The Scientific Conference Of Microfinance And Sustainable Development

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<u>**Presenters**</u>

Professor. Amir Kia
Finance and Economics Department
Utah Valley University, USA

Paper: "***Monetary Policy Transparency in a Forward-Looking Market: Evidence from the United States"***

Abstract: *Because unsatisfactory measures of the monetary policy transparency were used, the existing literature found mixed empirical results for the relationship between the monetary policy transparency and risk as well as volatility. This paper extends the literature by using a recently developed monetary transparency index [Kia's (2011) index] which is dynamic and continuous. Furthermore, the existing literature ignores the fact that market participants can be forward looking and, therefore, not policy invariant. This study also verifies this and finds, in fact, the agents in the market are not policy invariant with respect to monetary policy transparency. It was also found that the more transparent the monetary policy is the less risky and volatile the money market will be.*

Professor. Howard Qi
School of Business and Finance
Michigan Technological University, USA
Paper: ”***Insurance and Risk Management for Sustainable Microfinance***”
Abstract: Sustainable Microfinance hinges on appropriate management of credit risk. However, the small and micro businesses (SMBs) tend to offer little information on their default probability, which poses serious challenges to their financial infrastructure - Microfinance. Given the tremendous socioeconomic impact of SMBs, it is essential that they receive appropriate help. The current situation is not sustainable – sometimes lenders charge exorbitant interest rate or withdraw if limited by regulatory ceilings; sometimes lenders tend to have a rosy picture and neglect the intrinsic risk. To solve this problem, we propose an insurance framework which determines the feasible range of insurance premium.

Mr. Finagnon Antoine Dedewanou
Department of Economics
Université Laval, Quebec, Canada
Paper: ***"Does Deposit Insurance Promote Financial Inclusion? Evidence from ECCAS Countries”***
Abstract*:* We investigate whether and how deposit insurance program affects savings decisions in the Economic Community of Central African States (ECCAS). Specifically, using the World Bank’s 2014 and 2011 Global Financial Inclusion (Global Findex) databases, we apply Dong and Lewbel (2015) special regressor approach. We find that the deposit insurance program increases significantly, everything else equal, the probability that people save their money at a financial institution by 11 percentage points in Gabon, by 22.2 percentage points in DR Congo and by 15.1 percentage points in Tchad. These effects are matched with positive effects of age and education level. But in Cameroon, the effect of deposit insurance is not significant. In the way of policies that can be proposed to foster financial inclusion, our analysis suggests that those attempting to promote education and awareness among young people about the importance of savings for their welfare and for the society as a whole may be effective.

Dr. Ghada G. Mohamed
York University &. ECO-ENA, Inc., Canada
Paper: ***"Sustainable Development and Sustainable Growth: Dynamic Analysis”***
Abstract*:* This article describes the theoretical analysis of the concept of the sustainable development and the sustainable growth by utilizing basic mathematical models.

Dr. Harpreet Kaur
Department of Political Science
Sri Guru Gobind Singh College of Commerce
University of Delhi, India
Paper: ***"Strategies for Green Special Economic Zones (GSEZs) in India"***
Abstract*:* A number of countries have adopted a SEZ-led growth. Special Economic Zones (SEZs) are industrial clusters where economies of scale and other gains assist the operational firms in decreasing the costs with the competitive production systems and foreign investments. The number of formal approvals in India has been 564 and the notified SEZs are 388. Climate change and other environmental challenges put pressure on the SEZs to emphasize on the environmental dimension of SEZs, such as to make it 'Pollution Control Zone, Environment Compliance Zone, Eco-industrial Zone (Park), Low-carbon Zone, Green Zone and others'. SEZs can be places where the idea of commercial and non-commercial can combine. Across the length and breadth of the country, SEZs are coming up farmlands resulting in deep controversy. At the heart of the problem is the fact that the establishment of an SEZ generally requires the forced acquisition of land and eviction of its previous users. Losing land to the SEZ project has significantly reduced the farmland in the affected villages and also brought with it severe pressures on employment and livelihoods for the villagers and food security for the country, at large. Related issues are loss of livestock, water resources, trees and forest cover etc. Adani group's SEZ in Mundra tehsil of Gujarat has resulted in destruction of sand dunes. The SEZ saga has harsh realities to convey. The objective of paper is to gauge whether the existing SEZs are implementing green guidelines or the new ones are established conforming the environmental guidelines. India already is in process of developing guidelines and policies for green zones and how far these being adhered in these enclaves is the focus of the paper.

Dr. Janet Dzator
School of Business, Faculty of Business and Law
University of Newcastle, Australia
Paper: ***"MICRO-FINANCE, SUSTAINABILITY AND SMALL SCALE FOOD PROCESSING IN GHANA: CHALLENGES AND OPPORTUNITIES FOR DEVELOPMENT"***
Abstract: It is often assumed that strong and sustainable economic growth will deliver jobs to citizens of a nation. Several developing countries, including Ghana, have performed well during recent decades with growth rates above 4% of GDP. The growth in some countries like Ghana, delivered very little jobs with some analysts labeling it as growth without jobs. Many citizens have sought new

avenues within the various sectors of the economy for jobs. Ghana like many developing countries has a large informal sector with small informal enterprise start-ups emerging from time to time. Financing and other problems plague most of the emerging small enterprises but limited knowledge about the operation and profitability of the enterprises prevent vital interventions which may sustain them. Plantain production and processing is one such emerging informal sector enterprise with great potentials in raising and sustaining the standard of living of large number of people involved in the trade through forward and backward linkages. Plantain processing also has great potential in reducing post-harvest losses and hence promoting food security. Despite this potential, very limited information exists on the plantain processing activities including the industry's viability. Such knowledge is important for soliciting support including access to microcredit from institutional providers. We investigate the benefits and costs of the emerging plantain industry in Ghana using survey data. We found that the market is highly competitive but profitable. Major challenges of the market included relatively high initial set up costs, inadequate capital, high transport cost, poor access roads, and seasonal price fluctuations. We argue that cost reduction strategies especially for transport and finance could go a long way to ease the constraints and improve sustainability of the enterprise.

Mr. Mohammad Zoynul Abedin
Faculty of Management and Economics
Dalian University of Technology
Dalian, China

Paper: ***"Microcredit Empowerment of Rural Women in Bangladesh"***

Co-author: Chi Guotai and Fahmida–E–Moula

Abstract: Yunus (and Grameen Bank) for ground-breaking the thought of microcredit and setting up the Grameen Bank, a Microfinance institution (MFI) in Bangladesh. Microcredit programs in rural Bangladesh principally target women because women's microcredit participation is not only considered to be an indispensable part in poverty lessening but a means of empowering women in ways that enhance their capabilities, skills, expertise, as well as socioeconomic status. Consequently, microcredit is a consistent way for females to receive financial capital for starting or maintaining a business. It is still unclear, however, how and whether microcredit has a positive outcome on women empowerment and it is vital to analyze the link between microcredit and empowerment. Therefore, the objective of the study is to investigate the impact of microcredit in rural Bangladesh on women empowerment. Consequently, this study focus on women's empowerment and microcredit based on a survey carried out in Bangladesh based on the data of female population from three rural

villages who have been used Microfinance services during last five years from 2006-2010.

Dr. Sharareh Rakhshan
Statistics Centre of Iran, Iran

Paper: ***"Study of achieving gender equality and empower all women and girls and its challenges in Iran"***

Abstract*: Sustainable development goals are becoming critical issue for United Nations and all worlds as well. There is no deniable opinion against this issue and benefit of achieving all goals is clear to everyone. Women have a critical role to play in all of the SDGs, with many targets specifically recognizing women's equality and empowerment as both the objective, and as part of the solution. Goal 5 is known as the stand-alone gender goal because it is dedicated to achieving these ends.*

The main problem for this goal is lack of some statists because of limitation for some countries. There is no equal right for female in most of developing countries; historically, women have been burned or buried in some places. After that some cultures and religions created some restrictions for women to achieve to equal rights. This article considers some data in Iran and identifies the main challenges. Statistics show there is no enough attention to women as a same gender.

Other contributors (*Attendees*):

Mrs. Diane Kia (Canada) - *Guest*
Mr. Jean Francois Bonin (Canada)
Mr. Karan Gandhi (India)
Mr. Muazzam Sabir, Paris (France)

Others (Couldn't attend on-time):

Mr. Birol Dalbay (Georgia)
Mr. Dexter Gittens (USA)
Mr. Quan Anh Nguyen (Thailand)
Mr. Salamu Amadu (Canada)

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Insurance and Risk Management for Sustainable Microfinance

Howard Qi
Michigan Technological University

Abstract

Sustainable Microfinance hinges on appropriate management of credit risk. However, the small and micro businesses (SMBs) tend to offer little information on their default probability, which poses serious challenges to their financial infrastructure - Microfinance. Given the tremendous socioeconomic impact of SMBs, it is essential that they receive appropriate help. The current situation is not sustainable – sometimes lenders charge exorbitant interest rate or withdraw if limited by regulatory ceilings; sometimes lenders tend to have a rosy picture and neglect the intrinsic risk. To solve this problem, we propose an insurance framework which determines the feasible range of insurance premium.

Keywords: insurance, Microfinance, SMB

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Insurance and Risk Management for Sustainable Microfinance

1. SMB and Microfinance

For most parts in the world, small and micro businesses (SMBs) are the engine of job generator in the society and most relevant for local economy and well-being. Its importance has been increasingly recognized in lifting population from poverty, promoting general prosperity, and reducing the burden on the governments (for some countries with less of a market economy), etc. As the SMBs develop in the real economy, their associated supporting financial infrastructure becomes more important as well. However, the traditional financial industry has been mainly focused on large businesses. Therefore, should SMBs grow in a healthy and sustainable way, the associated infrastructure support – Microfinance – would be certainly indispensable. One key challenge in providing appropriate and sustainable Microfinance is how to manage the default risk and make the expected return properly match the risk properly. Otherwise, Microfinance, originating from a wonderful and socially-responsible idea, would not be able to carry on much longer. This investigation is an attempt to discuss some basic aspects of the role of insurance in risk management of sustainable Microfinance.

Around the world, a growing number of people of every age, particularly women and minorities, are starting their own SMBs because of the potential of social mobility and flexibility the SMBs provide according to the skills and passions the entrepreneurs have. As such, SMBs are becoming too important to ignore in both the developed and developing world. In the U.S., micro businesses (with less than or equal to five members including the owner) represent a staggering 92% of all legally registered business entities. It is certainly true that micro businesses are changing the dynamics of income, wealth creation and quality of life in the U.S. and the world like no other business factor. They have had a profound impact on U.S. job growth, creating over 26 million jobs in recent year according to a report by Small Business Bank™,[1] the most of any industry. As a result, they have also contributed to the creation of 1.9 million indirect jobs and 13.4 million induced jobs. In fact, if each Micro Business owner in the U.S. hired just one person, we would reach 100 percent employment. A 2014 Huffington Post article (Jan. 23, by Claudia Viek) titled "Micro-Business Is the Backbone of the U.S." reports

> "*From 2004 to 2010, the smallest of the small U.S. businesses created a net of 5.5 million jobs, while the largest businesses lost 1.8 million jobs during the same period. Very small businesses created jobs every year and mostly created more jobs than any other firm size. During 2009 and 2010, micro-businesses were the only firm size that created jobs*."

Microfinance as a relatively new sector in banking and finance has started to gain wider currency globally. In some cases, the governments are playing an active role, while in others, financial institutions and private individuals that are driven purely by financial profits or by some laudable ideas such as social justice and responsibility, environment preservation, or sustaining the local economy, are playing an active role. Indeed, there is also a strong and increasing social support for this new phenomenon hence it is expanding fairly fast in our life. Compared to the traditional lending industry which is considered to be somewhat high-end and opaque to small and micro businesses (SMBs), Microfinance explicitly targets the SMBs in the community which tend to have great difficulties to obtain traditional financing. Historically, SMBs are the major engine of the economy and have been generating by far the largest number of jobs than other sectors. Given the tremendous socioeconomic impact of SMBs, it is essential that they receive the appropriate help.

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[1] See https://www.smallbusinessbank.com/about/micro-vs-small-business/

2. Challenges in Developing Sustainable Microfinance

Despite the wide support it has received from either governments or private individuals, there are unique hurdles in establishing sustainable Microfinance such as the high default risk of SMBs and the uncertainty of such risk (i.e., uncertainty about uncertainty) due to the lack of historical information and tracking record of the SMBs. This creates several challenges to the lending industry. On the one hand, lenders may refuse to provide micro-financing as is the case traditionally. Those who do participate in Microfinance tend to charge exorbitant interest rates making Microfinance a practice of usury hence SMBs are exploited rather than helped. Of course, those who ignore these realities will sooner or later weed themselves out via the invisible hand of economic principles. Next we quote two observations to illustrate the unique problems associated with the default risk in Microfinance in China and Indian. To understand the current situation of SMBs and Microfinance, we refer audience to a study by Mills and McArthy (2014).

Case I. Usurious interest premium in China

Sun (2013) studied lending activities between SMBs and private Microfinance organizations in China, especially the more economically developed coastal areas. He found that to control risk, lenders tend require the borrowers to repay the loan in less than three months. The average annual rate is 10-18%. For such a high interest rate premium, the average default rate of the SMBs Sun (2013) studied is 0.7% over three months, or 2.8% on an annual basis. This is similar to the BB rating in 2002 given by S&P Ratings (2016).[2] However, in a well-diversified U.S. corporate bond portfolio, BB-rated bond historically offer an annual yield of about 4.5%.[3] Clearly, the extreme difference in annual yield between 4.5% and 10-18% cannot all be explained by the similar default rate or country differences. We believe it has a lot to do with some unique features of Microfinance as well.

In a different line of research, Hong (2015) carried out an extensive study on Microfinance within commercial banks in China and found that the mismatch in risk and return is grossly wrong in the Microfinance sector. Hong (2015) attributed this problem to the significant information asymmetry and the poor risk-resistibility of the SMBs. However, what Hong (2015) is concerned about is that the tight interest control sometimes does not allow risk in Microfinance to be rewarded appropriately, hence SMBs cannot obtain enough financing.

The above problems are likely to tighten up Microfinance market for the SMBs and force them to seek help from other channels which may put them in a vulnerable position. This concern is corroborated by a recent study by Hu (2014) who found that a growing number of SMBs are obtaining financing from the underground market

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[2] We note that the default rate here is a varying factor, and in some years, it is closer to B rating.

[3] See, for example, https://ycharts.com/indicators/us_high_yield__bb_effective_yield

at rates significantly higher than the nominal rates from commercial banks - 20% to, sometimes, more than 100%.

To sum up, legitimate lenders in China do not feel they are appropriately compensated by taking the "perceived" high risk of SMBs, but due to government regulations, SMBs will move to the booming underground market where their vulnerability may get further taken advantage of. This can lead to grave social problems that are beyond the business and finance sector.

Case II. Suicides in Andhra Pradesh[4]

Business Insider reported hundreds of suicides in India linked to Microfinance organizations in on February 24, 2012.

> *"Sometimes, the debt collectors watched nearby. More than 200 poor, debt-ridden residents of Andhra Pradesh killed themselves in late 2010, according to media reports compiled by the government of the south Indian state. The state blamed Microfinance companies — which give small loans intended to lift up the very poor — for fueling a frenzy of overindebtedness and then pressuring borrowers so relentlessly that some took their own lives."*

3. Reflection on the Challenges and Sustainable Microfinance

So far we have discussed the link between SMBs and Microfinance, and some risks and challenges that are becoming more and more prevalent and pressing. We hereafter refer to these challenges collectively as the problem of risk management in Microfinance to explicitly distinguish them from regulatory problems or imperfections.

The root of this risk management problem originates from the lack of information and potentially an outrageous mismatch of risk and return that may result from it. This problem may be further exacerbated by the fact that some organizations engaging in Microfinance, especially those that get substantial help from the governments, tend to have a rosy picture and neglect or gravely underestimate the intrinsic risk of the SMBs.

As explained earlier, the consequences of the challenges, originally purely business and finance, can have a strong social ramification, almost completely negative - the SMBs may not get the help, the people that need most socioeconomic help become victims of the underground loan sharks, crimes against the borrowers may follow, or the lending possibilities freeze for the SMB completely.

On the other hand, the mismatch of risk and return may swing to the other extreme. This becomes more obvious if we look at the growing influence of government and private entities that are driven by some well-intended ideas. Specifically, these include unscientific government regulations, such as interest rate ceilings in certain cases, and Microfinance participants - private individuals and organizations

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[4] This report is available at https://www.smallbusinessbank.com/about/micro-vs-small-business

with rosy pictures enhanced by their ideology. The problem in this dimension is equally bad and harmful because the basic principles in financial economics tend to be ignores and thereby the Microfinance run by these entities are bound to be unsustainable.

Taken together, all these challenges, if not addressed satisfactorily, will undoubtedly hamper the healthy development of a sustainable Microfinance environment that would help disseminate its socioeconomic benefit to its intended direct targets and a wider range of potential beneficiaries in the society.

In the next part of this study, we further discuss the challenges and propose a solution of insurance to address the risk management for Microfinance and explore how such a practice can be carried out sensibly based on the risk-return and risk aversion analysis. Specifically, we investigate the relationship between risk and premium, the size of Microfinance organization, the level of risk aversion, etc. It boils down to the central question - when should a Microfinance organization buy default insurance, and if yes, what would be the feasible range of premium.

4. Insurance and the Range of Its Feasibility

We have presented strong evidence and argued that in the new area of Microfinance the risk premium is much higher for the average default rates of the SMBs than the risk premia in other mainstream sectors of lending, such as bonds rated by rating agencies. This big gap in the risk-and-return complex indicates the feasibility and possibility for default insurance. Next, we explain why and how it works.

First, Microfinance organizations charge an exorbitant interest rate because they are overly averse to the "uncertainty of the default risk"[5] of the SMBs. The reason that they are willing to accept a much lower yield when investing in rated bonds with similar default probability is because the expected average default rate of a well-diversified bond portfolio is much more predictable. Let's use a simplified case to illustrate the feasible range where insurance can be attractive. Suppose Microfinance lenders are charging an annual rate of $R_{SMB} = 45\%$ on the SMBs whose average default rate is 5% in one-year horizon, while they are accepting annual yield $R_{BB} = 5\%$ on BB bonds with similar average default rate and horizon, then it may be attractive to them to pay an annual insurance premium of *Pmt* to have their Microfinance-loan portfolio's risk and its uncertainty reduced to something similar to that of the BB bonds. For a total amount of *FV* of a portfolio of Microfinance loans to the SMBs, the feasible range of the annual insurance premium of *Pmt* is given as follows,

$$0 \le Pmt \le FV \times \left(R_{SMB} - R_{BB}\right) = FV \times \left(45\% - 5\%\right) = FV \times 40\% \tag{1}$$

[5] Sometimes this type of the risk is referred to as uncertainty of the uncertainty.

The actual premium *Pmt* depends on the relative bargaining power of the lender and the SMB borrower. It also depends on whether the lender finds it attractive or not.

In fact, the most fundamental difference between an SMB and an issuer is the "size or scope of their perspective" - a rare but potentially devastating event for an SMB becomes a small and frequent event for a large portfolio of SMBs (hence their Microfinance loans). The following figures show the vastly different risk perspectives of them.

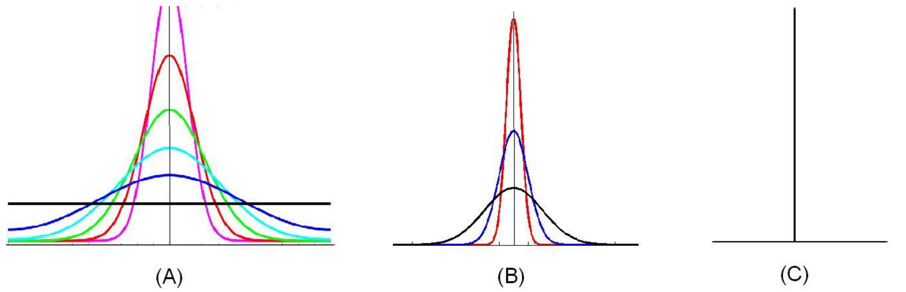

Figure 1. Uncertainty about uncertainty. (A) describes the risk profile of a portfolio of Microfinance loans. Due to the limited track record and the small number of the SMBs, the Microfinance loans' risk can only best be estimated as a distribution (or combination) of a series normal distributions. (B) represents the risk profile of a combination of all the Microfinance loans viewed collectively from an insurer of much larger size. Notice that distributions becomes much narrower, so is the distribution of the distributions. (C) shows the ideal or limit case where the size of the insurer becomes much larger and it becomes the delta function indicating that the default rate becomes stable and very predictable when the percentage of the SMBs in the lender's basket of Microfinance loans becomes a constant.

In Figure 1, (A), (B) and (C) represent cases where the risk profile of a portfolio of Microfinance loans varies with the number of the loans and the size of the portfolio. In (A), a Microfinance organization is having a small number of loans. Due to the lack of information, the manager or owner of that portfolio can only estimate the associated default risk profile as a combination of all possible well defined distributions, here we assume Gaussian distributions. (B) describes the perspective of an insurer who sees a much more stable distribution of risk. This is due to the sheer fact of diversification benefit because a well diversified portfolio would experience much less fluctuations in its total value. (C) represents the extreme and ideal case from the insurer's perspective when the portfolio's size and number of components, i.e., Microfinance loan, get infinitely large.

Here, we assume the average correlation among all the components is zero for simplicity.

The above description may be better paralleled with a more intuitive analogy - an individual may face certain type of risk as a rare event with a binary distribution between 0 and 100%, and therefore the associated cash flow loss would be highly unpredictable as well, but an insurance company selling policies on this type of risk is likely to see much more stable insurance payment cash outflows due to a fairly predictable event occurring rate. Indeed, for a large enough insurance company, the same event becomes a routine. This is why it is always in the insurance company's interest to become as large as possible (within the same business) and have the insured as many and as small as possible. Another analogy and a truth is that Casinos would not accept a rare and large bet. Instead, they would like the gamblers to wager small amounts many times. This is why it is such a lucrative business in all times. The same logic applies to the state-run lotteries.

In technical terms, the three cases in Figure 1 are about a linear combination of normal distributions. Here we make two assumptions for simplicity: (1) Only Gaussian distribution is considered here; (2) average correlation is zero among the possible distributions. In fact, the second assumption may be relaxed. We can also prove that

$$\sum_{i=1}^{n} a_i X_i \sim N\left(\sum_{i=1}^{n} a_i \mu_i, \sum_{i=1}^{n} a_i \sigma_i^2\right) = N\left(\mu_Z, \sigma_Z^2\right) \tag{2}$$

where X_i and Z are both normally distributed for all i. In other words, $X_i \sim N\left(\mu_i, \sigma_i^2\right)$ and $Z \sim N\left(\mu_Z, \sigma_Z^2\right)$. Therefore, Figure 1's (A) and (B) can be alternatively represented by two normal distributions, respectively.

The range for insurance as a risk management tool to be feasible must satisfy two basic requirements: (1) the policyholder obtains a greater benefit of reducing risk than the insurance premium to pay in order to shift some of the risk to the policy underwriter; (2) the premium paid by the policyholder is valued more by the insurer than the risk that is transferred to the company. We note that both parties are risk-averse. The reason that an insurance contract can be a win-win deal is solely because the transferred risk has different "values" hence viewed differently from different perspective. The logic is the same as that underlying the CAPM theory. In the extreme case where the insurance company's size is infinitely larger than the size of the insured and there is an infinite number of policyholders, the total risk distribution in the insurer's perspective would look what is depicted by (C) in Figure 1. In this case, we have

$$Pmt \geq \mathrm{E}_{insurer}\left[Claim\right] = \text{constant} \tag{3}$$

where *Pmt* is the insurance premium, *Claim* is the compensation paid by under the policy by insurance company, and $\mathrm{E}_{insurer}\left[\bullet\right]$ is the (conditional) expectation taken from insurer's perspective. Equation (3) is almost always true and easy to verify, and that is why we have huge insurance industry[6] and, by the same token, booming Las Vegas.

However, the following relationships are completely open.

$$\begin{cases} Pmt \quad ? \quad \mathrm{E}_{policyholder}\left[Claim\right] & (a) \\ \\ Pmt \quad \leq \quad \mathrm{Max}\left[Pmt\right] = ? & (b) \end{cases} \tag{4}$$

In fact, for more insured entities, it is likely true that $Pmt > \mathrm{E}_{policyholder}\left[Claim\right]$ in (a), meaning that insurance is a risk management rather than a for-profit invest opportunity. The insured is aware that he/she will pay more to the insurance firm that what he/she is expecting to get in return and the difference is the price he/she would pay to "buy a peace of mind." However, what is important is (b) because it sets the upper limit of the feasibility of the insurance policy (premium) below which the policyholder would not buy the policy anymore, while (3) sets the lower limit below which the insurer would not sell the policy anymore. In sum, we have

$$\mathrm{E}_{insurer}\left[Claim\right] = \text{constant} \leq \quad Pmt \quad \leq \quad \mathrm{Max}\left[Pmt\right] = ?$$

The first inequality (lower limit) is easier to estimate, the second is most challenging. Next, we propose the theoretical framework to solve this problem.

The maximum premium a potential policyholder would accept is where the benefit of risk reduction equals the sure payment he/she has to pay to the insurance company. Since the insurance purchaser is focused on risk management, we cannot carry out the analysis purely based on the expected cash inflows and outflows, which would be a lot easier, but it wouldn't make much sense because of $Pmt > \mathrm{E}_{policyholder}\left[Claim\right]$ as indicated earlier, i.e., the insured actually on average loses money to the insurer on the statistical basis which leads to the conclusion that no one should buy insurance. Therefore, a sensible analysis must consider human's risk aversion behaviour. There are several approaches to it: (1) risk averse utility with different types

[6] The total revenue of the insurance sector is about double the size of the U.S. military budget. Their total asset value is more than 4 trillion dollars as of 2017. Life and health care insurance sector has similar size as the P&C insurance sector. Large medical expenditure and relatively poor medical service have a lot to do with the huge middleman - insurance industry - in the U.S..

of risk aversion,[7] and (2) loss averse utility. Here we choose the first type for illustration.

Figures 2 and 3 show how the feasible maximum and minimum insurance premium can be determined based on the risk-averse utility function. The details are explained in the Figures' captions. Normally Figure 2 cannot be further simplified. However, in the real world, Figure 3 can be greatly simplified as explained in Figure 1 (C) because for large insurance companies, their cash outflows due to the insurance claims are very stable and predictable. Hence, in the limit of this ideal case (Figure 1 (C)), we have the lower limit of the feasible insurance premium $\text{Min}[Pmt] = \text{E}_{insurer}[Claims] \approx \text{constant}$ which is equation (3). Of course, we have assumed away all the operating costs for simplicity. It is trivial to factor them into our analysis without changing anything qualitatively.

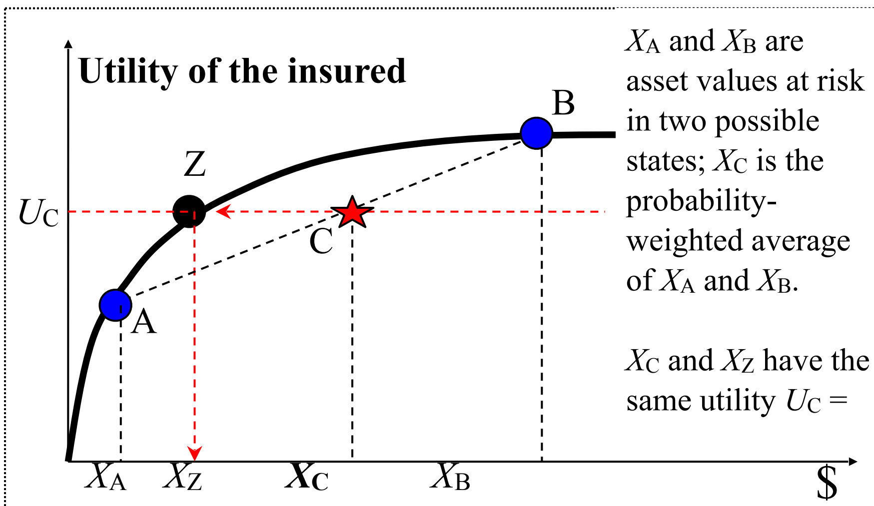

Figure 2. Utility of the insured and the maximum insurance premium. In this simplified binary mode of risk, the policyholder would have to face two possible mutually exclusive situations in the asset value - A and B, where the corresponding asset values are X_A and X_B. Their probability-weighted average is indicated by point *C* with value X_C which locates Z on the utility curve with equal utility. The corresponding value X_Z determines the maximum premium the policyholder would pay to avoid the fluctuation in his/her asset's value, i.e., $\text{Max}[Pmt] = X_C - X_Z$.

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[7] Such as constant absolute risk aversion (CARA), constant relative risk aversion (CRRA), hyperbolic risk aversion (HARA), increasing and decreasing risk aversion, etc. Which is most appropriate depends on the target we analyze and the cost of complexity.

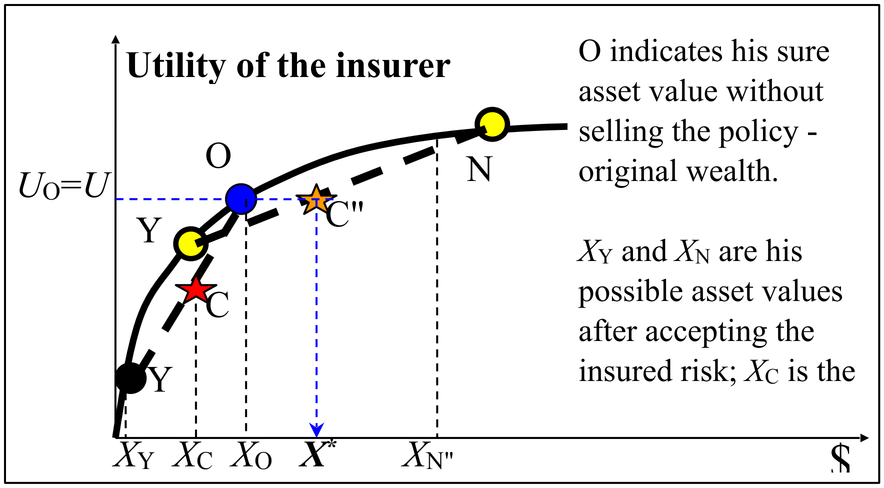

Figure 3. Utility of the insurer and the minimum feasible insurance premium. In this simplified binary mode of risk, insurer originally has an endowment indicated by point O. If he accepts the insured risk without insurance premium, value of his assets would fluctuates between Y and O(N). Insurance premium *Pmt* represents a sure addition to his assets hence it induces a parallel shift in the value of his assets in the two possible states. Points O(N)-C-Y become the double primed points. The minimum premium that the insurer would accept is the amount that results in a shift where $U_O = U_{C''}$; in this diagram, we have Min[Pmt] = $X^* - X_C$.

Technically, we can easily carry out this analysis with normal distribution assumption for all the expectation operations instead assuming binary distribution, which is perfect for illustrating the framework in a straightforward fashion. In the future study, we will implement this proposed framework in two dimensions: (1) investigating different utility functions including loss-aversion functions;[8] (2) numerically implementation with Gaussian distributions for risks and uncertainty of risks as well.[9]

5. Sustainable Microfinance, Insurance, and Discussions

We have explained the mechanism of insurance and argued that the current status of Microfinance and SMBs has a strong and untapped market for insurance to play an active role. If implemented successfully, both sides of lending can benefit, especially the socially and economically vital component of SMBs would benefit most by receiving the necessary help without being exploited. As indicated earlier, risk premia on Microfinance loans are way too high for the actual risk the SMBs have. On the other hand, some governments tend to set ceiling on the loans by ad hoc regulations or explicit anti-usury

[8] Risk-pro behavior will be studied as well.

[9] This would involve convolution product.

laws. This would discourage lenders from engaging in Microfinance. The result would be fewer and fewer lenders in Microfinance. On the other hand, some organizations or individuals with strong progressive ideologies are keen on helping the "weak" in the society and they tend to get some financial support from the governments which is a contemporary phenomenon. However, these entities tend to have a rosy picture about the true financial and credit risks. Both will make Microfinance unsustainable. Our study helps both sides better understand and analyze the risk and provides a framework to manage the credit risk in Microfinance in a mutually beneficial way. By having the risk insured according to the need and risk-aversion level of the potential policyholder, one, be it an individual or an organization, can better keep the credit risk under control hence will make Microfinance practice healthy and sustainable in the long run.

Studying the feasibility range of insurance premia helps us understand insurance mechanism and risk management better. It is somewhat surprising that the underlying economic principles of insurance mechanism has not been well understood by many stakeholders in industry and academia. For example, Brealey et al (2010) lists the insurance policy of BP as a remarkable innovation and touted its success in generating profits. Specifically, BP figured that it could save money by insuring against small routine risks because the insurance companies understand those risks better; and self-insured large but rare risks because it argued that the insurance companies do not better understand those risks than BP does and it's financially better. Indeed, BP boosted its profits significantly by self-insuring rare but consequential risks in the beginning. It also argued that efficient stock market has the well digested any information about the risks and the equity size was large enough to easily weather through possible "storms." However, the "spectacular" Deepwater Horizon oil spill on the *BP*-operated Macondo Prospect in the Gulf of Mexico on April 20, 2010 not only challenged our innovative risk management in industry, but also revealed the fact that the mainstream economics and risk management academia have questionable understanding about the relevant subject. In addition, the financial loss and the following regulatory fines from the British and American governments completely shattered any belief in its efficient equity market argument. After all, BP was brought on the brink of bankruptcy.

6. Conclusions

The current status of Microfinance exhibits a strong mismatch between risk and the expected return. The risk premia on Microfinance loans are much higher than that on other and mainstream credit products with similar risk levels. The SMBs are not appropriately served financially and the society suffers significantly if this issue is not properly addressed. In this paper, we propose credit insurance as a solution and explain the mechanism of determining the feasible range of premium for possible such insurance contracts. The benefits are clear and win-win in nature. To our knowledge, this is the first investigation in the area of credit insurance as a risk management tool for creating sustainable Microfinance and properly serve the SMBs and benefit the society. Our framework also helps clarify some common misunderstandings about insurance practically in industry and academically.

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Strategies for Green Special Economic Zones (GSEZs) in India

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Abstract

A number of countries have adopted a SEZ-led growth. Special Economic Zones (SEZs) are industrial clusters where economies of scale and other gains assist the operational firms in decreasing the costs with the competitive production systems and foreign investments. The number of formal approvals in India has been 564 and the notified SEZs are 388. Climate change and other environmental challenges put pressure on the SEZs to emphasize on the environmental dimension of SEZs, such as to make it 'Pollution Control Zone, Environment Compliance Zone, Eco-industrial Zone (Park), Low-carbon Zone, Green Zone and others'. *SEZs can be places where the idea of commercial and non-commercial can combine.* Across the length and breadth of the country, SEZs are coming up farmlands resulting in deep controversy. At the heart of the problem is the fact that the establishment of an SEZ generally requires the forced acquisition of land and eviction of its previous users. Losing land to the SEZ project has significantly reduced the farmland in the affected villages and also brought with it severe pressures on employment and livelihoods for the villagers and food security for the country, at large. Related issues are loss of livestock, water resources, trees and forest cover etc. Adani group's SEZ in Mundra tehsil of Gujarat has resulted in destruction of sand dunes. The SEZ saga has harsh realities to convey. *The objective of paper is to gauge whether the existing SEZs are implementing green guidelines or the new ones are established conforming the environmental guidelines.* India already is in process of developing guidelines and policies for green zones and how far these being adhered in these enclaves is the focus of the paper.

Key Words: *Special Economic Zones (SEZs), land acquisition, the environmental guidelines, green zones, waste management*

Introduction

Special Economic Zones are specific areas that have liberal economic laws in comparison to the economic laws of the state. SEZs are engine for the economic growth and are designed to stimulate trade and attract larger foreign investments, supported by robust infrastructure, have single window clearance and attractive fiscal package. SEZs are deemed to be foreign territory with liberal economic laws, tax holidays, incentives and facilities are offered to the units to attract FDI, employment, development of secondary industries to service firms and enable business to thrive without restrictions, facilitating economic growth. These zones are industrial clusters where economies of scale and other gains assist the operational firms in decreasing costs with competitive production systems and foreign investments.

In the 1960s, eco-industrial parks (EIPs) have been established in cities in Europe such as Denmark and Sweden. China, South Korea, Vietnam and Thailand have employed SEZ-led growth and have established eco-industrial parks systematically. India is among those countries that have developed guidelines for green zones.

SEZs in India

The Government of India (GOI) promoted import substitution-based industrialization with a bias towards basic and heavy industry in First Industrial Policy Resolution, IPR 1948. To promote exports, several fiscal incentives were offered to exporters. India was one of the first in Asia to recognize the effectiveness of the Export Processing Zone (EPZ) model in promoting exports and Asia's first EPZ (official nomenclature approved for SEZ) was established in Kandla, Gujarat 1965. EPZs were places where fiscal incentives could be extended to export.

Gujarat and Santa Cruz EPZ became operational in 1973. Although the EPZs played a vital role in 'improving competitiveness and diversifying the economy' (Madani, 1999) there was no significant impact on exports or investments in the country. Three committees were appointed by GOI to review working of these zones. Kaul Committee, 1978 reviewed Kandla EPZ, Review Committee on Electronics, 1979 reviewed Santa Cruz EPZ and Tondon Committee reviewed both these zones. As per recommendations of Tondon Committee, four more zones were established at Noida, FALTA, Chennai and Cochin.

SEZs can suitably be reviewed as “second generation reforms” with the announcement of SEZ policy in April 2000, as an instrument to boost economic growth and exports. The Special Economic Zones Act, 2005, was passed by Parliament in May 2005, and received Presidential assent on 23 June, 2005. After extensive consultations, the SEZ Act, 2005 came into effect on 16 February, 2006, offering simplification of procedures and single window clearance. As the concept evolved over time we moved to creating a legal framework for SEZ about a decade ago’. (*TOI, July 22, 2014*) This Act stipulated creation of SEZs and conversion of the existing EPZs into SEZs. The zones at Santa Cruz, Kandla, Surat and Cochin and later, Chennai, Noida, Falta and Visakhapatnam were converted into SEZs. The state governments introduced policy framework in regard to SEZs. As against the EPZs, the SEZs are intended to be ‘an engine for economic growth by quality infrastructure contemplated by an attractive fiscal package, both at the Centre and State level, with minimum possible regulation’. (*GOI, 2008c*)

There has been proliferation of SEZs in India and presently, the second-and-third generation SEZs promote highly skilled and advanced technology.

Exports from Indian SEZ were INR 2.2 Trillion in the years, 2009-10. There was phenomenal growth up to 43 percent and was INR 3.16 Trillion in 2010-11 and provided for over 840,000 jobs. Despite all odds, exports through Indian SEZs grew further by 15.4% to reach INR 3.64 Trillion (roughly US$ 66 billion). As of 2011-12 fiscal, investments worth over US$ 36.5 billion (INR 2.02 Trillion) have been made in these tax-free enclaves. ‘Exports of Indian SEZs have experienced a phenomenal growth of 50.5% for the past eight fiscals from a meager US$ 2.5 billion in 2003-04 to about US$ 65 billion in 2011-12 (accounting for 23% of India's total exports)’.

The number of Special Economic Zones in India has increased at a very fast pace over the last few years. The number of formal approvals in India has been 564. The number of notified SEZs (As on 29.8.2014) is 388 (out of 564)+(7 Central Govt. + 11 State/Pvt. SEZs). The number of operational SEZs is 192(till September, 2014) operating throughout India and applications of another 634 SEZs (till June, 2012) have been submitted and principally approved by the GOI.

The main objective behind the establishment of the SEZs in the country is economic and industrial growth. The developing countries have been promoting zones due to these benefits. These zones are promoting regional development through availability of employment, industrial development and infrastructure. The Development Commissioner armed with unlimited powers heads Special Economic Zones in India.

Objective of the Paper

The pace of establishment of SEZs is very fast and their numbers are phenomenally increasing. Any measure for industrialization should take into consideration the aspects of economy, environment and the society. There also has been wide criticism of these enclaves especially due to land displacement issues. Most of the SEZs in India are near already congested ports that put additional pressure on the environment as these enclaves are into large-scale manufacturing. So, along with industrialization to meet to the development needs, the SEZ Policy should be designed to facilitate environmental protection, urban management, waste management, rainwater harvesting and other important issues.

The objective of the paper is to look into *environmental aspect of the SEZ-led growth* in India. The main aspects covered in the paper are:

i) Environmental controversies surrounding SEZ establishment, the land acquisition issue and its impact

ii) Aspects of Green Special Economic Zones (GSEZ)

iii) Best and Disastrous Environmental Practices in the select SEZs along with suggestions for improvement

Research Methodology

SEZs are storehouse of employment and exports but not without a cost. The environmental dimension of SEZs cannot be undermined at the cost of development. The secondary data primarily is from Publications from Development Commissioner Office located at SEZs, Statistical Yearbooks, Newspapers, Academic Journals, Internet Sources and Reports from Ministry of Commerce and Comptroller and Auditor General of India. Extensive informal discussions and interviews were done with the officials, employees of units of the select area like, SEZs in Jaipur- Mahindra SEZ and Sitapur SEZ with focus on social, political and environmental issues in and around the zone.

Environmental Controversies Surrounding SEZs

Despite the huge rate of approval and establishment, the SEZs have faced considerable opposition because of various controversial environmental aspects. Some of these are mentioned below:

Land Acquisition, Displacement and the Issue of Protection of the Fertile Land

India is a vast country and is seventh in the world as far as territory is concerned. Despite this, the land in India is not supporting the rising demands of food grains, industrialization and economic development of the country. The need for growing SEZs in India is the question of conflict between the right to livelihood and the right to economic development. Millions of hectares of agricultural land have been acquired for industrialization resulting in shrinking of cultivable land. The issues pertaining from the changes in the land use has become a major source of dispute between the public and the government.

India is one of the prime economies of the world and the largest democracy and its strategy of development is of building from the ground up. India has to take into account economic as well as socio-political consequences. The government had even to call off ambitious SEZ plan in a number of cases that created controversy. India, being an agricultural country, the government takes into consideration farmers before any policy decision. The supporters of SEZs and the Ministry of Commerce and Industry point out that the SEZs are developed on non-agricultural and semi-agricultural, single crop lands or barren lands.

However, the practice is far beyond this version as vast tracts of agricultural land is being sacrificed for industrial development or real estate business by giant developers in the SEZs. All the norms have been thrown the winds. “SEZs are threatening to spout all over the country from the most backwards states, like, Orissa and Chhattisgarh, to the most advanced ones, like Maharashtra and Gujarat”. (Kumar, Arun, 2007) These are created as ‘island of affluence admist the cesspool of poverty, hunger, and deprivation especially at the expense of undeveloped rural areas’.

The SEZs have gathered controversy due to the broader issue of land acquisition and even of farming as an occupation. The State Governments are converting the agricultural land for the SEZ development and selling to the developers at subsidized rates. This land is being used for the Real Estate Development by the greedy corporate land mafia.

Forcible land acquisition, inadequacy of packages of compensation, resettlement and rehabilitation, loss of land and livelihood opportunities has met with opposition from the affected communities. SEZs generally require the forced acquisition of land and the eviction of its previous users. Indian farmers protested transformation of agricultural and fertile land into SEZs. The farmers in India stand to lose their land and livelihood and so, resisted. No safety net is available to the farmers leading to protests. ‘Among the issues now surfacing, the most strident issue, of course, concerns the transfer of prime agricultural land to non-agricultural and may be quite low socio-economic priority uses in the non-processing areas involving unjust stripping away of the farmers lands especially because the government intervenes on the side of the SEZ developers to acquire the farmers land'. (*Kabra, Kamal Nayan, 2006*) Land acquisition and its potential displacement has been issue that has remained unattended. "Rehabilitation is another issue which is not adequately addressed by the government". (*Kaur, Harpreet, 2007*)

The rural communities are resisting this land grab by the government and real estate developers. "People have already expressed their negative views over SEZs saying destroying agricultural plots seems especially ill-conceived, as farmers are not likely to make an easy transition to the jobs on offer at these SEZs." (*http://www.legalserviceindia.com/article/l32-Special-Economic-Zone-Myth-and-Reality.html.*) There are a number of examples, which manifest injustices meted out to the farmers. In the outskirts of Mumbai, the authorities and the developers have given land acquisition notices to the farmers claiming that the land in question is not productive, despite the fact that the land was productive.

The claim of the government is that SEZs are coming up only on wastelands or a non-productive land is a fact that is far from true. The SEZs establishment is on a large area and it is virtually impossible to differentiate whether the land is fertile, non-productive or wastelands. "But many SEZ projects are eying large tracts of farmlands. No wonder, land acquisition by the SEZs has become a major political issue". (*Anand, M.A. and Sunitha Natti, 2006*)

The policies of various states also differ. The policy officers in Maharashtra also clearly declare that irrigated and double-cropping land is not to be acquired. However, Posco-India has managed to acquire land that is multiple cropping in Orissa. In Karnataka, 10% of the land of SEZs required is double-cropped. 'The Baikampady SEZ has been disputed as a result of the statement made by the Union Minister for Commerce and Industry saying that 10% of the land can be double-cropped'. (*Bunsha, Dionne, 2006*)

The development of SEZs across length and breath of the country threaten food security for the diversion of agricultural land for non-farm use has serious implication on the food production of the country. The fertile land should not be converted for use of industries. 'If government is really serious about the export promotion and the SEZs, there are barren lands available in almost all parts of the country including, Punjab, Haryana and Uttar Pradesh'. If the wastelands are used for SEZs, the farmers will not be displaced from the farmlands, the development is not concentrated near the cities and the fertile land will continue to be used for agricultural use. Popular resistance to SEZs also contests the whole development model that replaces farming on fertile agricultural land with autonomous, private industrial enclaves that mostly just provide jobs for urban skilled and semi-skilled workers.

Many PILs pertaining to forceful land acquisition without obtaining consent from the farmers have been filed in the Supreme Court of India and various High Courts. The Acts that have remained controversial are Special Economic Zones Act, 2005 and Haryana SEZ Act, 2005. 'In another PIL in the Supreme Court, the controversy was from 1700 acres of Garhi Harsaur SEZ Site in Haryana was brought to notice by the petitioner and the court directed the Centre, States involved and the Developer to examine the issue'. (SC notice to Centre, states on SEZ petition, retrieved from: http://www.indlawnews.com/899b7fdd5a27d99ce1dd18e27309d2f7, published on 7 December, 2006) 'The Government of Punjab and Reliance Industries pursued blatant policy and violated the land allotment policy and petitioner questioned it'. (Writ petitions challenging Reliance SEZs, retrieved from: *http://www.indlawnews.com/D2451A6689171C0AA8F1F04E1724D12B,* published on 26th September, 2006) The Allahabad Court questioned the SEZ in Noida for acquiring land at the cost of farmers.

Vast amount of land grabbing is going on as most of the land is acquired by the government at the minimum rates, and later, sold at the market rate after commercializing it. SEZs are models of development for the country and if it is inclusive, then only growth will be balanced and sustainable. However, the present model ignores hard grassroots realities and ignores the farmers. Large lands in UP, Maharashtra and other states are being acquired and if unfettered, it might lead to socio-economic crisis. SEZ Policy requires a fresh insight especially the land displacement and rehabilitation policy and adequate measures should be taken to compensate the loss emerging affecting the sustainability of our prime land that supports agriculture, ensures food security and bio-diversity.

Environmental, social and health impacts of establishment of SEZs

SEZ projects have significantly reduced the farmland in the affected villages, pressures on employment, livelihoods and food security for the villagers. The farmers face problems to ensure food security and survival depending on their assets, family size and community. The vulnerable sections of the dispossessed communities have been subjected to rapid marginalization making life miserable for many. The farmers with smaller land holdings become landless while some buy some plot of land so that basic survival was not threatened. The conversion of farmland for non-farm uses has also reduced farm labour opportunities for the people who have no non-farm skills. The SEZ has caused fragmentation of land holdings as the land losers have been forced to buy small pieces of land from neighbours. There were forced changes resulted in occupational shifts, indebtedness and migration. Several families have one or more members of the family forced to migrate to engage in unskilled jobs in the towns and cities. The inability of some to adapt has apparently lead to increases in ill health and deaths, including suicides.

Keeping livestock becomes impractical for many due to severe shortage of fodder and loss of grazing lands. Related issues of land acquisition are loss of wells that assured irrigation and loss of cattle sheds and livestock, an important source of livelihood for the villagers. The villagers were forced to sell the cows for distressed prices due to scarcity of fodder and pressures of moneylenders to clear the loans, meet household needs or construction of a house.

Loss of trees of significance is a loss of income to the owners by losing the source of food or fruit for the owners and also, for the landless households, the loss of fodder and organic manure, construction material for housing and medicinal preparations are other concern areas. Land acquisition has resulted in the disruption of the livelihoods of the affected households. Unemployment was a direct result of the loss of land by the farmers due to large-scale conversion of farmland into non-farmland and also, absence of the wage labourers working on farmlands. The collection of fruits and fodder for domestic as well as commercial ends from the common lands decreases substantially.

All this results in decline of income of the people or unemployment, the children have to leave the schools. The affected lot is subject to household food insecurity, increasing the dependence on food grains and food procured from market, which increases the dependence on cash significantly. The land acquisitions and its conversion into industrial enclaves also have grave social and health impacts.

Other Environmental Issues

Lax Rules

Large-scale industrialization that needs reservoir of natural resources has an impact on environment and adversely affects the ecological imbalance. SEZs are enclaves where industrialization is going on; hence these should not be exempted from the regulations pertaining to the environmental concerns. But it is an acknowledged fact that the units in SEZs are exempted from the *Environmental Impact Analysis* according to the Environmental Protection Act.

The Development Commissioner is armed with enormous powers to grant environmental clearance for SEZs and can issue consent and no objection letters in association with the state pollution control board. The non-polluting industries can be given clearance without consulting the pollution control board. If these units conform to the prescribed pollution standards, they can submit the compliance report. The units within SEZs are subject to random checks by the Development Commissioner. The units maintain their own environmental standards. So, the SEZs developers, units and the entrepreneurs have relaxation to the environmental norms prescribed by the government.

For SEZ that are centrally controlled, the State Pollution Control Boards can be bypassed. There is no space for filing any petition if the people are affected. The pollution standards are ignored and even the costal regulations are flouted. Moreover, state governments have also created complementary conditions for SEZs in the coastal zones also by developing new Coastal Regulation Zone Act. *(Jharkhand SEZ Policy-http://www.ibef.org/download/Jharkhand_190111.pdf-)* SEZs will not require Environment Impact Assessment (EIA) approval. So, these rules for SEZs can be altered and distorted very easily impacting environment and environmental norms adversely.

Misuse, Non-use and Diversion of Land Allocated

There has been *misuse, non-use and diversion of land allocated* for SEZ purpose especially by the developers. There is a large amount of land that is lying idle in the 392 SEZs covering 45635.63 hectares notified till March 2014 out of 576 formal approvals after SEZ Act, 2005 covering 60374.76 hectares. 152 operational SEZ encompass in 28488.49 hectares while 'the land allocated to the remaining 424 SEZs (31886.27 hectares) was not put to use'. This vacant land is situated in various states like, Andhra Pradesh, Maharashtra, Odisha, Gujarat etc. So, rather than expanding zones at the cost of environment, an optimum utilization of the existing land resources in the present SEZs is imperative. 'Commerce Department officers said that they are discussing various possibilities with the revenue department to ensure that some of the unused infrastructure, such as schools and hospitals, are used even by those who are not part of the zones so that the investment in the facilities isn't wasted. (*TOI, July 14, 2014*)

Infrastructural Growth in SEZs poses Environmental Threat

SEZs have phenomenal infrastructural growth, airports and ports and improvement in transport, communication, real estate, logistics etc. But this has led to related and additional problems, like, urbanization, pollution and depletion of ground water, decline in forest cover, break-up of village communities etc. The poor site location near ports is a problem for land is congested due to industrialization, over-concentration of population and poses environmental threat.

So, due to the above-mentioned problems, it has become imperative for the government to modify the existing policies and create new policies so that problems do not arise in the zones and these enclaves become more sustainable.

From Special Economic Zones (SEZs) to Green Special Economic Zones (GSEZs)

Indian SEZs have been in controversy for a number of above-mentioned environmental reasons. Based on the implementation problems of the SEZs, Indian government has to make such policies that *even with the proliferating SEZs, the growth and prosperity of the country is achieved without compromising the future of the succeeding generations.* For this, the SEZs have to devise and establish *Green Special Economic Zones* **(**GSEZs) in India especially in light of environmental problems including the climate change concerns. Article 3 of the United Nations Convention on Climate Change stipulates the principle that all the countries have to participate in global efforts to fight climate change.

In many countries, industrial zones are major contributors to GHG emissions from manufacturing, energy generation and consumption, buildings, and transportation. With the changes on the global levels, more environmentally sustainable SEZs are coming up over time. The private as well as government is fulfilling the demand for environmental sustainability. Due to phenomena of climate change, there is increasing emphasis on the environmental dimension of SEZs. To make these areas pollution free and ensure environment compliance is the aim. Their conversion into eco-industrial zone (park), low-carbon zone and green zone is the rising demand.

Governments like China and India are developing guidelines and policies for the green zones and in the Republic of Korea and Thailand; there is systematic development of the eco-industrial parks.

SEZs are devising new strategies in conformity with the governmental laws and pressures from other stakeholders. SEZs have to carefully formulate policies that are environment friendly, including, elimination of trade and non-trade barriers on climate-friendly products, green house gases mitigation and carbon footprint management and emphasis on green building codes, energy-efficiency laws, low carbon policies, reuse and recycling of resources and use of renewable energy.

Strategies for Green SEZs

SEZs are special enclaves aimed at creating strong industrial base and world-class infrastructure. For these labour and power intensive zones, the Commerce and Industry Ministry has declared that the SEZs should adhere to eco-friendly norms for large-scale industrial activities are concentrated here.

Due to opposition and criticism in the creation and implementation of SEZs in India, the demand for the GSEZ process started in India. The GOI has issued guidelines GSEZ and the Ministry of Commerce and Environment has laid down directives for the SEZs to endorse Energy Consevation Guidelines and have mandatory certification for Green SEZs. The upcoming as well as, existing SEZs have to endorse green guidelines and go for green certification. These can have a short-term impact as it increases the cost of additional development, regulation and permissions. Although in the long run, there are gains that will make SEZs more sustainable.

The suggested strategies are: 'Optimization of use of energy, hundred percent organic waste generated power within SEZ, water harvesting for sustainable water consumption, recycling of waste for proper waste management, set up of for plantation, site prevention and restoration policies, local internal transportation facilities, certificate for buildings, ventilation and day lighting, IT infrastructure and easy certification process'. IGBC, TERI etc. and other national and international bodies certify compliance with the environmental guidelines agencies.

Guidelines on Green SEZs

Low-carbon Green SEZs with emphasis on environmental sustainability is the up-coming phenomena throughout the world. These enclaves have to emphasize on issues like, pollution control, environment management, use of renewable resources, reuse and recycling of resources, green cover, rainwater harvesting etc.

Few essential components of the Low-carbon Green SEZs are:

i) GHG Mitigation Target: The SEZs are marked by feverish economic activities and are major contributors to GHG emissions from manufacturing, energy generation and consumption, construction of buildings and transportation. If action plans for mitigation is not in place especially for areas wherein a large-scale industrialization is going on, then there would be a disastrous impact on environment. Some countries of the world encourage private investment in GHG mitigation in these enclaves.

GSEZs in India are mandated to make optimum use of green energy and renewable energy sources, especially solar energy for solar water heating, lighting load, air conditioning etc. With two percent of the estimated energy consumption in the beginning, the aim is to scale the consumption from renewable energy sources up to twenty five percent of the installed external lighting load. The traffic lights, billboards, signage and external lightning are to be LEDs powered by solar energy.

A number of Government incentives and schemes promote manufacturing of LEDs in the SEZs. "The Department of Electronics and Information Technology (Deity) under the modified Special Incentives Package Scheme (MSIPS) provides a subsidy for investment in capital expenditure up to 20 percent for investments in an SEZ and 25 percent in non-SEZ projects". (*http://electronicsb2b.efytimes.com/close-look-indias-led-imports-exports/*) It is also mandatory for the buildings to have ventilation and day lighting standards as per National Building Code (NBC).

In some zones, the developers have entered into Power Purchase Agreements (PPAs) with renewable energy to fulfill these conditions. Even wind mills /aero generators are to be established where wind speed is permitted. Most of the units are adhering to the green guidelines due to strict compliance norms and some units like, in Noida and others have even installed in situ power generation facilities like bio-mass /bio-gas using waste generated in the basement.

SEZs have to take measures to avoid heat island effect due to air conditioning. Some measures taken are that 50 percent of the net roof area is covered with vegetated roof in some units. The Solar Reflective Index (SRI) material can be placed at the roofs.

ii) Sustainable Infrastructure: The planning, designing and building of zone infrastructure should be using energy-efficient, resource-saving and low-carbon methods. The green guidelines are to be adhered by the individual buildings and the entire area of SEZ developed by developer/ co-developer. Appropriate rating programmes are mandatory for individual buildings based on the building types including, Residential, Commercial Factory buildings or Schools. Even the material for the construction used has to obtain green certification and technical services from consultants and material and equipment suppliers are in conformity with the environmental norms.

'The guidelines compliance has to be sought from organisations like, Indian Green Building Council (IGBC) www.igbc.in, Green Rating for Integrated Habitat Assessment (GRIHA) www.grihaindia.org, and other national & international agencies'. National Building Code (NBC) guidelines should ensure site preservation and restoration and protection from soil erosion and waterway sedimentation. The Optical Fiber Connectivity (OFC) would provide broadband connectivity to the units.

iii) Climate-Friendly Investment Generation: Low-carbon, green SEZs can come up with innovations for a streamlined and low-risk environment. SEZs can attract climate-friendly investment and technologies to fill the gaps in the national legal framework in various arenas like mentioned below:

Waste Management-To minimize environmental impacts, waste management is mandatory in the zones. The solid waste from the zones is for subsequent reuse or recycling. It is either be converted to vermi-compost or used for power generation. Waste that can be recycled like, paper, cardboard, plastics, glass, metal, organic etc. is stored in the common storage area earmarked in the units before being diverted to the local vendors for recycling or reuse. Garbage segregation is to be done as per Solid Waste Rule, 2000. The industrial units have to undertake primary treatment within the premises itself as per guidelines of local pollution control board. The plants for sewage treatment are designed to decrease the released effluents.

Water Consumption and Preservation -GSEZ should encourage water-harvesting practices, with 30% of rainwater harvested for use within the SEZ depending on the aquifer characteristics. The existing water bodies must be protected. There has to be centralized in-situ wastewater treatment plant to treat 100 percent waste water generated as per the Central Pollution Control Norms and the treated wastewater can be re-used for landscaping, air-conditioning and flushing.

Use of Cleaner Fuels- SEZs should try to use technologies aiming at maximum emission reduction and introducing alternative fuels, e.g., gaseous fuels and biofuels can improve local air quality as well as reduce greenhouse gas emissions from these zones.

Local Internal Transportation- Environmental guidelines require SEZ developers to provide electric vehicles and electric rickshaws, bio-diseal, CNG or any other environmental- friendly fuel for transport within the zone and calls for separate lanes for bicycles. If such measures are adopted, it will go a long way in sustainability.

iv) Low-Carbon Policy Incentives and Regulations: These zones are marked by intense industrial activity, so has the onus of reducing the level of pollution, improving air quality and controlling emissions strategies will achieve
the most effective and rapid emission reductions from the factories functioning here. The zones can search for carbon finance mechanism to develop low-carbon, green SEZs.

Green SEZs Case Studies

The good practices in SEZs or disastrous examples are discussed in this paper.

i) SEZs posing Threat to the Environment

The SEZs *pose a threat to the environment* that is visible from a number of examples and have been questioned by the courts.

Adani Port SEZ (APSEZ) has been under the scanner for violating the environmental norms and destructing natural resources. Adani's ship recycling project also faced impediments due to depiction in the maps of proposed site of ship recycling facility that there were no sand dunes. “But the company has obtained environmental permission by making a false presentation, because the report does not refer to sand dunes in the region. He also submitted that the sand dunes in question were not allocated to the company by the government for the purpose of making a ship-breaking yard”. (*http://timesofindia.indiatimes.com/city/ahmedabad/Save-Mundra-dunes-HC-tells-forest-dept/articleshow/39191150.cms*)

A PIL against it has been filed in Gujarat High Court. Adani SEZ in Mundra tehsil, Gujarat and Adani Port SEZ (APSEZ) in Tunda and Vandh villages have been probed for flattening and damage to the sand dunes. ‘The sand dunes are bulwark against ocean waves in the event of tsunami or cyclones. The activities in the SEZ are also leading to destruction of mangroves and other vegetation in the area’. (*Financial Express, December 15, 2009*)

The SEZ in Kutch district by Gautam Adani promoted Adani Ports and Special Economic Zone (APSEZ) was directed it to restore the creeks in Mundra, multi-product SEZ on 18,000 hectares to the condition that they were in 2005 and also, prevent from carrying out ‘any river course modification and conserve the mangroves in the area’. It was alleged that the company flattened the sand dunes on the seashore and dumping dredge spoils.

Under the project, the target of the company was to recycle every year approximately 40 ships. ‘Light Displacement Tonnage (LDT) is 7,582 tonnes. It is estimated that nearly 0.25 million tonne (Mt) per year of scrap metal will be recovered along with 11,000 tonnes per year machinery and 10,000 tonnes per year of miscellaneous items’.
These maps are part of the Environment Impact Assessment (EIA) report prepared by the company and submitted to the expert appraisal committee (EAC) of the MoEF that recommends CRZ clearances for projects. (*http://www.business-standard.com/article/companies/adani-s-ship-recycling-project-faces-legal-trouble-114071100902_1.html*)

Another example is ***Lavasa Hill City*** where the critical environmental concerns and the issue of compliance with environmental clearance regulations stopped the progress of the SEZ in 2010-2011. The Bombay High Court (which has state jurisdiction for Maharashtra) ruled in 2010 that construction and work within the zone had to come to a complete stop because of “serious violations of the EIA [Environment Impact Assessment] notification that can’t be ignored”. (MoEF again asks, *TOI, December 15, 2010*)

The SEZs have been under scanner due to sustainable development. The SEZs should fulfill few broad objectives, manufacturing of goods and provision of services, abridge the sectoral imbalances and check mindless exploitation of resources, preserve bio-diversity, come up with innovative technologies in conformity with environmental preservation, social services etc. “If these aspects are taken care of with comprehensive and proper deliberation then SEZs can generate sustainable value. SEZs should be envisaged as a self-sustaining value creation proposition. In other words, they should benefit the society in tremendous quantam". (Singh, J.P., 2005, *www.visionri.com*)

ii) SEZs and Environmental Protection

Due to a number of objections and controversies mentioned above, there has been a lot of furours. It has become imperative to change the policies and priorities in the SEZs. Many SEZs are taking into consideration the national priorities, attached with the environmental concerns as well as promoting innovative industrial projects. *New Innovations* are coming up in the enclaves fulfilling the conditions of Green SEZs.

A few examples of new and upcoming SEZs that are in conformity with the principles of environmental protection are mentioned below:

i) The declining forest cover is a main apprehension for the environmentalists. In an initiative by the Central Government under the Environment Ministry is to come up with '***Forests SEZs'*** wherein the government-owned forestlands would be used for growing plantations. (*http://timesofindia.indiatimes.com/india/Centre-plans-to-free-forest-land-for SEZ/articleshow/2063210.cms*) It would be multi-stakeholder partnership, the degraded forests with areas with a tree cover of less than 10% would be handed over to the industry to produce raw material like paper pulp. Two-fold benefits emerging would be enhancing the declining forest cover and the paper pulp industry, which requires access to forestlands can get the raw material. The displaced and needy people could be employed by the industry as labour. The SEZs would come up on forestland without resistance and environmental concerns would be fulfilled. Through the Joint Forest Management (JFM) or Gram Sabha, the villagers earning their livelihood through the forest products could negotiate with the industry to retain their traditional rights of fodder and other forest produce. "The role of government in contentious issue of the transfer of forestland that can stir sections of civil society into an agitation decreases and the villagers can retain their traditional rights over forests." (*http://www.business-standard.com/article/companies/litl-to-set-up-integrated-solar-sez-in-chhattisgarh-111021100027_1.hml*)

ii) In Maharashtra, SEZs were de-notified due to "fragile" ecosystems throughout the state and horticulture. The Government of Maharashtra is exploring the possibility and viability of establishing the ***solar farms in SEZs*** in association with relevant stakeholders. The ***wind farms*** that acquire a vast tract of land special incentives have to be devised for the affected stakeholders. "The idea behind the proposal was to facilitate continuous, affordable power for small farmers to enhance productivity" (*http://www.dnaindia.com/mumbai/report-maharashtra-govt-moots-sezs-for-wind-energy-farms-1413866*).

iii) Lanco Solar, a subsidiary of Lanco Infratech Limited (LITL) is setting up India's first ***integrated Solar PV (photovoltaic) manufacturing SEZ*** in Rajnandgaon district. (*http://www.business-standard.com/article/companies/litl-to-set-up-integrated-solar-sez-in-chhattisgarh-111021100027_1.html*) The SEZ would come up in about 250 acres of land near Chavardhal village, about 20 km from the district headquarters. (*https://www.wbginvestmentclimate.org/uploads/SEZs%20-%20Performance,%20Lessons%20Learned%20and%20Implications%20for%20Zone%20Development.pdf*) Chhattisgarh signed MoU for Rs 290 crore solar cell plant. *(http://timesofindia.indiatimes.com/business/india-business/Chhattisgarh-signs-MoU-for-Rs-290-crore-solar-cell-plant/articleshow/49894798.cms)* The state-of-the-art project places the country and the State of Chhattisgarh in the global map of polysilicon production bases. Small and Medium enterprises attached with it would 'additionally provide job opportunities for a large number of people in and around the area'. *(http://www.aninews.in/newsdetail3/story241968/lanco-invites-domestic-and-international-companies-at-its-solar-sez-in-chhattisgarh.html.)*

Another example is the Solar Integration Systems India Private Limited (Solarsis), a Hyderabad-based company that offers "grid-connected and off-grid systems using solar photovoltaic (PV) technology', at Sri City SEZ at Tada in Nellore district of Andhra Pradesh, the southern border abutting the neighbouring Tamil Nadu. This is a stepping-stone for future of solar power in India-government's initiative of accelerating the green energy mission (*Business-standard.com /K Rajani Kanth - Chennai/ Hyderabad March 24, 2011*)

iii) A Case Study of Mahindra World City (MWC)

The case study of Mahindra World City (MWC) right from the establishment to the present functioning gives an insight into the environmental problems as well as pursuit to solve the same.

Mahindra World City (MWC) at Jaipur, Rajasthan comprises of specific zones for IT/ITES, Light Engineering, Gems and Jewellery, Handicrafts and Apparels. The 700-acre IT/ITES zones is a substantially large sector and is a BPO hub. It has come up on grazing lands, farming lands and local villages of the vicinity. The people belonging to the place comprised of various castes, with majority of Hindu led villages dependent on rain-fed agricultures and livestock rearing especially for milk production. Through the compensation policy, the Rajasthan government offered to the displaced land that was adjacent to the upcoming SEZ but had no agricultural value. The plot size offered to them was just the one-fourths of their previous land. The farmers were lured to grant jobs in the SEZ with great business opportunities. This was a part of the compensation offered which served the interest of the government by individualizing the village people's relationships to the project. "So, instead of facing the state as a collectivity, they were thrust into land markets as individuals." (*http://books.google.co.in.books?ISBN= 137415183*) As a result, the establishment of SEZ actually did not generate land war. The brokers also played their bit in the exploitation of the land worth.

The people employed in it were mostly educated youth and the displaced villagers and farmers due to lack of skills did not find sufficient jobs in the established zone and even if, got jobs, it was at lower levels as peons, gardeners, watchmen etc. Being afflicted with poverty, they had to work as wage labourers. The villagers also lost their wells and water bodies, however scarce in the area and were forced to purchase water of dubious quality from the tankers. So, the locals lost their home, livelihood, food and water and stood to lose more than they gained. However, the operation in the SEZs is going on from years and the work within the units is expanding tremendously even if it is at the cost of environmental sustainability.

One of the units of Mahindra SEZ in Jaipur namely, Infosys is trying its bit into the solution of environmental problems. Today, the planned structure of Infosys Jaipur comprise of five buildings for technical operations, bank counter, gymnasium and two food courts and other amenities. All facilities there confirm to highest environmental standards and meet platinum standard norms.

CSR- In pursuance of the policy of CSR, a colony is being maintained for habitation for local people who mainly render labour services. This colony is maintained at outskirt of the main campus at a distance and is equipped with shelter, water, food and other basic amenities.

Buildings- The building, in its sprawling green campus conforms to building standards. It has huge glass panes so that minimum lights are needed during the daytime.

Preparedness for disaster mitigation- Preparedness for disaster mitigation is another feature and mock drills are made to sensitize people or to meet the disaster. A separate complex is created and maintained for employees' safety, if something goes wrong due to natural calamities or any other mishap, it can serve employees with all basic necessities of life for several days. Company incurs huge annual expenditure to maintain the same although not used till now apart from mock drills for the same.

Use of Solar Energy-The Campus is self-sufficient when it comes to electricity. It has well laid down solar panels in its sprawling campus ensuring 24 hours electricity supply to meet its energy needs.

Water Management- Campus also consists of plants and green grass belt equipped with well-structured drip irrigation facility. The Company has been pro-active and makes consistent efforts to maintain and raise the ground water level in the drought prone area.

Green Cover-Campus features its huge green area for sports ensuring good health and fitness of the employees. It has volleyball and basketball courts and also a huge cricket ground where many leagues and tournaments are organized.

So, the area of the unit fulfills the environment norms and pursues pro-active policies for green governance. Such examples can make these enclaves sustainable.

Suggestions for Improvement

The national initiative to create more SEZs continues, despite delaying and even de-notifying SEZ projects due to popular resistance. *The establishment of Green SEZs is important for today as well as an idea of future.* SEZs can be places where the idea of commercial and non-commercial can merge. SEZs have a flexible regulatory regime. The groundbreaking laws or statutes or creative and innovative policies can be formulated as per environment friendly guidelines and to address new or pressing challenges. These zones can innovate in fields of power, energy efficiency, the alternative energy, the gas and oil or developing renewable energy sources. The renewable industry has special incentives in SEZs. They can set example by reducing their dependence on the natural gas and to promote the use of renewable energy, such as biomass, biogas, and waste. "SEZs may have to take the green route". (*http://archive.financialexpress.com/news/sezs-may-have-to-take-the-green-route/554031/0*)

A few suggestions can be made:

- Fostering environment should be included in basic *policy* framework for SEZs at the level of government
- *Land Acquistion Policy* devised carefully to satisfy relevant stakeholders
- Coordinated *multiple stakeholders* to promote green guidelines
- Green SEZs, with their *special regulatory regime* should eliminate trade and non-trade barriers on climate-friendly products or services
- Efforts for *climate change mitigation* in SEZs
- *Low emission zones* with proper emission control and prevention
- *Set scrappage target*

- Adoption of *stricter fuel standards*
- Encourage development of *alternative fuel vehicles* in the zones
- Ban use of incandescent lights within SEZs and u*se of LEDs made mandatory* for lights in public spaces
- *Optimum utilization of resources, energy, water* etc.
- Planned handling of *waste and waste management, waste treatment plants*
- *Reduction in fuel use for transport* and encourage bicycles, e-rickshaws etc.
- *Incubation of green building materials manufacturers*
- Oversee the implementation of *sustainable energy options through public - private partnerships*
- *'Green Drive*' campaign should passionately be followed, not only due to strict norms of exporters and zone but due to pro-active policies under CSR practices
- Emphasis on Food & Agro Industry in our agriculture-based country and creating '*Kisan SEZs'*. At present, 5 Notified SEZs are in Agro sector.
- Pro active policies promoting *sustainable development* should be endorsed

Green SEZ Rating System can be adopted as voluntary measure to facilitate the creation of energy efficient, water efficient, healthy, comfortable and environmentally friendly SEZ. A prescriptive approach as a precautionary measure can be adopted to avoid any controversies and also, set a benchmark for environmental norms. Initiatives for accelerating the development and green energy mission by inviting participation from foreign and private players in the SEZs will not only bring in technological know-how but will also create employment opportunities along with promoting sustainability.

Our SEZ policy, is changing over the years, to fulfill environmental pressures and presents tremendous potential for innovation in green governance, needs a more realisitic implementation. Flexible policy regime and pro-active policy is the key to success.

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Microcredit Empowerment of Rural Women in Bangladesh*

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Abstract
Microcredit, predominantly in developing countries has in the past few years received a lot of attention in the international community. For instance, the 2006 Nobel Peace Prize was honored to Professor Dr. Muhammad Yunus (and Grameen Bank) for ground-breaking the thought of microcredit and setting up the Grameen Bank, a microfinance institution (MFI) in Bangladesh. Microcredit programs in rural Bangladesh principally target women because women's microcredit participation is not only considered to be an indispensable part in poverty lessening but a means of empowering women in ways that enhance their capabilities, skills, expertises, as well as socioeconomic status. Consequently, microcredit is a consistent way for females to receive financial capital for starting or maintaining a business. It is still unclear, however, how and whether microcredit has a positive outcome on women empowerment and it is vital to analyze the link between microcredit and empowerment. Therefore, the objective of the study is to investigate the impact of microcredit in rural Bangladesh on women empowerment. Consequently, this study focus on women's empowerment and microcredit based on a survey carried out in Bangladesh based on the data of female population from three rural villages who have been used microfinance services during last five years from 2006-2010.
Keywords: Microcredit, women empowerment, rural Bangladesh

1. Introduction

Microcredit, mainly in developing countries has in the last few years received lots of attention in the global community and in this connection the 2006 Nobel Peace Prize was honored to Professor Dr. Muhammad Yunus (and Grameen Bank) for the ground-breaking thought of microcredit and setting up the Grameen Bank, a microfinance institution (MFI) in Bangladesh. The significance of microcredit is also noted down in the United Nations World Summit Outcome Document, 2005, (United Nations 2005) which refers that "We [the United Nations] recognize the need for access to financial services, in particular for the poor, including through microfinance and microcredit. . .”

Conversely, empowerment is not only talked about in the background of microcredit but also usually in a development background and especially regarding women empowerment. Some evidence argues that microcredit guides to the empowerment of whole nations or marginalized groups (Charmes & Wieringa 2003; Mosedale 2005). Although microfinance and empowerment are intensively discussed in the academic literature, however, the link is still indistinct and need more experimental analysis. Accordingly, this study will concentrate on women’s empowerment and microcredit based on a survey conducted in Bangladesh. Therefore, we describe the concept of microcredit, microcredit scenario in Bangladesh, the current status of women in Bangladesh, women’s status and microcredit programs in rural Bangladesh, policies regarding women empowerment.

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1.1 What is microcredit?

Microcredit is explained as the annex of micro-loans to the socioeconomically disadvantaged people. It is also recognized as a poverty lessening interference in both low-income and high-income states (Ahmed et al. 2001; Salt 2010; Schurmann and Johnston 2009). Microcredit plans crack down on the poor community, who are usually deserted by the conventional banks. This is as traditional banks barely offer credit to the folks who are a lack of security, stable employment and a provable credit history. It is supposed that microcredit permits the poor to pursue income-producing capitalist projects, which ultimately facilitates them to afford better to care for themselves with their ancestors. Currently, microcredit has become an accepted women empowerment intrusion across the glove.

Microcredit in prescribed shape initiated from Bangladesh in 1970’s in a small scale and Professor Dr. M. Yunus, the enormous creative thinker, is the sole and only claimant the development of this notion. He has conceptualized micro credit interference for its wide use to eliminate poverty of millions for the world’s poorest people. The assignment of micro credit has been directed by four core themes: (i) reaching the poorest; (ii) attaining and empowering women; (iii) creating financially independent institutions; (iv) making sure a constructive assessable impact on the lives of the clients and their families.

1.2 Microcredit in Bangladesh

Convinced by the achievement of the Grameen Bank in granting collateral-free microcredit to the poor for income producing activities, a large number of MFIs, for example, BRAC, ASA/Proshika had taken over the small credit plans for women empowerment in Bangladesh (Mahmud 2003). Figures from microcredit regularity authority, Bangladesh (http://mra.gov.bd/) assert that in microcredit sector as of June 2014 total credit disbursement is around BDT 403 billion (together with Grameen Bank, 10 Government project, and Commercial Banks) savings BDT 237 billion. The total customer of this sector is 33.73 million (together with 8.62 million customers from Grameen Bank) that speed ups overall women empowerment progression of the country. Loan services of this sector can be secreted into six broad groups: i) universal microloan for small-scale self-employment based events, ii) microenterprise loans, iii) loans for ultra poor, iv) agricultural loans, v) seasonal loans, and vi) loans for disaster management. Credit amounts up to BDT 50,000 are normally deemed as microcredit; loans above this amount are deemed as small enterprise loans (Islam 2011).

1.3 Current status of women in Bangladesh

Women in Bangladesh has less access to political positions, managerial or technical jobs, occupational choices, equal pay for equal jobs, or social status although it is having a female prime minister since 1991. The women's social and economic status has recovered in last few years, though, such as the country has expanded 107 positions in the Gender Development Index (GDI) contrasted to the Human Development Index (HDI) positioning of 142 (www.undp.org). Nevertheless, women in Bangladesh, on the whole, in formal or informal economic activities, have to resist reconciling activities inside and outside the home with their customary household roles and family responsibility. The call for women's empowerment, particularly those in countryside areas, has originated from the cruel social scenario of the country (Imai et al. 2011).

1.4 Women's Status and Microcredit Programs in Rural Bangladesh

Bangladesh is one of the underprivileged and most thickly populated countries in the globe. Around 45% of total 16.5 core citizens exist below the poverty line–receiving less than two US Dollars per day. 78% of Bangladeshis live in the countryside where scarcity is most severe; women, in particular, undergo low socioeconomic status, as they are restrained from having property, land, employment, income, education, and liberty (Mahmud et al. 2010).

Small loan plans in countryside Bangladesh mainly target women as women's microloan involvement is not only deemed to be a vital element in poverty lessening but also a means of empowering women in ways that improve their capabilities, skills, proficiency, and socioeconomic status (Yunus 1994). Nowadays, more than 2,000 microcredit associations are lending microloans to about 20 million people in rural Bangladesh, and almost 97 % of the microloan clients are women.

Aside from the expansion of microloan involvements and their growing fame among policy-makers, there is a short of trustworthy information about the achievement of microcredit plans, though a few pieces of evidence point out both positive and adverse effects of microloan projects on women and their ancestors. A little number of studies signifies that microcredit involvement advances women's socioeconomic position, elevates their self-regard, and guarantees their wellbeing inside/outside the household (Ahmed et al. 2001). On the contrary, other evidence gets that women's microloan involvement raises their workload and family clash, leading to an appreciation of marital violence since it intimidates men's customary patriarchal family power (Banerjee 2013; Crepon et al. 2013). Inconsistency in statistics across evidence connected to the levels of women's income-producing microloan involvement, poverty lessening and empowerment is also apparent.

1.5 Policies regarding women empowerment in Bangladesh

The Bangladesh administration pursues the millennium development goals. About women empowerment plans, the education policies are an important agenda. As a result, government strategies attempt to make sure that by 2020 all kids, whatever the sex, will be capable to finish primary schooling successfully. Secondly, the National Education Policy sketches to abolish gender discrepancy in education at all levels until 2020 (Ministry of Finance of the Government of Bangladesh 2015). Other strategies to strengthen women and their empowerment are a project to grant state land to landless women, an income support plan that joins financial products such as microcredit, grants, insurance, and training of women in countryside jobs, and assisting them in marketing their products.

1.6 Problem statement and objective of the study

On top of, this study explained the current status of women in countryside Bangladesh and the ways to improve their position. As well as educational policies, a microloan is meant to play a significant function to hold up women empowerment in Bangladesh, as it may propose entrance to monetary affairs that is not obtainable mostly for those without any security. Although the crisis exists lots of developing and also developed states and is rather gender neutral, in countryside Bangladesh the position of women is even inferior to of men (Roomi & Parrott 2008). Women frequently do not have entrance to credit by traditional banks and either rely on private lenders/ MFIs lack of entrance may appear as women do not know how to entrance formal credit, they cannot supply the essential security or credit record, or as of cultural barriers with respect to interacting with male bank staffs (Niethammer, Saeed, Mohamed, & Charafi 2007). Consequently, microcredit is a consistent means for women to obtain credit for establishing/ maintaining a business. However, it is still indistinct, how and whether microloan has a positive result on women empowerment and it is vital to examine the link between microcredit and empowerment. Therefore, the objective of the study is to investigate the impact of microcredit in rural Bangladesh on women empowerment.

This study employs Bangladesh as a case study. There are three motives for this. First, the thought of microfinance was opened up in

Bangladesh. Over the last two decades, the MFIs in Bangladesh has raised from below 50 to almost 1000, a boost of about 1900% (CDF 2005). At present, MFIs in Bangladesh provide on 11 million domestics. Hashemi (1996) declare that, by revising the case of Bangladesh, 'the world's most saturated microloan marketplace,' it would be possible to forecast what could occur in other cases if MFIs are built with the same care as in Bangladesh. Next, Bangladesh has a financially thin market. Domestic credit offered by the traditional banking sector is around 40% of its GDP. This figure contrasts with more than 250% of the GDP in the U.S. and Japan (World Bank, 2005). A big portion of the Bangladesh inhabitants—more than 80%, is not capable of getting any financial service from the traditional banking sector. The third motive for focusing on Bangladesh is that poverty is widespread in Bangladesh. According to the Human Poverty Index (United Nations Human Development Programme, 2005), Bangladesh graded 86 out of 103 developing countries. In the year 2000, 83% of the population in Bangladesh survived on less than $2 per day while 36% survived with less than $1 per day.

2. Background

2.1 Defining and measuring empowerment

For the reason that the thought of empowerment is so personal, each has a single definition of what it refers to be empowered based on his/ her life experiences, personality, and goals. Apparently, context and culture also outline one's meaning of empowerment. Reflecting the manifold experiences and visions of empowerment, there are lots of definitions of empowerment in the literature (see Narayan 2005 for a comprehensive review). Three definitions that are normally cited are found in Kabeer (1999), Khandker (2005) and Afrane (2002). Kabeer (1999) describes empowerment as escalating people's capability to build strategic life choices, mainly in contexts in which that ability had been denied to them. Kabeer (1999) added that there is a gap between the accepting of empowerment as a procedure, and more instrumentalist forms of encouragement that have required the dimension and quantification of empowerment. In Kabeer's explanation, the capability to exercise choice encompasses three aspects: resources (defined to comprise not only access but also future assets to the material, human, and social resources), achievements (well-being outcomes), and agency (including processes of decision making, negotiation, and even deception and manipulation).

Women's empowerment, however, in this study is analyzed from two aspects: (i) Economic (ii) Socio-cultural. The focal points of economic empowerment are more on the 'power to' issue of authority associations about more entrance to credit and savings and other financial resources, for example, entrepreneurial training. All these issues improve the economic place of women leading to improve bargaining skills in their home and society (McDermott, 2001) and eventually 'power to.' The signs of economic empowerment within the household comprise women's participation in income producing activities, admittance to and control over credit operation, and manage revenues and expenditures. Economic empowerment can be examined with questions like who maintains family earnings and who has a say in family spending (Kabeer 2005).

Socio-cultural empowerment includes the 'power with' measurement of power association that lets women to articulate, examine, fulfill, and organize their interests and to link with other women's and men's partnerships for change (McDermott 2001). Socio-cultural measurements of empowerment include women's decision-making activity, women's contribution in community development and women's social dignity (e.g., involvement in the income producing activity, change in business skills, loan taking contributed women's self–esteem) (Kabeer 1999). Decision making activity includes women's capability to take both minor decisions (for example, small household purchase, emergency health care and family matters) and major decisions (e.g., large customer purchases, children's education, giving out daughter/son in marriage, family health, house repairs, leasing land etc.) (Hashemi et al. 1996).

2.2 Microcredit and women's empowerment

Microcredit is employed as the most significant anti-poverty and women empowerment tool all over the globe (Rahman 1999), but there are two inconsistent points, one arguing in favor and the other against the positive impacts of microcredit on women. The debate is particularly pronounced when microfinance's impact on women's empowerment is considered. Hashemi et al. (1996) accomplished that the Grameen Bank was very thriving in women's empowerment in Bangladesh as of its inner concentrate on credit as well as a skillful use of rules in loan program operations. Women's empowerment in their paper was apparent in the women's higher mobility, legal and political awareness, the capability to make family decisions, and ownership of productive assets. Mahjabeen (2008) cited that a woman's more economic roles, as beneficiaries of the microcredit programs, absolutely get better their status within the household. She added that a majority of microcredit borrowers have entrance to more monetary affairs, and even more importantly a greater say in the economic decision-making. Her study supplemented that most women microcredit borrowers claim an improved situation compared to the past as a result of their role to the family income.

Khandker (2005) asserts that microcredit accounts for 40% of the entire lessening of moderate poverty in countryside Bangladesh and that microcredit's spillover have 1% annual effect among non-participants concerning poverty lessening for those living in moderate poverty and 1.3% annual lessening among those living under extreme poverty lines. Some other evidence (Rahman 1999; Mahjabeen 2008; Hashemi et al. 1996) support the above opinions. In another research in Khan et al. (2012) established that microcredit effects women's empowerment are owing to their use of microcredit in various income producing actions and that economic empowerment leads to raising empowerment inside and outside the household.

Islam (2015) performed a study on women's empowerment in a district (Gaibandha) in rural Bangladesh with a planned questionnaire survey of randomly selected samples. They had selected the BRAC, Grameen Bank, and Thengamara Mohila Sabuj Sangha (TMSS) for evaluating their impact on women's empowerment. The findings reveal that only 21% of the women samples qualified empowerment evidenced in the women's institutional participation, family land holdings, and media exposure. Interestingly enough, 69% of the 'empowered' women were active members of the microcredit programs, proving their effect on women's empowerment.

Again another research, Roodman, and Morduch (2009) using a case study in Bangladesh claimed that the impact of microcredit on women borrowers' empowerment is associated with the borrower's age, the level of income and education. They accomplished that the educated women were more about to make the right decisions and to enhance their empowerment impacts. Therefore, microcredit involvement alone is not enough to empower women except it is combined with education, and so, non-borrower women can also experience empowerment.

Further, Ghuman et al. (2006) evaluate existing data on loan use with the borrowers' acknowledgment to highlight the impact on lending to women has on family vulnerability and women's empowerment in Bangladesh. She claimed that loans taken by women are often used for purchasing family assets or increasing income, to allow households to cope with a crisis. Even so, the author adds, that with no ownership of productive assets women stated disempowerment as women's empowerment rests on successfully challenging the patriarchal grip on productive assets.

Most empirical evidence on women empowerment quoted above have primarily focused on a financial or an economic paradigm with no considering multidimensional structure of empowerment. As a result, the current study extends beyond the economic model of empowerment and includes its social, cultural measurement. Within the theoretical foundation, the research analyzes whether microcredit has brought any changes in gendered allocation and operation of resources, which is usually in the men's domain and control.

3. Methodology

The study is based on the data of the female population who have been used microfinance services during last five years from 2006-2010. They belong to the three villages in Hathazari under Chittagong district namely Dhalai, Fatehpur, Farhadabad Union Parishad since these villages are a pioneer in the establishment of microfinance concept. The primary data was collected with the help of a structured questionnaire containing details of demographic and socio–economic information with 350 sample size and has been collected by face to face interview. On-site, face-to-face interviews allowed the interviewer to interact with the respondents, which ensured a clear understanding of the survey questions as well as better-quality responses (Fernando & Porter 2002). The data collection was a part of first authors' *necessary fieldwork* under the course of 'Soc–407: Comprehensive' in her bachelor degree level. Therefore, the interviews were administered personally like most of the respondents were illiterate and didn't know how to read or to write. I collect the women's information before and after access to loan and analyze them between two points in time. Accordingly, this study generates the relative empowerment index (REI), a relative comparison of women involvement in social and economic activities before and after access to microcredit, which indicates women's role and status within and outside the household. The robustness of the results was established by non-parametric Chi–square test. The study is based on a field survey which was conducted from March 15 to July 31, 2010.

4. Findings and analysis

To acquire an inspiration in relation to the socio-economic circumstances of women respondents following eight questions were asked: i) age, ii) education, iii) marital status, iv) reason to hit (reasons to get loan), v) loan taking in times, vi) husband's education, vii) living status, and viii) family members. The information presented in Table 1 demonstrates that the mean age the participants are 32.93 years with the standard deviation of 7.57 years. The majority (90.0%) of women belong to age group of 15–40 years. While there were only 10.0% respondents, who were in between of 41–above 50 years of age. Table 1 also points out that most of the interviewed women were of childbearing age for example, between the age limit of 21–40 (85.43%). Education position reveals that majority of the women in the current study were either illiterate (58.29%) or either has the only lower educational achievement (28%) while their partner's illiteracy rate was 64.29%. It has also exposed that the majority (55.43 %) women were either widowed or divorced. The women's average loan taking rate was 10.40%, in fact, 70.57% women have taken the loan in between of 4–14 times while 29.43% of women have taken it 15–above 19 times within the range of 5 (2006–2010) credit consumption years. There were 74.43% women who are living with joint household while remaining is with the single household. The statistics confirm that majority (93.43%) of the household were having 4–above 12 family members while only 6.57% households were having 1–3 family members. All variables are statistically significant at 1% except 'education' and 'reason to hit' variables.

Table 1: Demographic variables of the respondents (N = 350)

Attributes		Percent	*p*-value	Attributes		Percent	*p*-value
Age (Yrs)	Mean (Std. dev)	32.93 (7.57)	<0.001	No. of Loan taking	Mean (Std. dev)	10.40 (4.34)	0.020
	15 – 20	4.57			4 - 6 times	7.43	
	21 – 25	28.29			7 - 10 times	20.57	
	26 - 30	21.43			11 - 14 times	42.57	
	31- 35	25.14			15 - 18 times	18.86	
	36 – 40	10.29			> 19 times	10.57	
	41 – 45	5.71		Husband's Education	Illiterate	64.29	<0.001
	46 – 50	2.00			Primary	24.86	
	>50	2.29			Matriculation	9.71	
Education	Illiterate	58.29	0.019		Intermediate	1.14	
	Primary	28.00			Graduation	0.00	
	Matriculation	7.71		Living with in-Laws	Yes	71.43	<0.001
	Intermediate	6.00			No	28.57	
	Graduation	0.00		Family Members	Mean (Std. dev)	6.40 (3.36)	<0.001
Marital Status	Married	44.57	<0.001		1 – 3	6.57	
	Widowed	24.86			4 – 6	23.14	
	Divorced	30.57			7 – 9	36.29	
Reason to hit	None	0.86	0.494		10 – 12	28.57	
	At least one reason	99.14			> 12	5.43	

4.1 Women's involvement in income-producing activities

As the first step to empowerment, microfinance institutions (MFIs) grant credit to village women so that they might engage in some income-producing activities and therefore convey meaningful socio-economic transforms in their lives. Once loans are provided, borrowers should invest their loans in productive activities and start paying their installments every month using the profit earned from the credit investment. Data were drawn to assess whether women were involved in income-producing activities, the proportion of microcredit beneficiaries who already had income- producing activities before receiving the credit, and how many of those who did not have an economic activity at the beginning succeeded in starting one after enjoying the credit. Table 2 shows women's involvement in income-producing activities before and after the receiving credit.

Before getting the microcredit, only 21% of our study respondents were connected in some financial activity. This figure rose to 32% after the loans were received which provide a REI of 51.35%, explaining that 68% of women who obtained the credit were not capable of starting any entrepreneurial activity. At the same time as we talk about the reasons for this in Table 3 below, two issues should point out. First, given that a big percentage of women were not already connected with any income-producing business but MFIs nevertheless gave them credits for the purpose of starting up business, one could congratulate the organization for enhancing these women's access to monetary affairs. However, the reality that a substantial number of these women be unsuccessful to start-up any business suggests that MFI's approach did not effectively appreciate what women's entrance to microcredit can do/ not do in a context where financial opportunities for women are limited and where women faced other economic necessities for example hunger and poverty. Second, our interviews with the ladies disclosed that most of them who were not done in any commercial activity but managed to start one after receiving the microloan were, in fact, doing so for the first time. Even if exposure to income-producing activities in a single generation might not be sufficient to run out long periods of traditional as well as cultural conditioning, for these women, the fact that their participation in the NGO's micro-lending plan has enabled them to be involved in commercial activities that might produce income was itself empowering.

Table 2: Involvement income-producing activity before and after loan

Involvement in income generating activity	Involvement before loan	Involvement after loan	Percent before loan	Percent after loan	Relative empowerment (%)	*p*-value
Yes	74	112	21.14	32.00	51.35	<0.001
No	276	238	78.86	68.00	…….	
Total	350	350	100.0	100.0	…….	…….

The cited events for which microloans are acquired are in Table 3, and it also demonstrates the patterns of credit utilization among the 31.73% of the rural women who were employed in some form of monetary activity (category 1–7) after they received the credit. Food crops farming, petty trading, livestock rearing, poultry farming are the most common monetary uses for their credit. However, our evidence revealed two problematical issues as regards women's loan investment decisions. The first is that most microloan receivers invested their loans in activities that yielded a little income, e.g., Petty trading in agricultural products, Sewing/dressmaking. Our interviews, however, with women found that male supremacy in the local economic sphere tended to push most women into less economic, monetary events, for example, those described in Table 3. But some participants also accounted that they invested their loans in these types of activities because of the little size of the loan they obtained.

The next concern is that the majority number of women (68.27%) has even failed to invest their microloans in any venture that could produce substantial income (Table 3, category 8–16). Two main grounds accounted for this. First, the preliminary loan capital went into direct consumption. Several reports were given about loans being used to meet immediate family needs for example purchase of food/ medicine, marriage, education, etc. And the biggest reason, the loan was vigorously detained, or in some instances, women themselves willingly handed over the credit to their husbands/ another family member. For all these women, losing the first loan capital frequently initiates a process of dispossession and indebtedness that concludes in a gradual but profound socio-economic privation and disempowerment.

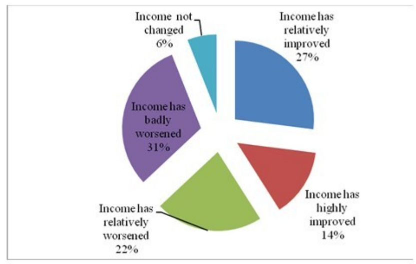
4.2 Impact on women's income and contribution to family welfare

Figure 1 is an illustration of women's self-assessment of their earnings position since accessing the microcredit, while Table 4 demonstrates the distribution of changes in earnings between women who already had an income-producing event before getting the microloan and those who did not. These results are the outcome of a question that asked women to explain their earnings after they had entranced the microcredit.

Table 3: Stated purpose of loan (N = 350)

Microcredit activity	Percentage
1. Farming (food crops)	6.29
2. Petty trading in agricultural products, e.g., wheat, rice	5.14
3. Petty trading in other consumer goods, e.g., salt	2.00
4. Livestock rearing, e.g., cow, goat	8.57
5. Poultry farming, e.g., hen, duck	5.71
6. Sewing/dressmaking	2.88
7. Purchase/maintenance/expansion of existing business	1.14
8. To pay secondary loan	10.57
9. House construction and purchase	2.57
10. Marriage of the children	7.71
11. Education of the children	8.88
12. Doctor/medicine/health	4.57
13. Direct loan consumption	11.11
14. Loan seizure by husband/loan given to husband or another family member to use	18.86
15. Non-food primary activities (candle/kerosene)	1.43
16. Negative social event (death/ divorce)	1.71

17. Did not report reason	0.86
18. Other activity	0.00
Total count	100.0



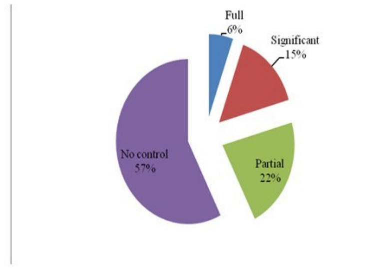


Figure 1. Credit impact on women's income
Figure 2. Women's control over loans and funded enterprises

Figure 1 point out that 14% and 27%, of the women participants, respectively accounted that their earning levels have highly enhanced and relatively improved while 31% and 22% women respectively asserted that it was severely worsened and relatively worsened. On the other hand, 6% reported that their earnings level had not changed anymore. Table 4, however, illustrates that majority of the women who had income-producing events before getting the microloan reported that their position increases (85.14%)/ no change (6.76%) in income. In contrast, the majority of our respondents who reported decreases in earnings (46.01%) were women who did not have any income-producing commercial activities before accessing the loan. Our interviews originated that most participants who reported improvements in their income had invested their microloans in one productive activity/ had prolonged their existing businesses. Even though these women admitted that the income they were received, most of them feel proud of the monetary contribution they now make to their family welfare and children's education. A few of these women cited how they were using their loans and incomes accruing from their loan investment to give better quality and quantity food, pay expenses of their children's education and clothing needs.

Table 4: Distribution of changes in income after access to microcredit

Participant categories	Income increased after loan	Income decreased after loan	No change in income after loan	Total
Already had an income-generating activity	85.14% (63)	8.10% (6)	6.76% (5)	74
Didn't have an income-generating activity	28.27% (78)	46.01% (127)	25.72% (71)	276
Total	141	133	76	350

On the other hand, for the majority of respondents whose earnings worsened or remained stagnant, the situation is the reverse. Those women were instituted either not to be making any profits from their investments/ to have lost the original loan capital to non-productive ventures for example direct consumption, the marriage of the children, non-food primary activities (candle/kerosene), negative social event (death/ divorce). For the majority of this category of respondents, not only they were not capable of adding to household well-being, but also they found it enormously difficult to pay the monthly interest on their microloans. These women painfully inform of how they frequently have to borrow from friends and other money lenders to pay the monthly interest on their credit so as to avoid defaulting and run off the social pressures and shame that comes with defaulting.

Apparently, our findings here propose that microcredit programs for women are likely to have a more positive impact on family incomes if such plans are targeted at women already engaged in some entrepreneurial activities.

4.3 Control over loan and income from funded investments

MFIs offer credit to women on the supposition that women will independently/ jointly–exercise full control over both the credit and the investments that they make. In fact, however, this assumption typically does not apply. Empirical findings demonstrate that in more than half of the cases women had no control over their funded investments. Figure 2 illustrates this. 57% of the women sampled pointed out that they exercise no control over the credit they obtained, including funded investments with earnings and assets that may accumulate. Only 6% were capable to fully manage their loans and investments while some 15% and 22% exercised significant and partial control, respectively. Our in-depth appointment with respondents disclosed that while women are the credit recipients, decisions about how these credits are used and who might work out control, take place within the domestic monetary affairs. In the study areas, the household usually activates as both a cooperative, productive unit and political entity where financial decisions are made by male counterpart with exercising power and control. At the time of dialogue period with women respondents instituted that in the majority of cases men (mostly husbands) directed the loans and funded investments in whole/ in part as well as supplied installments for the monthly interest payment. Two main motives clarify this. The first is related to the fact that in more than half of the issues, husbands with other male relations in the family made the preliminary decision for a woman to join the credit plan by either sending/ influencing her to become a member of MFI's credit–lending program. In a few cases, women provided detailed accounts of how their husbands not only asked them to join but also literally forced them to join to attain funds for their male counterpart's convention. In part, this gives details why husbands will either totally grab the credit or exercise full control over the loan and funded investments. Certainly, there were several accounts of husbands vigorously taking away income/ selling out assets acquired by women from their credit investment.

The next explanation why a small number of women were capable of managing the loans and funded investments is that existing standard and socio-cultural traditions confine women's capacity to own/ to exercise control over their monetary affairs with physical assets. In the traditional socio-cultural surroundings of Bangladeshi society, women may possess assets through inheritance and self-purchase. Fewer women, however, are capable of asserting possession and control of these assets because men exercise management and use rights even if it is the woman who obtains the goods lawfully. Though, some respondents illustrated personal experience about how they eagerly handed over their loans, assets, and resources to their male counterparts thinking that men are superior in managing and handling monetary affairs.

4.4 Microcredit and women's involvement in major family decision making

Admission to microloan with participation in income-producing events is assumed to strengthen women's bargaining power within the household, thereby allowing them to influence a greater number of tactical choices (Hashemi et al., 1996). In poor Bangladeshi countryside's particular, men's command over women is the strongest within the family circle. Women's aptitude to contribute and influence decisions that affect their lives at the family level is therefore considered one of the major parts of their empowerment. While it is not clearer exactly what types of decisions and what scale of contribution and influence should be classified as empowerment, this study, therefore, records REI in women's levels of participation in making important family decisions after the entrance to microcredit. Table 5 evaluates respondents' involvement in family decision making before and after their admission to credit. It is apparent from Table 5 that in all family concerning issues, women are in an excellent position in relation with REI, suggesting that the microcredit operations has considerably increased their status and bargaining power within the family circle.

Table 5: Women's participation in household decision-making before and after access to loan

Household concerning decisions	Involvement before loan	Involvement after loan	Percent before loan	Percent after loan	Relative empowerment (%)	*p*-value
Sale of farming products e.g., food crops	47	51	13.43	14.57	8.51	<0.001
Sale of family livestock e.g., cow, goat	30	35	8.57	10.00	16.67	<0.001
Sale of poultry items e.g., hen, duck	58	61	16.57	17.43	5.17	<0.001
Use of household income	51	54	14.57	15.43	5.88	<0.001
Schooling of children	55	58	15.71	16.57	5.45	<0.001

Sending family member for medical care	50	53	14.29	15.14	6.00	<0.001
Giving out daughter/son in marriage	24	27	6.86	7.71	12.50	<0.001
None	35	11	10.00	3.14	…….	…….
Total	350	350	100.0	100.0	…….	…….

4.5 Microcredit and women's economic dependence on husband

Women's economic reliance is an additional major factor that can conceal their empowerment. Usually, women in research area are connected with family affairs those are non-wage earning, for example, working on their husbands' farms and caring for children. This renders them financially reliant on their husbands and other male counterparts. Yunus (1994) affirm that if women had opportunities for successful engagement outside the family circle through their entrance to microcredit, their contribution to family welfare would help to diminish family poverty as well as reduce women's overall monetary reliance on their husbands. In our research, women's economic sovereignty was evaluated by the REI by comparing data before and after their participation in the microloan program. The results are presented in Table 6.

Table 6: Women's economic dependence on husband's/kin's earnings before and after access to loan

Expenditure/purchase type	Involvement before loan	Involvement after loan	Percent before loan	Percent after loan	Relative empowerment (%)	*p*-value
Food	67	56	19.14	16.00	16.42	<0.001
Clothing	45	51	12.86	14.57	– 13.33	<0.001
Medicine	74	79	21.14	22.57	– 6.76	<0.001
Jewelry	39	47	11.14	13.43	– 20.51	<0.001
Children school fees	63	51	18.00	14.57	19.05	<0.001
Hair cream and other body accessories	42	54	12.00	15.43	– 28.57	<0.001
Others	20	12	5.71	3.43	40.00	<0.001
Total	350	350	100.0	100.0	…….	…….

Usually, women's entrance to microcredit emerges to have a very limited consequence on their reliance on the wages of their husbands/ other male counterparts. Aside from food purchases/

spending from payment of children school fees, which experience a marginal empowerment, 16.42%, and 19.05% respectively, regarding the number of women depending on their husbands/ other kin wages. The REI is negative, on the other hand, for the rest of the evaluated variables, suggesting that women's economic reliance has risen even after entrancing microloan from MFIs. The quantitative analysis identified two primary motives why this is the case. First is the incomplete control of women having over their credit and funded investments. Usually, husbands control women's loans and funded investments. As a result, not only do women depend on their spouses for delivery of installments to pay their monthly interests, but they have also become unceasingly needy on the same male partner for obtaining absolute necessities and personal effects.

The following grounds is that the income-producing events that are principally controlled by women, for example, farming, i.e., food crops; livestock rearing, e.g., cow, goat; poultry farming, e.g., hen, duck, etc. classically yield modest earnings contrasted with the earnings of male counterparts in wage labor. In this vein, most women are not self-sufficient regarding personal income and therefore still have to depend on the earnings of their husbands to fill up various purchases and meet different family expenditures.

4.6 Microcredit and women's social dignity at the community level

Given their household tasks, it would appear that women have a higher degree of experience and maturity to deal with the conceding and succeeding repayment of a loan. This finding, however, is not generalizable, as a crowd of factors (for example, economic, social, religious, and tribal) combine and influence in the right utilization and return of microloan. Among these factors, household binds to the husband and children are stressed. In many cases, thus, there is a propensity to diverge the microcredit to its objectives and applications more advantageous to the husband and children than to the women themselves. In this sense, Islam (2011) ends, after being interrogated

920 household samples selected randomly in Bangladesh from the participants of top three microfinance institutions: Grameen Bank, BRAC, and ASA, that the participation in the microloan plans endorses women social dignity within and outside the household, while increasing the role of involvement at the society level.

According to Mahmud et al. (2010), microloan assist women in three ways: (1) leading to higher income due to monetary diversification that will assist women to do their reproductive position as brokers of the health, nutritional, and educational status of other family members; (2) providing employment to women in micro enterprises, and (3) enhancing their self-confidence and status within the household. Also, Gupta & Yesudian (2006) show empirically, using data on the borrowers of the Grameen Bank of Bangladesh, that microloan has had a considerably positive effect on women's dignity and bargaining power within the household. Therefore, in this study we measure this scenario by adding two variables, 'women's participation in community development and their social dignity' before and after access to loan and the empirical results from Tables 7–8 show that there is a trusting relationship between microcredit with these two variables. The REIs are highly positive, suggesting that women can play an active role in community development activities after accessing microcredit that enhances their social dignity also.

Table 7: Women's participation in community development before and after access to loan

Household concerning decisions	Involvement before loan	Involvement after loan	Percent before loan	Percent after loan	Relative empowerment (%)	*p*-value
You participate in the community for development efforts	27	51	7.71	14.57	88.89	<0.001
You participate in community development as a member	43	63	12.29	18.00	46.51	<0.001
You only attend meeting when invited	58	84	16.57	24.00	44.83	<0.001
You never participate in community development efforts	222	152	63.43	43.43	…….	…….
Total	350	350	100.0	100.0	…….	…….

Table 8: Women's social dignity before and after access to loan

Activity/participation	Involvement before loan	Involvement after loan	Percent before loan	Percent after loan	Relative empowerment (%)	*p*-value
Involvement in income generating activity	74	112	21.14	32.00	51.35	<0.001
Change in business skills	44	54	12.57	15.43	22.73	<0.001
Loan taking contributed women's self - esteem	11	23	3.14	6.57	109.09	<0.001
No involvement/no skills/no dignity	221	161	63.14	46.00	…….	…….
Total	350	350	100.0	100.0	…….	…….

5. Conclusion

This study spotlight on women's empowerment and microcredit based on a survey carried out in Bangladeshi countryside rooted in the data of women microloan borrowers from three villages who have been used microfinance services during last five years from 2006-2010. Findings propose that those women who became more empowered as a result of their entrance to credit who were either already connected with some entrepreneurial activities before getting the microloan or they exercised full or significant control over earnings from their loans. In contrast, women borrowers who became susceptible and even disempowered were those who either received loans to start-up new commercial engagement but truly failed to do so and owing to loss of first credit to other unapproved uses for example direct consumption, or those who had no control over investments and earnings from their loans.

The empirical results also propose that the impact of any microcredit plan depends on the socio-economic and cultural backgrounds in which it is implemented, and that women might experience both more gains and difficulties from entrancing credit, depending on their positions and whether they are capable of paying their debt or not. In some cases, entrance to credit might be the only effort needed on the road to women empowerment. Simultaneously, the study results also demonstrate that in a culture in which women have little control over their loans and earnings from their investments, it is a singularly poor environment to give out credit to women to start-up new entrepreneurial affairs. This would advise that MFIs require revising their lending approach to center on some things. First, it might be better to the hub on women already having an income-producing commercial event that generates enough earnings to repay the loan. This would not only help countryside women to grow their existing businesses and produce more earnings, but it would also ensure the sustainability of the microcredit schemes themselves. Following, it might also be helpful to the first screen and determine which women have sufficient control to be capable of employing microcredit actually. This might necessitate moving beyond individual women to focusing also on households and communities to readdress powerlessness and sex-based bias against women.

As well as the above recommendations, the small income-yielding nature of women's commercial events contributed to discouragement the spaces for women empowerment, while resists over loan employ and manage over loan-funded commercial investments within and outside the household with rising debt-liability of individual borrowers shaped new forms of violence, abuse, dominance, and control over borrowers. These empirical results from our study clearly hold the need to boost the sizes of loans to levels that are sufficient enough to be invested in high income-yielding entrepreneurial ventures. Likewise, we advocate that the timing of loan payment should be altered to be in a period where economic opportunities and foods are plentiful rather than limited, while effectual loan monitoring devices should be put in place to tackle the high possibility for loan fungibility.

In brief, empowerment cannot always be supposed to be the habitual outcome of women's entrance to microloan predominantly in contexts, for example, Bangladesh where countryside women still face substantial socio-economic drawbacks about male counterparts. Even though microloan could be the first step in a procedure that could take 4–5 generations, it is impractical to expect women's entrance to microloan plan to immediately alter a pattern of male control with other social–cultural forms that may have existed for time immemorial–that divest women of control over their monetary activities and the earnings thereof. Nevertheless, with sufficient loan size, suitable timing, effectual monitoring, and improved screening methods that evade giving loans to those who are not likely to be in a situation to repay through the fortitude of which women have insufficient control to be capable of employing credit effectively; women's entrance to microcredit can boost their empowerment.

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Microfinance at work in the poor corners of Ecuador

By Jean François Bonin

Last year (2016), I took part in the latest study tour organized by Oikocredit international in Ecuador. What an experience it has been to see first-hand what microfinance allows disadvantaged people to do. It was not an easy trip, we had little sleep, no time for a few drinks, never a beach in sight, and of course, all the expenses were ours. But it was real and so instructing.

Oikocredit international is a worldwide cooperative and social investor active in Africa, Asia, Latin America and Central & Eastern Europe where it finances institutions involved in microcredit and agriculture.

The funds gathered by Oikocredit come from individuals who invest, knowing their money will be put to good use. When I was told I could be part of the tour, I did not hesitate one minute. I asked for 10 days off, checked the validity of my passport and bought my airplane ticket and a new suitcase.

Of course the earthquake that struck the country last April (2016) made me hesitate. As reported by the media, the devastation was indeed great. Over 600 people lost their lives, many are still unaccounted for, and houses and infrastructures instantly became ruins on the 16th of April. To those unfamiliar with the region, the whole country seemed under duress. Thanks to its extensive network of partners, Oikocredit officials were quick to assess the situation and take the decision to go on with the mission. The earthquake had been particularly severe in two coastal provinces so some plans had to be modified and visits cancelled. In terms of physical damages, the rest of the country, including Quito and Guayaquil, respectively the capital and the largest city in Ecuador, were largely unscathed. That is not to say that no microfinance beneficiaries were touched, in fact several were impacted, and the microfinance institutions supported by Oikocredit are sparing no effort to help them financially.

Those lenders partnering with Oikocredit international are either banks or foundations. We had the chance to meet with the managing teams of Banco D-MIRO and a non-profit association called FACES who explained, with figures to support what they were saying, what they were doing with the hundreds of thousands of US dollars they were borrowing from Oikocredit international.

That money is a large chunk of the capital held by the bank and the FACES foundation and they are lending it to hundreds of small borrowers who otherwise would not have access to the ‘regular credit’ offered by commercial banks. Simply put, they are too poor and they are not in a position to offer the guarantees required. What they have in common is a spouse or friends willing to co-sign the loan, a particular knowhow and eagerness to make a decent living out of it.

For example, we met in the outskirts of Guayaquil a couple in their mid-fifties (Vincente and Elena) who were making chicken or vegetarian empanadas with a crust made of plantains. Prior to getting their first credit from Banco D-MIRO, they were working a small plantains plantation whose revenues had to be supplemented by the income earned by Vincente. He was taxiing people in his car until he had an accident which resulted in a total loss of the car. They could not afford to buy another and had to abandon the plantation. It was about that time that they heard of Banco D-MIRO microloans. They knew what to do with plantains and that they could sell their empanadas in their neighborhood. So they took out a loan that allowed them to purchase a fridge, an oven and a professional grade grinder. Today, as they are paying back their fourth microloan with interest, they are left with enough income, not only to send their three daughters to school, properly fed and dressed, but also to make slight improvements to their house.

When we met these street vendors in their home, they had just got rid of the wooden ladder they were using to reach their bedroom and replaced it with a small cement staircase. A wooden floating floor for their ‘commercial kitchen’ was next on their list. During our visit, we were interrupted by the three girls coming back from school.

We have met other small borrowers, a mechanic, a plasterer, a dressmaker - all entrepreneurs working at home, making a decent living and sometimes creating jobs for others. They looked happy, and so were we, becoming aware of the difference our investment was making.

Improving lives and communities through co-operative action and organic certification

We also spent entire days with cocoa and coffee growers and we learned how microfinance was improving life in their community and helping them produce the top quality organic beans for our favorite beverages.

Cocoa producers handpick each cocoa pod and each coffee bean from small trees growing in the shade of dense vegetation. It is hard work and if the growers have a small plantation their best option is to join a cooperative which will help them, their family and the bean pickers they sometimes hire to reach a decent level of life. Thanks also to the financial support provided by Oikocredit, their work place, (i.e. the plantation) is safer and cleaner while their community is able to provide essential services.

We visited several small cocoa and coffee producers in the vicinity of Guayaquil and in the Andean Highlands who are members of a local cooperative which itself is a member of two associations, FAPECAFES for coffee and UNOCACE for cocoa.

To become a member of the cooperative, participating growers agree to produce beans which meet the standards of various organic certification agencies. As for the cooperatives, to be affiliated with the coffee or cocoa farmers associations, they have to abide with the requirements of fair trade certification.

For export commodities like coffee or cocoa, meeting all the organic standards is fairly demanding. As we have learned from the producers, an entire shipment of coffee had not received the certification due to traces of insecticides they were using to protect themselves from mosquitoes. (We were also reassured that they were experimenting with natural products and that they were confident to find soon a perfectly innocuous product. Who knows, one day that cream or lotion will be found on the shelves of our drugstores?). All that is to say that, it is more hard work to produce organic cocoa and coffee and, most of us, as consumers, should be aware of this when we pay a premium price for our organic certified coffee or chocolate bar.

That is where these associations come into play. They are the ones negotiating the prices of the organic coffee and cocoa beans that North American and European importers are looking for. Although the prices vary from one season to another, prices received for certified commodities are noticeably higher than the prices of non-certified cocoa or coffee beans.

It is at that internationally negotiated price, slightly lessened, that the growers will sell their sacs of coffee and cocoa to their cooperative which, in turn, will sell them to the Association which will take care of processing, packaging, shipping and certification procedures. And that is when the loans provided by Oikocredit international to the Associations come into play. These funds allow them to supply their members, the cooperatives, with the money they need to purchase the beans from their members upon delivery. There are no waiting delays, no "up the line" approvals, and no hidden fees. Just certainty and predictability for the producers who can concentrate on what they do best, growing coffee beans and cocoa. Remember, none of them are rich, quite the contrary, and when they need money to keep working their plantation they do not have access to the loans Ecuadorian banks are making.

That is not to say that these plantation owners have no other options. Intermediaries representing big trading firms roam around. Their negotiating power is immense when they approach a small plantation owner. These representatives, called "coyotes" in some places, have deep pockets and they may offer on the spot good money for an entire crop. But it will happen only once; after that, the conditions will be much less favorable, and the cooperative, if the grower belonged to one, would be of no help. As a member, you have rights, but also responsibilities and duties, and selling exclusively to the cooperative is one of the rules.

Apparently, these rules are one of the reasons given by coffee and cocoa growers when asked why they chose to remain independent. Abiding to the strict protocols of organic production and not being free to sell it those who will give the best price is not to everyone's taste. Moreover, cooperatives follow that democratic decision making process where each member, whatever the size of his or her plantation, has one voice. If you possess acres and acres planted with coffee and cocoa trees, you may not like majority rule.

Another feature of the cooperative system some growers don't like is that, before paying the members, the cooperative keeps a small fraction of the money it gets from the association it belongs to. It is true that, like a coyote, the cooperative is an intermediary between the growers and the association which sells their production abroad. But at the same time it is so different because that money, the cut the intermediary would take otherwise, stays with the coop and is used for the benefit of the community. In fact, it represents the added amounts to the price obtained by the Associations in their negotiations with importers agreeing to buy fair trade certified coffee and cocoa.

It is fairly simple, through their association, the cooperatives agree to a list of community projects they will implement with the returns obtained as a result of that heightened price. For example, we were told coffee farmers' cooperatives in the Province of El Oro, near the Peruvian border, whose isolated plantations were infested with venomous snakes. The cooperatives have decided to use their 'fair trade surpluses' to build a small dispensary with a refrigerator they filled with the live-saving antidotes.

We heard many other revealing stories but to summarize my state of mind when we made those visits, I can only say that I was honored to spend time with these people providing us with quality coffee and chocolate. We have not met anyone we would consider wealthy but those we met deserve the little they had and were proud of what they were doing, and rightly so. They were also cognizant of the thousands of investors who make Oikocredit possible. I don't think that they see these investors as charity providers; after all their association pays interest on the loans provided to them by Oikocredit. I heard some farmers, cooperative and association workers referring to Oikocredit International and its investors as enablers. I could not have come up with a better word.

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