did not worked during all 2014 and started to produce in 2015, her outstanding debt of around 43.000 Rs. She is the one with the

smaller default amount. This situation of insolvency is strongly driven by the high starting debt caused by the inactivity of the previous year.

Speaking instead about the problematic situations of default it is possible to identify three main determinants:

1. Low number of trees rented: all the defaulted cases, except for the oldest woman Jeyarani Jessammal, have a lower number of palmyra trees rented (60 or 100) than successful members. This implies a low production that is just sufficient to repay the debt with the average productivity. In addition this women all presents over-indebtedness situation.
2. Over-indebtedness situations: These cases of over-indebtedness of women that borrow loan beyond their real restitution capability can be linked to several studies run by CGAP about this theme. A research previously mentioned of Isabelle Guérin³⁹ analyses precisely the problem of liquidity default in rural Tamil Nadu. Guérin highlights the evidence that repayment defaults can include liquidity defaults and strategic defaults. In our cases some situation can be related to both of these two cases. There can be default situations driven by the fact that women have more loans than the one with the cooperative but in the other hand can happen that women misuse the membership of cooperative to do strategic defaults. This behaviour is explained by the lower pressure perceived by members than the one where they used to borrow money from moneylenders that bear any flexibility in repayment. This behaviour is also called moral hazard that is the risk the borrowers are unwilling to repay.
3. Risk that members leave the programme: the risk of members leave the cooperative is real because the moneylenders and middlemen often press members to work with them. The cooperative has damaged the local informal financial sector because it offers more advantaged conditions for its member and workers would want to join it. Contrary to this trend there is also an attitude to offer the same conditions by the moneylenders to attract back workers.
4. Age and personal conditions: it is largely shared that poor people that participate microcredit programmes can present problems in repayment more than people having access to formal sector. This happens for the lack of guaranties and for the lower skills and resources they normally have. Microcredit programmes, especially the group one,

³⁹ Isabelle Guérin, *Loan Defaults Versus Over-indebtedness in Rural Tamil Nadu*, www.cgap.org/blog/loan-defaults-versus-over-indebtedness-rural-tamil-nadu

are focused in helping people having repayment problems through a high flexibility. In the case of Sontham cooperative the members decide to support the oldest member that is not able to produce enough to repay her debt and in the same way to support widows which have to face bigger problems in everyday living caused by the strong social exclusion their condition involves.

3.4 Impact of Microcredit

Goals reached

After having analysed the whole cooperative condition in work and operation it is possible to resume the goal reached by this programme of entrepreneurial activity in cooperative form of vulnerable women in Sayalkudi:

- Access to formal credit: the 14 women initially reached by cooperative, and the other two added during the second year, exit the informal system of lending money and emancipate themselves by moneylenders. This way women had access for the first time to a formal credit channel, they did never have access to it before. Despite there is the possibility that some women (default cases) continue to borrow money also using the informal credit.
- Interest rates reduction: the cooperative has reduced cost of borrowing money for its members from 35-40% to 6-12% interest rate. This reduction in cost translates into an increasing of workers income of production.
- Sharing of income: after the first year production started to share income through members so women can benefit of the group labour of the cooperative by receiving an “extra income” at the end of the production period.
- Lowering interest rates for entire community: Moneylenders aligned interest rates charged on money to the cooperative one to avoid the risk that other workers join the cooperative. This impact at market level is very meaningful because affected positively the entire community.
- Improvement of product: the system used by the cooperative allows workers to better preserve their product for a long time and to sell it for a higher price directly to customers.

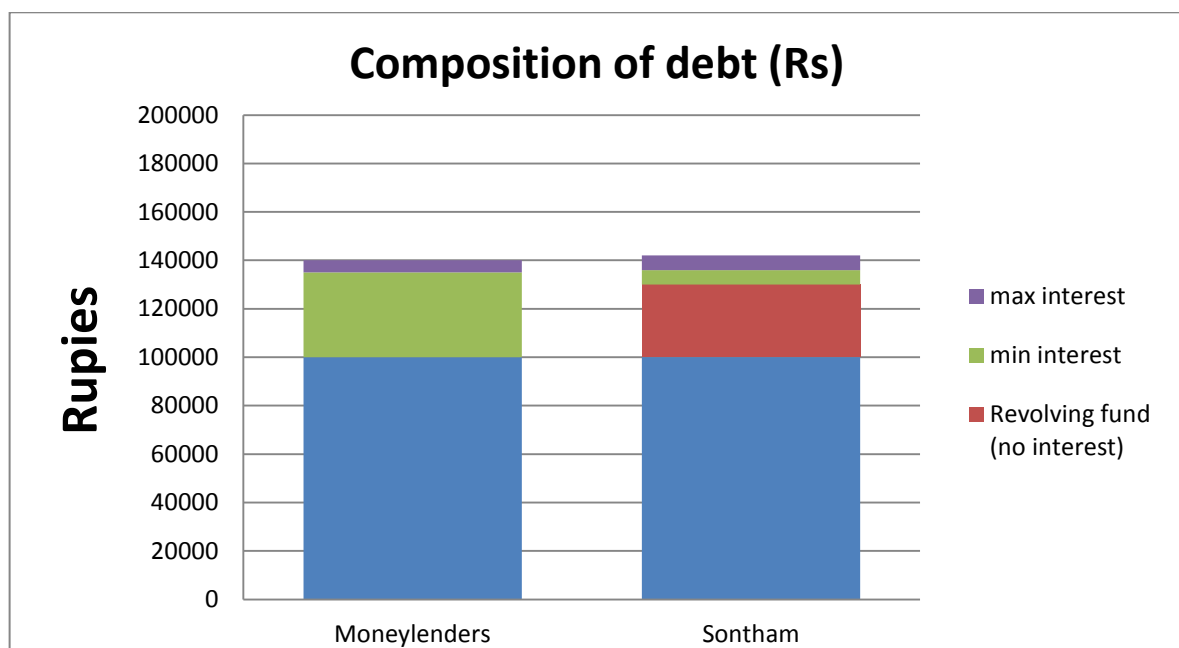
- Social impact: the women members of the cooperative benefit the cost of money reduction, the sharing of income and the entrepreneurial skills acquisition, in addition all the whole village population benefit the actions of the cooperative because of the changing in market price of money and increasing competitiveness. At personal level workers of cooperative have bigger margins over production thanks the cost of price of money reduction and the sharing of income.

Improvement in life condition

The young experience of Sontham cooperative shows some important evidences in improvement of life conditions of members especially during the second year.

First of all joining the cooperative member benefits the cost of money reduction that directly impacts the annual cost of living. In this economic sector the women are the ones that manage all the economic activities of the family, because landowners and moneylenders negotiate with them in name of the whole families.

Figure 3.12: Comparison of composition of debt at individual level (moneylenders and Sontham)



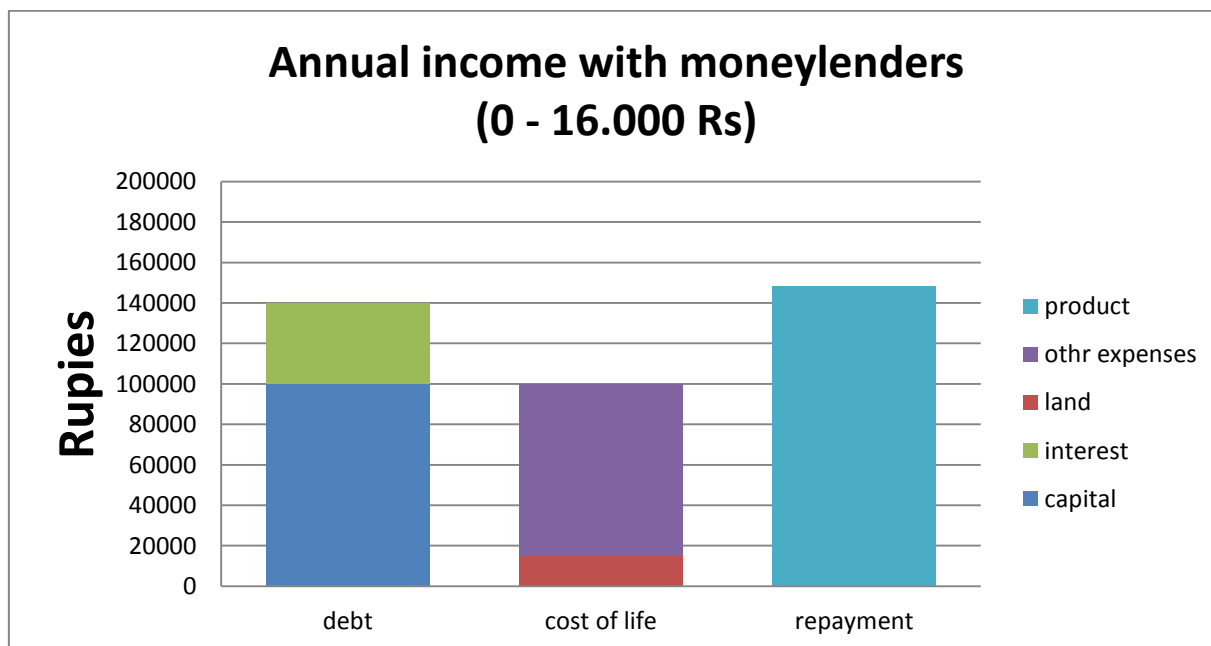
For the average amount of 100.000 Rs borrowed the interest rate charged by moneylenders used to be around 38% that means 38.000 Rs, on the contrary the cooperative charged interest rates from a minimum of 6% to a maximum of 12% that means from 6.000 Rs to 12.000 Rs.

The high cost of money used to lead a situation of subsistence for farmers with a vicious over-indebtedness condition during those year when people were not able to fully repay their debt. With the microcredit programme of the cooperative the situation goes better but it is not true for all the women involved.

As the graphic above shows the amount of debt is almost the same but its composition is quite different. Joining the cooperative member received capital with a low interest rate and a weekly revolving funds without interest to support small expenses during the production season. This way the disposable liquidity for families increases with no additional cost for interests.

In average the cost of living for a family involved in palm cake production in Sayalkudi for one year is around 100.000 Rs included all the expenses (rent of the land, food, children’s education, and other living necessities). Before join the cooperative the members have an income per year between 0 and 16.000 Rs, money with entire families of at least five people live.

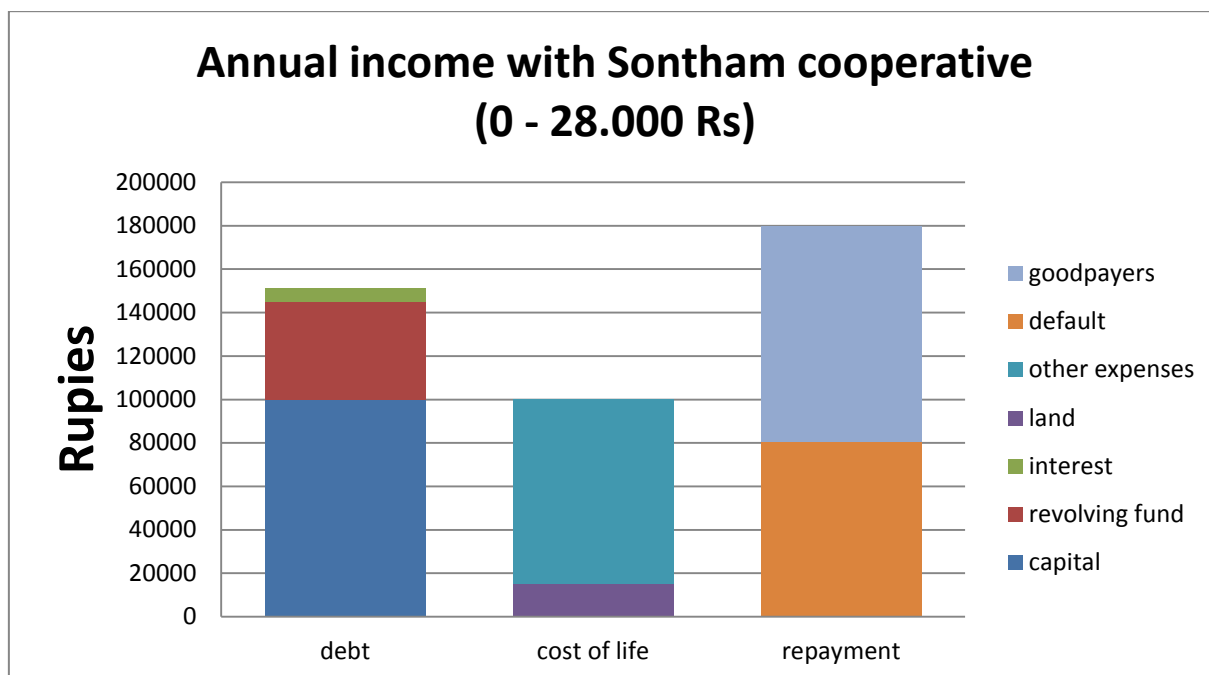
Figure 3.12: Annual income of people in moneylenders informal system



Members of cooperative improve their economic condition respect of the past. Three people had a positive balance receiving an extra payment for having over produced, and two people voided their balance. As the graphic below shows all the members received more money than in the past because they had also the revolving fund. So the liquidity increased for all members and in light insolvency cases the amount of revolving funds is similar to the

outstanding debt. The members obviously have to payback this money but the loan is not charged by any interest rate and the repayment is easier.

Figure 3.13: Annual income of people in Sontham cooperative system



The economic condition of woman and their families which worked successfully has increased and for the others it is substantially unchanged except the benefits already mentioned that the cooperative brought all over the area.

The main negative aspect is the impossibility of the cooperative to go beyond the debt mechanism that is imposed by the big landowners which rent palm fields. In this mechanism is not possible to break the debt circle because women would have to leave the activity to escape it. For real these women condition is so much more complex because the whole rural and urban economic culture of the area is based on vicious circle of debt and over-indebtedness.

Economic independency

About economic independency of individuals, the cooperative has not already reached this goal. It is possible to say, as just said, that members now are independent from moneylenders and informal credit system but they still depend on debt. In addition the whole cooperative did not recoup all its investment in microcredit and this is a fundamental part for its sustainability.

During the two first year of activity the cooperative needed to borrow money from trusts for members financing. This situation can be affordable in order to sustain the activities starting but now cooperative need to zero the balance of debt to finance members in the long run.

At personal level the economic benefits in joying the cooperative are several. Members benefit the interests reduction that allow to receive the same amount of money than in the past but with a low effort in repayment. Moreover in this system they have the possibility to borrow more money at the same time. The pressure in repayment is reduced because members know they have more time to repay the cooperative while with moneylenders they often used to turn to other loan when the production was not sufficient to repay the entire amount borrowed.

Being a member of the cooperative undoubtedly offers women a higher grade of security against over-indebtedness even if it was demonstrate that some members are in that situation once again.

The economic independency is the most difficult goal to reach into the economic context where these women operate. As previously said indebtedness is a strong structural component of the entire economic system of the area. The almost “feudal” modality of production in which workers have to rent the land to work in does not allow to people to emancipate themselves from debt dynamic.

According to the sensitive analysis scenario is possible for members to reach the situation of self-financing when a member rent at least 200 palmyra trees and the productivity is equal or more than the average. This productivity rate might allow members to repay debt and earn more than 100.000 Rs that is the standard loan provide by Sontham. This way member would have enough money to exit the debt dynamic.

3.5 Evaluation on sustainability

Economic sustainability

The Sontham cooperative activity is may be considered economically sustainable in long run because it has the potential to realize every year the sufficient income to can finance all its member and to share income. Moreover the cooperative is committed in a traditional activity which have a stable market in the area. The positive aspect in work in palm cake sector is the certainty of the demand of the product that never decreases because palm cake is a very

popular secondary good. The price trend demonstrates that palm cake cannot be considered as a primary good because during the year in which the harvest was low for climate reasons, and consequently the supply, the price did not increase but on the contrary it fell down. This market mechanism could be explained by the lower income of customers and merchants during the year, caused by the climatic condition that damaged the agriculture sector. General low income of people could cause a lower buying power and as a consequence a lower request of secondary goods as palm cake.

It is clear that the type of product is a strength of the cooperative and the competitive advantage in its pureness allowed by the preservation technology makes the cooperative leader in the area.

The microcredit system developed by Sontham is focused in low annual interest rates in order to support members in repayment. This fact is important because, as previously seen, one of the most critical points of microfinance are the too high interest rates compared to the classic bank ones. The low interest rates allow cooperative to offer a good financial service to its member giving besides revolving funds without interest rates.

Furthermore Sontham cooperative benefits the photovoltaic system installation in terms of reduction of costs and stability of energy supply too. The cooperative is the only entity in the Sayalkudi area using solar energy and this makes it a pioneer of pollution reduction in a geographic area where problems linked by environmental sustainability and regulation of pollution are ignored both by government and people.

As mentioned before the cooperative needs to improve repayment rate from its members in order to be completely self-sufficient. For this reason at the end of 2015 production, Sontham (under the control of SMSSS) decided to not refinance defaulted members to push them to be more responsible with the group.

The choice to change the marketing strategy from B2B to B2C, going directly to final customers, has been demonstrated as a good marketing decision. Sontham palm cake is considered as the purest and best conserved palm cake in the local market. Customers like the product and the name of the cooperative is starting to become well known. For all these reasons Sontham can sell its product at a high price. In 2015 the cooperative sold barely the half of production, because selling directly to final customers requires more time and a bigger effort. Instead during 2016, especially in the first months of the year where the price is at its highest, they continue to sell the unsold palm cake from the 2015 batch.

Summing up the economic sustainability of microcredit system and of the whole cooperative activity are determined by:

- core activity, palm cake production, is a traditional activity and this allows Sontham to be linked to the territory, tradition and population of the area where it operates,
- low interest rates over loans and sharing of income allow members to improve their condition,
- Sontham has rapidly acquired a leader position in the market that allows to fix prices and rules,
- Sontham is a self-sufficient entity that does not depend on foreign contribution and is run exclusively by local people even if the starting contribution came from a cooperation development project,
- the cooperative is the first case of using solar energy to produce electricity in the Sayalkudi area,
- the cooperative is the first entity to well define a marketing strategy trying to influence the market and reach new costumers, it was also the first to operate at market level in palm cake sector,
- Sontham has an high possibility to become autonomous in financing its member in a few years, without the need of external loans, if it will be able to support members occurring in economic difficulties and to do the right peer pressure to discourage voluntary defaults.

Social sustainability

To reach social sustainability is the most important aspect and outcome for microcredit programmes. As seen on the first chapter the social impact and sustainability is often the most difficult output to measure. Several studies, as the one run by Asian Development Bank⁴⁰, assert that social impact can be measured as welfare effect of programmes. And as a consequence a programme is sustainable at social level if it affects sufficiently positively its beneficiaries. A microcredit programme as the one run by Sontham does not aim just to financial inclusion but to improve life conditions of people involved.

About the social impact and sustainability of Sontham cooperative's microcredit programme and production activities, is possible to highlight some goals reached in term of welfare increased and some other not yet realized but which are very likely to happen.

⁴⁰ Asian Development Bank, *Impact Evaluation: Methodological and Operational Issues*, www.adb.org/sites/default/files/impact-analysis-handbook.pdf, 2006, p.3

Social sustainability goes beyond economic indicators because a microcredit programme should create some improvements in life condition of beneficiaries, not only their enrichment. For example the previously presented study run by Guérin⁴¹ about microcredit programmes in rural Tamil Nadu states a lack of social impact of some microcredit programmes. These programmes effectively brought income increasing for their beneficiaries but in way not sufficient to face the rapid changes in needs and lifestyles drove by society urbanization. All aspects of social composition and behaviours are important in order to measure the social impact.

Regarding the case study, starting from outcomes of the programme, it is possible to understand if it is really sustainable at a social level.

Sontham cooperative's work and its microcredit programme addressed several positive outcomes to its members and the whole Sayalkudi community. These positive results are:

- inclusion in the formal economic system of lower castes women (Nadar and Dalit) who use to be mainly marginal into the society and isolated from income generating activity,
- income increase for the great part of families involved in cooperative activity,
- growth of technical and managerial skills of cooperative members.

So at social level the cooperative activity is sustainable because it addresses positive effects not only to its members but to the entire community. Sontham operates in a very difficult and poor sector that is still very traditional, the cooperative started an innovation project in term of implementing technologies and company structure. These elements bring a highly added value for the village community for sharing various skills and improving the working conditions. All of this leads to a development for the area.

A limit to growth: people behaviour

The repayment problem is central in the analysis as highlighted more times before. At the current state the main cooperative activities are borrowing microcredit to members and selling the product stored. It is clear that if the first activity lacks repayment the second activity

⁴¹ Isabelle Guérin, *Loan Defaults Versus Over-indebtedness in Rural Tamil Nadu*, www.cgap.org/blog/loan-defaults-versus-over-indebtedness-rural-tamil-nadu

cannot work properly, earning enough money to cover expenses and refinancing members (without mentioning the possibility in sharing of income).

During the first two years of activity Sontham cooperative supported its members in repayment difficulties because the main goal is to emancipate vulnerable women from moneylenders. However Sontham discourages over-indebtedness monitoring personal debt of members and reducing financing in case of default. In addition to these actions Sontham should control member production during the seasonal working time to assure that women give all the harvest to the cooperative.

Sontham has to strengthen the trust relationship with its member because is very difficult to change the common thought that having debt is a normal condition and that not repaying debt may happen. The cooperative has to face the cultural idea that if someone is not repaying debts she surely will do it later. This mindset may work with moneylenders but absolutely cannot fit in a cooperative organization where every member is called to equally contribute and work.

The repayment case is an emblematic example of the need in education for the entrepreneurial activity that is unnatural for men in general and even less natural in certain cultural and social context.

In order to increase trust relationship within members, Sontham could continue to support defaulted members establishing repayment plans according to them in order to fix some rules of good behaviours.

What is clear is that low-skilled people, as the SHG members, cannot be left alone in managing the cooperative activity until they have all the skills to face this kind of responsibility.

Empowerment of positive behaviours of cooperative members is necessary for Sontham in order to make the cooperative more sustainable both at economic and social level. It may be said that from this challenge depends the success of the interventions that the cooperative could implement.

3.6 Suggestions and possible interventions

Increasing economic efficiency

This last paragraphs are focused on thinking and designing possible strategies and interventions to improve the cooperative's outcomes in the light of the study just realized.

Regarding the actions already realized, the cooperative has surely proven its effort in being consistent with its core values operating for the change of the informal economic system of the Sayalkudi area.

In future Sontham should operate some actions in order to increase its economic efficiency:

- Marketing strategy: first of all the decision of structuring a fitting B2C marketing strategy helped members to understand the importance of avoiding merchant that are moneylenders too. This marketing decision allows the cooperative to sell its product at an high price all year long.
- Costumer network: Sontham should improve its costumers network to reach the goal of selling all the production during the non-working season (September to February). This action requires a strong effort in marketing and advertising; members should exploit all their informal networks to reach the biggest possible number of costumers.
- Services to provide: According to the decision to reduce the debt of members, Sontham could try to reduce revolving funds encouraging members in being more organized in money annual management and budgeting. This action could be supported by trainings in home economics to improve the members' managerial skills. Sontham also needs to monitor better its member to make them understand repayment problems, this way the problem would not emerge only at the end of the year but during the season. This monitoring role should be conducted by the local partner SMSSS that already is the guarantying entity for the cooperative. As several microcredit experiences demonstrate, the more the programme is flexible and in contact with real borrower life and problems the more it will be able to support the person in a positive path of repayment.
- Maintenance of photovoltaic system: the photovoltaic system installation has been decisive in reducing costs of production but energetic efficiency could be increased by

a more careful maintenance of the system, for example by a weekly cleaning of the solar panels.

- Interest free debt: Sontham cooperative could decide to support members with more problematic situation by interest rates reduction more than intermit microcredit. The cooperative would have anyway the income generating from the selling of the product.

All these suggestions can be considered obvious but is important to bear in mind the cultural context in which the cooperative operates.

Increasing social impact

Increasing the social impact of a programme basically means increasing the life conditions of its beneficiaries. Starting from this easy assumption it is possible to go through the Sontham case to understand the possible actions to reach this goal.

Sontham cooperative activities is assumed having a positive impact in members life condition but it is possible to analyse some weaknesses to suggest possible solutions.

First of all the cooperative activity allows its members to be free from moneylenders but not from the chronic debt condition. In the future, after having saved sufficient income, Sontham could buy land in order to allow its member to exit the debt condition and to be paid day by day through the selling of the harvest to the cooperative. Surely this system should be based on mutual trust between the cooperative and its members and on a strong control of the cooperative over its members to avoid the possibility they would sell product to anyone else as today occurs. This changing in perspective would bring an economic efficiency increasing too.

The market price of agricultural land in Tamil Nadu is 280 Rs/m²⁴² and usually the trees are disposed 1 every 4 m² in palmyra field. In order to lease 100 palmyra trees to every member, each member would have to buy at least 400 m² of land at the price of 112.000 Rs. Members spend every year in average 10.000 Rs in renting field. Keeping the annual costs the same, people could buy 100 trees in 11,2 years. Interests charged on loans are 7% in

- ⁴² Data from Suresh Fr. J. , “Agricultural land market price analysis” SMSSS, Paramakudi, 2015.

average. Sontham cooperative should invest at least 1.568.000 Rs to buy palmyra fields for 14 members.

COST-BENEFIT OF BUYING LAND			
Palmyra tree	1	100	200
Tot m ²	4	400	800
p/m ²	280	280	280
Tot price land	1.120	112.000	224.000
Cost for 14		1.568.000	3.136.000
Cost for year rent		10.000	20.000
Years lease back		11,2	11,2
Revenues		132.144	264.288

AVERAGE LOAN COMPOSITION	
Land rent	10.000
Life expenses	90.000
Revolving fund	32.400
Interest	7.000
Total	149.400

It is demonstrated as 100 palmyra is the number of trees just sustainable to repay the debt. For this reason it would be more profitable for members and cooperative to give 200 trees every members. This action would sustain a faster exit of members from debt vicious circle. In addition the revenue of 200 trees is so high that members could decide to increase costs for land in order to become owners in a shorter time than 11 years.

Figure 3.13: Palm field in Savalkudi



However Sontham cooperative should spend 3.136.000 Rs to buy 200 trees and then lease them to each member but at the moment it has not enough capital to implement this action.

For this reason the most practicable way is to lease 100 trees to every member in order to be consistent with the social idea of equity towards members.

This perspective is practicable by the cooperative if it has enough money for the starting investment to buy all the land. In addition Sontham would have to run a market analysis to find sufficient land on sale in Sayalkudi area.

Secondly if Sontham cooperative would realized the interest free debt previously proposed, members would benefit a sensitive reduction of costs of life. They would have the possibility to spend more money in education for children, sanitary disposals and medicines. This way debt reduction would have an immediate positive effect in the everyday life of members.

Often in poverty situations improving life conditions coincides with increasing economic efficiency and costs reduction can be achieved by rationalization of management and procedures, this is the case of the domestic economic trainings proposed above. They could help planning in spending money and drive a reduction of debt but they also would bring greater skills in life organization and education.

Designing a better scenario

According to data form the last two years, it is hard to presume a future perspective for Sontham activity. Difficulty is given by the first year data that can be considered as a big outlier and as a consequence they are not believable in a forecast in normal conditions.

To analyse quantity produced and make a realistic estimate for 2016 it would need the control over all the variables linked with women behaviours in giving all the harvest to the cooperative, thing that clearly did not happen during the two first years.

Assuming that the cooperative succeed the policy of debt reduction started in September 2015 for the year 2016 that might have the effect to reduce the starting debt keeping at least constant quantity produced. Sontham decided to keep the debt of member as lower as possible to discourage negative behaviour and contrast over-indebtedness situation.

For the next year if the debt reduction policy will work properly and if Sontham will start to monitor members in production and repayment it is demonstrated that the outstanding can be eliminated.

According with sensitive analysis run and previously shown members could easily repay their debt producing just the average quantity paid according to the average price. This analysis highlights the real possibility of every year full repayment. The microcredit

mechanism could work better if quantity produced is sufficient, the starting debt is not too high and if members work at least on 100 trees.

All the interventions suggested could be realized in a few years to increase efficiency, impact and sustainability.

In particular the hypothesis of buying the land to lease to a member who after 11 years would become owner would increase impact at social level because the dependency in debt system would be reduced.

More over if all conditions become real in few years the cooperative will be able to enlarge the number of members as expected by the initial project of international cooperation. Sontham will be able to do that only if all members sensibly reduce their outstanding debt rate giving the possibility to the cooperative to have more liquidity.

The possibility of new members joining the cooperative is consistent with the scope of Sontham that is not to create profit but to emancipate farmers from the local informal economic system. This scenario would increase the impact of cooperative at community level affecting a bigger number of people living in the area.

The cooperative activity has a big growth potential but it has to be stimulated by the right inputs. If Sontham will fail the corrective policies started in 2015 the whole programme risks to be not sustainable at economic level. So the effort required to increase the current situation is high. On the other hand members showed an increased loyalty to cooperative that may suggest a positive future.

CONCLUSION

Nowadays microcredit is used in different ways and conditions around the world. However some experiences show positive effects reached by microcredit programmes and others deep failures that worsen beneficiaries conditions⁴³.

The drivers of success in microcredit programmes are many, starting from the lending model implemented to applied interest rates.

As regards the case study of Sontham cooperative microcredit programme it is possible to sum up some results:

- at first the lending model appears to be appropriate to beneficiaries that were positively affected by this program,
- secondly the cooperative is earning profits despite repayment problems occurred during the beginning two years,
- moreover, lower interest rates charged positively affected members but also benefited the entire community since all market rates got lower,
- finally repayment rate is increasing suggesting that some free riding behaviours are vanishing.

Sontham activity positively affected member's life conditions and the whole community getting out of subsistence status by starting new income generating activities.

This study shows that the cooperative activity mostly relies on members repayment so that it needs to face rapidly defaulted situations caused by over indebtedness of some members. The main determinant of default is over indebtedness of members that use the harvest to repay other debts first (strategic default)⁴⁴.

The sensitive analysis run explains the relation between outstanding debt and repayment determinants showing that the most important variable is the number of trees rented, where 100 is the minimum number for sustainability.

In order to increase social impact and economic efficiency two possible and sustainable scenarios has been designed for Sontham:

⁴³ Banerjee A., Duflo E., Glennerster R., Kinnan C., *The miracle of microfinance? Evidence from a randomized evaluation*, www.economics.mit.edu/files/4162, 2014

⁴⁴ Schicks J., Rosenberg R., *Survey of the Evidence on Over-Indebtedness*, Working paper No.19, CGAP, 2011

1. Sontham might buy palmyra field and then lease it with minimum 100 trees inside to each member who would become owner after a 11 years contract. The social impact is represented by the break of the vicious circle of debt for members and owner of asset generating income. This action also would increase economic efficiency because cooperative should not have to finance member every year anymore and it could use capital in order to generate new profits.
2. Sontham might choose to enlarge the number of its members. This action would increase the social impact into the Sayalkudi community and at the same time it would allow Sontham to increase its production and income.

Hence, this case study works properly and affects positively beneficiaries and target community. It represents a successful experience of microcredit in rural areas despite both the monitoring and evaluation show some problems strongly related with cultural variables. Cultural behaviours are in facts one of the main element that has to be taken into consideration in order to design a successful microcredit programme or other financial services. As many researches state (NN. Year) flexibility and suitability of services are the most important determinants of microcredit.

We are aware that a single case study cannot be generalised to the entire country or system since microcredit may include so many different programmes, in terms of models, target population and outputs, which cannot be considered as just one.

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