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WOMEN'S EMPOWERMENT AND MICROCREDIT: EVIDENCE FROM AN EMPIRICAL STUDY IN INDIA

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To my family

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Abstract

Women empowerment constitutes one of the main developing countries issue of modern times, with microfinance playing a key role. This work, using a quasi-natural experiment with a hand-collected dataset in an Indian MFI, explains the effects of the participation to empowerment projects (Women Peace Council, WPC) combined with the membership to the microcredit programmes. Starting from the creation of a questionnaire that reflects the multi-dimensional characteristic of the empowerment process, different aspects of this process have been examined. The goal of the thesis is to study the relations between the participation to WPCs and the level of empowerment compared to women that have access only to microcredit projects. On the basis of the results of this research, it can be concluded that the impact of WPC membership on women empowerment level is positive, generating high outcomes under different aspects including financial, entrepreneurial, family empowerment and education. In addition, there is no evidence of that the program leads, as a drawback, to phenomena of violence.

Abstract- Italian version

L'emancipazione femminile rappresenta uno dei problemi principali dei tempi moderni relativi ai paesi in via di sviluppo, che vede come ruolo chiave la microfinanza. Questa tesi, utilizzando un esperimento quasi naturale con un set di dati raccolti presso una IMF indiana, spiega gli effetti della partecipazione ai progetti di *empowerment* (Women Peace Council, WPC) abbinata a quelle dei programmi di microcredito. Dalla creazione di un questionario che riflette la multidimensionalità del processo di emancipazione, sono stati esaminati diversi aspetti. L'obiettivo della tesi è quello di studiare le relazioni tra la partecipazione ai WPC e il livello di *empowerment* rispetto alle donne che hanno accesso solo ai progetti di microcredito. Sulla base dei risultati di questa ricerca si può concludere che l'impatto derivante dall'appartenenza ai WPC a livello di *empowerment* delle donne è positivo, generando esiti consistenti sotto diversi aspetti, tra cui quello finanziario, imprenditoriale, relativo alla famiglia e all'istruzione. Inoltre, non vi è alcuna prova che la partecipazione al programma di *empowerment* porti a fenomeni di violenza nei confronti delle partecipanti.

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Executive Summary

By living in a world where 2 billion of people are unbanked (Demirgüç-Kunt, Klapper, Singer, & Van Oudheusden, 2015), governments and policymakers have noticed that this financial exclusion can be a threat to the global economic development. That is the reason why, financial inclusion impacts not merely on the life of the individual but also on a global scale as well.

In this context, the concept of microfinance can be presented as "the provision of financial services to poor households. The main element of microfinance programmes has been the provision of small loans – microcredit – to poor women via neighbourhood groups"(Garikipati, Johnson, Guérin, & Szafarz, 2016). With the purpose of having a better understanding, microfinance can be described with these nine features: "small transactions and minimum balances (whether loans, savings, or insurance), loans for entrepreneurial activity, collateral-free loans, group lending, focus on poor clients, focus on female clients, simple application processes, provision of services in underserved communities, market-level interest rates" (Armendáriz de Aghion & Labie, 2011).

The birth of a sort of microcredit programmes dates back to the end of the 1980s and the beginning of the 1990s, but the modern concept of microfinance was established by the Nobel Prize 2006, Muhammad Yunus with his Grameen Bank. He offered little amount of credits to poor rural women, giving proof that even unbanked people can repay their loans and step out of their condition of extreme poverty. During the 90s, microfinance programmes were characterized by an important economic upturn and a consequent international growth. Today it is a global business with over 211 million borrowers where women constitute over the

74% (Microcredit Summit Campaign) and Asia is experiencing a significant growth. In particular, India occupies a leading position, and the number of clients from 2012 to 2016 is increased from 14,8 to 32,5 million. Microfinance services are no longer supplied exclusively by Microfinance Institutions (MFIs) but there are several other providers such as commercial banks, insurance companies, payment services, non-bank intermediaries and NGOs. However, in 2010 the microfinance sector was hit by the Andhra Pradesh crisis and in this context microfinance faces the issue of the trade-off between the financial sustainability and outreach of its programmes (Hermes & Lensink, 2011). The microfinance impact is still unclear among the scholars, where a global consensus across the various research about microfinance and health, education, job creation and women empowerment. Two schools of thoughts perceive microfinance as something that can improve people's lives, or on the contrary, as a potential threat to their status.

Literature Review

Several research analyse microfinance under different perspectives from psychology to international economic, from finance to social sciences. In this piece of work microcredit will be studied by considering its impact on women empowerment. A great body of research has analysed this topic in the past and different results have emerged, regarding its positive or negative impact on women empowerment. A review of the literature highlights that there is much debate on what is empowerment. However, the common opinion across all the various scholars is that empowerment can be measured with different dimensions and that it is a process rather than something static. Kabeer clearly defined empowerment as "the process by which those who have been denied the ability to make strategic life choices acquire such ability" (Kabeer, 1999) and this is the most shared definition between different authors. Regarding its relevance, women empowerment relies on one of the Millennium Development Goals that is to promote gender equality and empower women and it is extremely important in societies, like the Indian one,

where there are still gender discriminations. So, in this context women empowerment is gaining wider interests all over the world both in developed and developing countries.

This topic has gained wider interests especially in the microfinance field. Several studies analyse the relation between microfinance and women empowerment, since the majority of financial services are dedicated to women. In this direction, women empowerment has been studied as an effect of the access to microfinance services. Many studies deal with the role and the impact of microfinance in empowering women but results are controversial. There is not a common opinion on the impact of microfinance programmes, some studies report a positive impact, some negative and some mixed. In particular, even when the impact is positive, the evidence is not so strong and results are not so significant.

This is the reason why some scholars report that giving access only to microfinance programmes is not worthy. In particular, they suggest to offer other supporting activities in addition to microfinance services. NGOs, MFIs, sponsors of microfinance programme should provide training courses, networks, workshops in order to create awareness and improve the self-confidence.

All these considerations have done the groundwork for this research study, whose final goal is to answer to this question:

Does the participation to Women Peace Council (WPC) and microcredit programmes increase the level of women's empowerment?

Therefore, the scope of this thesis is to provide a new perspective on women empowerment and microfinance and to understand what relationship exists between the membership to WPC and emancipation under different aspects.

Women Empowerment and the Hosting Institution

In particular, WPC is a project aiming at satisfy the increasing women's need and desire to emancipate. This project promotes awareness on women rights, gender equality and empowerment. In a context where the level of discrimination is still high, it becomes really important to promote activities that enlighten the path for women empowerment and emancipation. Therefore, the overall investigation has tried to determine if the participation to WPCs can empower the women in the project.

The study has started in October 2016 and it took place in the rural south-west districts of Kolkata, India, though the collaboration of a no-profit microfinance institution, Institute for Indian Mother and Child (IIMC-www.iimcmissioncal.org). More in detail, this non-governmental organization gives microloans through 7 branches, located in the area of South 24 Pargans, to women. This microcredit service is aimed at funding new business and supporting the on-going ones and in addition the other objective is to support women social empowerment. IIMC mission is to improve the lives of people living below the poverty line and help them to achieve a financial stability through the acquisition of a new knowledge, and not simply offer a short term support. The life aspects covered by IIMC broaden from microfinance and women empowerment, to basic accessible health care and children education.

On-Field Research

More in detail, the study is a quasi-natural experiment led in four branches, out of seven, of IIMC (Chackberia, Hatgacha, Hogalkuria and Kalyanpur) and the sample is composed by 227 women. The quasi- natural experiment occurs when the assignment to a treatment is not random and the allocation to this group is not managed by the researcher. All the women in the sample participate to the microcredit program, and they are divided in two sub-groups: the treatment and

the control group. The former is composed by 137 women member of the WPC project, while the latter, to which belong 90 women, has no treatment and all the women had to compile the same questionnaire.

The on-field research was held between 30th of September to the 10th of November and it consists in the distribution of the paper questionnaire to the women. These questionnaires were prepared in Italy and once arrived in Kolkata, they were translated from English to Bengali, the local language. by IIMC staff. The first week of the on- field research was dedicated to the review of these questionnaires with Alim Sardar, who is in charge of the microcredit programme, and successively to their translation, both versions are attached in the appendix section. The survey is structured in 28 questions divided in five parts which cover different aspects of women's life. All the questions, except for the identification and personal data, required the answers for two different periods, 2007 and 2016. The first two parts to identification and personal details such as: name, village of belonging, microcredit group name and number, marital status, religion, membership to the Women Peace Council and woman activity. The third part is the numerical one and provides details on information like age, number of children and number of people in the house. The fourth part is focused on who is the household's head and his main economic activity and on house facilities such as: type of toilet, wall material and electricity. The last part is the core of the questionnaire and it is related to questions that analyse empowerment aspects such as: on which decisions women can have a say on, if they are free to move alone or not and if they own a phone and money for personal spending. The answers to this questions will be deeply analysed in order to asses if the participation to WPC has an impact on empowerment or not.

Therefore, through the adoption of a proper statistical model, it is assumed to show a difference in the level of empowerment between the two groups of women, proving that the participation to WPCs generates a higher level of emancipation and awareness in treated women compared to controlled ones. Of course, this must

not be given for granted, a possible drawback of WPC participation might be caused by their husbands' disapproval who might not agree with their participation. Household's heads can prevent women's participation, resulting, at times, in domestic violence and this would lead to disempowerment.

Once collected, the data of the questionnaire were transferred from the paper-format to the digital one through Microsoft Excel.

Statistical Methodology

The methodology needed to analyse the data and answer to the research question is decline in three main sections: descriptive statistics, t-test and correlation analysis and Two Stages Least Squares (2SLS) model.

In the first section, the information coming from the questionnaire was used in order to have a complete overview on the women characteristics. The sample is composed by 227 observations, of which 90 belonging to the control group and 137 to the treated one. The identification and personal data are almost similar and there is no evidence of differences between the two groups for what concerns the age and the marital status. Regarding the children gender, is interesting to notice that there is not discrepancy between male and female, that means the sex selection abortion is not practiced. Moving the attention on the empowerment aspects, it can be noticed a difference between the two groups for what concerns the use of borrowed money for health. Control women, which do not participate to WPCs, are not so conscious about the importance of the health, that is one of the main topics discussed during the daily meetings.

In the second section, the t- test and the correlation analysis are implemented. The first is used in order to understand if there are differences between the control and the treated group. In particular, the means of the two groups are compared according to the independent t-test where variances are assumed to be equal. This method is required in order to understand if the difference between the means of

two groups are significant or not. So, if the difference in mean of a variable is significant, this variable will be used as a covariate. Among the variables in the dataset, the ones selected as regressors are: religion, number of people living in the household, the woman economic activity, household's head main economic activity, the material of the house wall and the type of toilet in the house. Then, the correlation analysis is computed in order to assess the relationship among the different variables and so conclude the selection of the predictors.

In order to answer to the research question, the third part is the crucial one. The main purpose is to evaluate the relationship between a dependent variable (that measure the empowerment) with respect to the WPC membership and other variables, using different regression blocks. In particular, the model used is the Two Stages Least Squares (2SLS) method. This method is structured in two stages and for both steps it is used the multilinear regression model. The 2SLS is used when an independent variable, in this case the participation or not to the WPC (WPC_{2016}-WPC_{2007}), is correlated with the error term that represent other factors that affect the empowerment, such as behaviour and personal interests. When it is verified the presence of an endogenous variable, that is the one correlated with the error, it is necessary to recur to the use of an instrumental variable, that is the distance from home to the closest WPC meeting point, and to the 2SLS model. The instrumental variable regression is a method to obtain a consistent estimator of the unknown coefficients of the population regression function when a regressor is correlated with the error term and it will be the first stage of the 2SLS method. Therefore, in this first step, a multilinear regression model is run, where the dependent variable is the endogenous variable, (WPC_{2016}-WPC_{2007}). The other control variables are the instrumental one, and the other independent variables selected from the set of variables available. The objective is to understand if the participation to the WPC is positively or negatively related to the distance from home to the WPC meeting point. After this considerations, the predicted values of the endogenous variable (WPC_{2016}-WPC_{2007}) are computed and are used in the second step. The second level of analysis regards the study of the relationship

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between a dependent variable that is a measure of empowerment and a set of independent variable including the endogenous variable. For what concerns the regression model, the set of independent variables are kept fixed for each block of regression except for the empowerment variable measured in 2007 that changes according to the dependent variable, that is the same empowerment variable of 2007, but measured in 2016. Therefore, in this step 18 blocks of regression were run according to each relevant variable that best represents empowerment.

Results and Conclusions

As concerns the first level of analysis, it emerged how the participation to the WPC is negatively related to the distance from home to the WPC meeting point, that is as the distance increases, the level of participation decreases. In this stage the predicted values of the participation to variable are computed in order to be used in the second stage regressions. Among the results of the 18 blocks of regressions, here only the relevant results are presented. In particular, the five significant results show a higher level of empowerment for treated women compared to the controlled ones. The empowerment aspects touched are different and they cover several spheres of women's life. More precisely, these aspects include personal, financial, entrepreneurial, family empowerment and children education. In the matter of personal empowerment, represented by the *freedom to move alone outdoor* variable, the participation to the WPC project has a significant contribution on this empowerment variable. Presumably, women of the treatment group acquire more independence when they go to the daily WPC meetings, where they are not carried by other people as it has been observed during the on- field research. Another interesting influence emerged is related to the entrepreneurial empowerment described by *you have a say in decision on: buying livestock* variable and to the variable *you have a say in decision on: taking a loan* variable. In both cases, the participation to the WPCs variable showed a significant effect on these dependent variables, respectively with *Sig.*<.05 and *Sig.*<.1. For what concerns the family

empowerment, the variable *how does your household used borrowed money: ceremonies* is significantly influenced by the participation to women empowerment programme. Even if ceremonies represent one channel which savings should not be invested upon, it must be noticed that women can choose independently how to use their savings. In addition, it must be observed that religion has a fundamental role in Indian people's life and since it is a strong cultural factor, it could not be changed or influenced. Furthermore, the last significant result is related to the children education aspect and *how does your household used borrowed money: education* is the variable analysed with *Sig.*<.05. WPC women use money to finance children education and this is mainly due to the fact that this topic is largely discussed during the daily meetings. The results related to these considerations are summarized in Table 1, where a complete overview on the relevant parameters can be observed.

Table 1 Summary of the Second Stage Regression Results

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
WPC_{2016}-WPC_{2007} (1)	,182	,101	,235	1,808	,073
WPC_{2016}-WPC_{2007} (2)	-,233	,111	-,192	-2,101	,037
WPC_{2016}-WPC_{2007} (3)	,195	,115	,172	1,703	,091
WPC_{2016}-WPC_{2007} (4)	,104	,039	,227	2,681	,008
WPC_{2016}-WPC_{2007} (5)	,238	,101	,211	2,356	,020

Notes: the independent variable WPC_{2016}-WPC_{2007} is the unstandardized predicted value computed in the First Stage of the 2SLS; dependent variables: (1) *2016_Free to move*, (2) *2016_Buying livestock*, (3) *2016_Taking a loan*, (4) *20016_Ceremonies*, (5) *20016_Education*.

According to the results presented above, the data show a significant level of empowerment for the WPC women and this is a positive signal that reflects the main purposes defined by WPC project. In addition, there is no evidence of that the program leads, as a drawback, to phenomena of violence.

In conclusion, it is important to specify how the objective of this research is to do the groundwork for future studies and to provide some suggestions for hosting institution IIMC. For the former, it would be interesting to extend the study to all the area covered by IIMC and in addition to analyse other empowerment aspects, such as psychological and social factors. As concerns the latter, IIMC should continue and improve the WPC project with the aim to extend the project further.

After all considerations, it is clear how additional research can be done in order to provide further evidence on the importance of women empowerment and of the offering of emancipation projects in addition to pure microcredit programmes.

Research outline

The outline of the thesis is structured as follows: First Chapter is the Introduction and it aims at showing briefly the topic. In particular, it will be presented the context where the project took place and the hosting institution, IIMC. The Second Chapter is dedicated to the Literature Review, which led to formulate the Research Question that is the pillar of the thesis. Then the Chapter 3 is dedicated to description of the data available and the statistical methodologies applied. The results and the relative considerations are then presented in the fourth part. In the last sections, the conclusions are made and some suggestions are provided.

Introduction

1.1 Background

Living in a world where 2 billion adults remain unbanked (Demirgüç-Kunt et al., 2015), this financial exclusion can be a threat to global economic development. In particular, the three most populous countries - China, India, and Indonesia - together account for 38 percent of the world's unbanked people and India itself is home to 21 percent of the world's unbanked. In terms of economics and development, financial inclusion is critical in reducing poverty and achieving inclusive economic growth. When people can access to financial services, they are able to start and enlarge businesses, invest in their children's education and in health. Therefore, the access to these services is not just a matter of improve lives of poor people but also something that has impact on a global scale. At the global level, governments and development organizations have stated that financial inclusion can enable the achievement of broader development agendas, giving significant momentum to the field of financial access (CGAP, 2016). For this reason, one of the most important goal of the World Bank is to reach the universal financial access by 2020 and the purpose of this target is to ending the extreme poverty (people living on less than US$1.90 per day) by this year.

Microfinance is playing a leading role not only in economic field but also in social aspects. One of the goals of microfinance is to empower women, according to one of the declared goals of global development programme (i.e. women's empowerment). There are several studies that demonstrate that microfinance has a significant impact on the living and improves women living conditions by also reducing poverty (Ali & Hatta, 2012). This objective is one of the main priorities

of development agencies and governments around the world, in order to fill this gender gap.

This work thesis takes in to account two of the eight Millennium Development Goals that have been established during the Millennium Summit of the United Nations in 2000:

- To eradicate extreme poverty
- To promote gender equality and empower women

Both of these goals can be achieved through microcredit programmes.

1.2 Microfinance

Microfinance as described by Banerjee and Duflo is "a wonderfully simple idea" (Banerjee & Duflo, 2011). In a more technical way, microfinance is the provision of credit, savings, and financial services to very poor people. The provision of these services to poor households gives the opportunity for the poor to create, own, and accumulate assets and smooth consumption (CGAP, 2016). Microfinance is defined by nine traditional characteristics (Armendáriz de Aghion & Labie, 2011):

1. Small transactions and minimum balances: poor people need not only credit but also savings, cash transfers and insurance;
2. Loans for entrepreneurial activity: it is not just a matter of survival, but also make plans for the future;
3. Collateral-free loans: it would discourage people to access to the services;
4. Group lending: group liability schemes resolve moral hazard (Duvendack et al., 2011);
5. Target poor clients: poor people constitute the vast majority of population in developing countries;
6. Target female clients: higher repayment rates;
7. Simple application process: complex process would mean few clients;

8. Provision of services in underserved communities:

9. Market-level interest rates: high interest rates would be too risky for poor people;

Microfinance purposes and social impact: the purpose of microfinance practices consists in the poverty alleviation if it is considered only the financial point of view. But Littlefield, Morduch and Hashemi have argued that, microfinance impact goes beyond just economic results: the financial services are not only used for business investment but also to invest in health and education, to manage household emergencies and to meet a wide variety of other cash needs that they might encounter. The common findings are of the opinion that there is some increase in income levels and household assets in real terms among the clients (Malhotra & Schuler, 2002).

1.2.1 Microfinance impact

Microfinance's purpose can be seen by different perspectives. The first one, strictly related to the mechanisms of microfinance, is the poverty alleviation and financial inclusion considering the economic and financial perspective. Access to financial services can increase income and assets, diversify the sources of income and it can contribute to better education, health and housing of the borrower. In addition, this access can contribute to improve the social and economic situation of women and the last perspective is the one related to financial sustainability (Hermes & Lensink, 2011). Here below, are summarized and described the three most important purposes of microfinance.

Poverty Alleviation

Despite the different definitions, is commonly shared that microfinance is a tool for economic development and poverty eradication. During the years, the success of Grameen is related to its role as a poverty alleviation project. For Muhammad Yunus, the poverty can be eradicated only if poor people have the chance to release themselves from this condition through an initial credit (i.e.

microcredit). After they receive a first push, poor people can start a little activity, make some profit and auto-sustain their families and also the activity. That is why the provision of loans is without any kind of collaterals. CGAP stated that microfinance supports the eradication of extreme poverty and poor people "improve their lives in ways that reflect the multidimensional aspects of poverty" (Sananikone CGAP, 2002). Globally about 2 billion people cannot access to basic financial services and in most developing countries a huge percentage of the society have no reach to finance. In these countries, the access to these services is a necessary element for poor people's life (Kundu, 2014). Khandker examined that microfinance programme reduce poverty and benefits both the single participant and the local economy (Khandker, 2005).

It is important to underline that also the concept of poverty has evolved during the time and in addition each country has its own national poverty level. Today, poverty involves different other aspects that are not circumscribed only to economic aspects, like social and life aspects.

Women Empowerment

Microfinance has become popular not only for its role in fighting poverty, but also for its potential to empower its clients, that in most of the case are women. In *Banker to the Poor*, Yunus explained in details why it is better to lend to women instead of men. Women live hunger and poverty in a more intense way than compared to men. They suffer to not being able to breastfeed their children during time of lack of foods and factors of first necessities. Yunus had to face the opposition of husbands and many said that the Grameen project was a social revolution. In addition, the Noble Prize found strong barriers to attract women to the lending programme due to the *purdah* (literally curtain, veil), women stay in a state of isolation from the society. The objective is not just under an economic perspective, but also under a social one and it is to give space to women's role in the society and to increase women's status within families (Yunus, 1999; Yunus & Jolis, 2003).

Financial Sustainability

This last objective will be discussed briefly just to have a partial understanding on the topic. "In general financial sustainability describes the ability to cover all costs on adjusted basis and indicates the institution's ability to operate without ongoing subsidy (i.e. including soft loans and grants) or losses." (Guntz, 2011). This issue of financial sustainability is broadly discussed and it is topic that received a greater emphasis in the time (Hermes & Lensink, 2007). Microfinance is a costly business due to high transaction and information costs and a lot of microfinance programmes depend on donor subsidies in order to cover these high costs. The debate is between reducing poverty and being financially sustainable. If institutions are not financially sustainable, they will tend to inflict high costs on the poor greater than the gains losing the benefits of microfinance programme. So, the trade- off is between growing and serve millions of poor or performing in a good way under the financial perspective.

In conclusion, even if these three objectives are complementary and strictly related to each other, institutions that offer financial services generally are focused their attentions and efforts on one of them and consequently contributing to the others. Their purpose depends in particular on the mission and the vision of the single organization.

1.3 Indian context

In order to have a complete overview of the context where the hosting institute of the research operates and where the different programmes take place, the economic environment is briefly described. West Bengal is the fourth most populous state of India with more than 91 million inhabitants and a population density of 1000/km² (Census of India Website : Office of the Registrar General & Census Commissioner, India). The majority of the population, 68,11%, lives in rural areas and only 31,89% lives in urban area of Kolkata. The most practiced religion is Hindu, 70,54%, followed by Muslim, 27,01% (Census 2011 India). In these areas, transport and communication connections are not well developed. The inhabitants do not have access to sanitation services and the lack of access to a proper hygiene services and to drinkable water contributes to the spreading of diseases. The main economic activities are agriculture, farming, fishing and basic trades. The literacy rate in the urban area is 88,37% for men and 80,98% for women while in the rural areas is 78,44% for the former and 65,51% for the latter (Census of India Website : Office of the Registrar General & Census Commissioner, India). It is very common that children drop out the school due to economic reasons and start working in very early age. Therefore, the rate of higher education is very low because family cannot afford to pay tuition and school equipment for children (Nagarajan, 2014). In addition to this problem, in rural areas is also harder to reach schools due to the lack of public transports. Another relevant issue faced in this area is the women conditions. In the las Global Gender Gap Report 2016, India has been ranked 87 (out of 144) with a score of 0,683 (World Economic Forum, 2015). They often suffer of discrimination and exclusion, both in society and family life, especially for cultural reasons. They often are victims of exploitation, violence and abuse and they are the most vulnerable in this kind of family set-up, where they are subjected to family pressures and discrimination. Considering their poor education level, women have more difficulties to access to loans and legal support, which would be the first step to reach a complete emancipation. Even if it has been

prohibited by the law in 1961, the payment of a dowry is still a matter of fact. Families make this disbursement in order to set the marriage, that most of the time is arranged. If families cannot afford the payment of the dowry, sex selective abortion and female infanticides are practices used in order to avoid this payment. In 2015, a high percentage of suicide has been recorded among housewives due to physical abuse and lack of options to them and in West Bengal is recorded the highest number of dowry cases amongst all Indian states (Ghosh & Mitral, 2017). In West Bengal, households availing banking services are just 48,8% of the overall population (Open Government Data (OGD) Platform India), so very few people can have access to formal banking systems. That is why the origins of Microfinance can be traced in the early 1970s, when the Self Employed Women's Association (SEWA) in Gujarat gave birth to an urban cooperative bank. The main objective was to provide bank services to poor women (Devaraja, 2011). The main purpose was to provide credit to women so as to empower them and free them from vicious circle of debt.

Initial Period

In 1982, was created the National Bank for Agriculture and Rural Development (NABARD) in order to rationalize the provision of rural financial services (Garikipati, 2008).

In the 1990s, the inspiration given by the global success of the microcredit gave birth to Self Help Groups (SHGs), which work in a way roughly similar to the traditional Grameen bank (Aitken, 2013).This is the dominant microfinance methodology in India (Malhotra & Schuler, 2002). These credit groups consist of 10-15 members, exclusively women, coming from the same socio-economic context and after six months of regular savings the groups are eligible for bank credit (Garikipati, 2012).

Change

Later on, NABARD started a new nationwide microfinance initiative linking banks, non-governmental organizations (NGOs) and informal local groups (SHGs) leading to the SHG- Bank Linkage Program (SBLP) (Swain & Wallentin, 2009). SBLP received policy and support from central and single state governments and huge benefits, both direct and indirect, were recorded (Köhn, 2013). The former in terms of income increase of poor household and the latter in terms of women's empowerment.

Growth and Crisis

During 2005-2010, microfinance sector reported a strong growth due to a strong demand for loans from borrowers excluded by the banking system and investors eager to invest funds in the high growth industry (E&Y, 2016). Hence, SHGs linked individual clients and banks and in March 2006 they connected about 14 million poor households to banks, giving them an indirect bank access (Allen, Chakrabarti, & De, 2007). However, in 2010 the microfinance sector was hit by the Andhra Pradesh crisis. This crisis was generated by the simultaneous expansion of SHG Bank Linkage Model promoted by the State and the MFI model by private actors (Mahajan & Navin, 2013). People took advantage of the easy availability of credit and borrowed far beyond their repayment capabilities from various microfinance sources (Mehta & Aggarwal, 2014). The State Government ordered to slow down the activities of microfinance companies and the Reserve Bank of India (RBI) put in place regulatory changes with the purpose to reassure market participants and to instigate rapid growth in total loans (The Economist Intelligence Unit, 2013).

Consolidation and Maturity

Now, the Reserve Bank of India now regulates two types of institutions that provide microfinance services: banks and non-bank financial companies (NBFC) and MFIs. After the crisis, the Government of India introduced a legislation in

order to check the interest rates level and protect microfinance clients. The Micro Finance Institutions (Development and Regulation), introduced in 2012 with the purpose to provide a statutory framework to regulate and develop the microfinance industry. That is why MFIs after the crisis consolidated their operations due to these stringent regulatory requirements. From FY12 to FY16, the number of clients, both NBFC and MFIs, increased from 14,8 to 32,5 million, but there are still more 200 million unbanked people in India (IAMAI-PWC, 2015).

1.4 IIMC

This section introduces the institute where this research has been done. After a brief description of the evolution and the different humanitarian services offered by this NGO, the focus will be on the microcredit programme and on the empowerment on the women.

"Work for development is essential for us" can be read in the IIMC Annual Report 2010-2011, this is the first statement of the IIMC annual report 2010-2011. Therefore, it is clear the direction of the organisation that covers many different aspects in order to improve the situation of poor people. The Institute for Indian Mother and Child (IIMC) is located in a poor area distant 30 km South of Kolkata City in the South 24 Parganas district of West Bengal. This voluntary and non-governmental organization was founded by Dr. Kumar Brahmochary in 1989, after he joined for two years Mother Teresa as the medical in charge. Dr Sujit's first mission was to provide medical care to poor people suffering for the absence of medical facilities and health care support. Since the beginning, the aim was to improve significantly living conditions on a long-term perspective. After few years, Dr. Sujit and his team realized it was necessary to provide also a basic education in order to effectively improve living conditions in rural areas. Later, particularly attention was devoted to the emancipation of women. In a country where often women conditions are miserable, it was created, in 1996, the Women Empowerment Programme. In order to develop villages, the institute created its

health education and promotion of basic hygiene, nutrition and family organization. In addition, the Rural Development Programme is aimed at support local activities and develop infrastructure (like sanitation facilities) and the Network Project's objective is to transfer the knowhow to local NGOs and make them active partners. In 1999, the spontaneous activity of micro-loans was replaced with a more organized programme according to the Grameen Bank of Bangladesh. In order to help women to establish themselves as social actors and prove themselves competent, in 2008 was created the Women Peace Council. Women must regain their self-confidence in a non-violent way and learn that they have the capacity to be leaders. Another programme addressed to women is the Women Excellence Centre at Dhaki, 2015. It is a multi-purpose community centre where all women residing in this area are welcomed in order to foster cultural, intellectual and educational development. According to all these programmes, that cover a broad range of rural life aspects, IIMC is a total social empowerment organization designed to improve the lives of the poorest of the poor through educational, medical and economical means. The main goal is evolved over time and nowadays the first aim of IIMC-Mission is to "eradicate the roots of poverty providing education and socio cultural support for a sustainable development", from the IIMC Annual Report (2016-2017).

Going into detail regarding the organizational structure, the institute is composed by the Board of Trustees of seven members, that meet every four months to review and approve the financial transactions and to make new plans for the following months. The Board delegates to four different sub-committees: Health, Education, Finance & Administration and Rural Development Programme. There is also a Core Group composed by 5 members, which are in charge of a specific programme and meet several times every week in order to face day-by-day issues. More than 660 individuals are engaged daily to help run the project and all of them are volunteers, who receive only a reimbursement for their daily expenses. The majority of these volunteers are local people and about twenty are foreign people

from all the world. All together they share IIMC vision, mission and goals and contribute with their time, skills and physical labour in different projects.
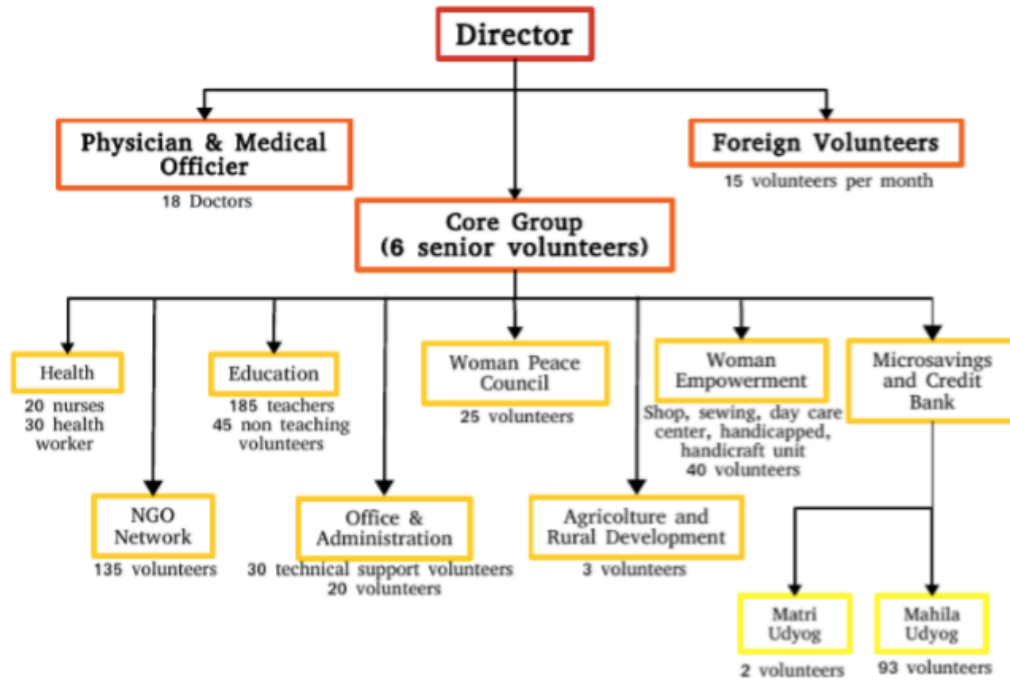
Figure 1 IIMC Organizational Structure

Currently the programmes held in IIMC are:

- *Medical project*: since the first clinic was established in Tegharia, the project has increased a lot. Excluding this one and the Indoor clinic (IIMC headquarter), there are other four clinics, with a total of 18 doctors. Every year more than 120000 patients of the medical services offered by IIMC. The medical activity is the first step in order to get in touch with the people living in the villages and then to allow them to know other programmes like microcredit, educational and women empowerment programmes. The health services provided are basic ones, according to the developmental purpose of the project. The offer of more sophisticated services would have meant increasing in the number of medicine and a better training to the volunteers with the direct consequence of higher expenses and loss of the title of developmental project. Another common and widespread problem in

India is the malnutrition. Especially in these desolated areas, high percentage of people are malnourished. This is why Dr. Sujit invented three nutritional mixtures containing all the calorie and protein needed per month. The nutritional diet is distributed regularly and is accessible to the poorest people with the price of 5 Rs. In addition, IIMC built up collaboration with 47 other NGOs (Network programme), that are implementing developmental projects in rural areas all over West Bengal. The main objective is the development of rural areas and IIMC mainly guarantees the right to health and security and education support. This programme is the best way for IIMC to reach individuals and spread its mission;

- *Women Empowerment and Socio-cultural project*: this programme's main purpose is to promote gender equality and empower women. This project works on the emancipation of women, offering support and guidance in an environment where conditions are often miserable. In particular, in the late 2000s the Women Peace Council (WPC) project was born with the main purpose to promote women awareness and rights, make them aware of their potential as active actors in the rural society. WPC groups are created with the purpose of encourage, sustain and recognize women social responsibilities and improve their social condition under economic, cultural and intellectual aspects;

- *Microcredit*: in order to develop all the aspects of the rural life, IIMC decide also to start in 1999 the economic programme. This project includes micro-saving and credit activities and the main purpose to provide women with the opportunities to get loans at a very low interest rate to start a project by which they will be able to improve their conditions. In addition, IIMC gives the possibility to women to learn job in order to live in a respectable way and to guarantee to their children a better future. In the headquarter in Sonarpur, women make bags, needle, sew, produce winter clothes and work with loom. Another

successful activity is the Mozzarella project, located in the outdoor of Hogalkuria. It is very interesting to notice how this project is strongly integrated with the microcredit one. The women that every day supply milk to the unit, buy cows through a micro loan and refund it by selling the milk to this unit. This policy helps them not only to refund the loan but also to start saving;

- *Educational project*: in order to make the medical programme more effective, the institution has decided to invest resources in education. In a developing country like India, it is very important to avoid child labour and try as much as possible to guarantee a bright future to each child. This project also includes the Sponsorship programme for education, that is a financial support that comes from families all over the world. Another way to avoid child labour, since in West Bengal many children start working at the age of 5-6 years, is the Schools construction where there are no government schools. IIMC has taken the initiative to create a peaceful environment for disadvantaged children building the Orphanage centres for boys and the Handicapped centre for girls;

- *Rural development project*: this project started in 1996, since that moment the activities have grown a lot. From agriculture and fishponds to sanitation and solar panels. Once again the main objective is to improve living conditions in the villages and support local activities and develop infrastructures.

IIMC in numbers from IIMC Annual Report 2016-2017:

- More than 660 individuals are engaged daily with IIMC Mission and 20 of them are rotational foreign volunteers;
- two indoor campuses with 20 beds each;

- o five outdoor clinics located in Tegharia, Hogalkuria, Chackberia, Challapara, and Dhaki. Tegharia receives more than 40000 patients every year;
- o collaboration with 47 different local NGOs in the West Bengal area;
- o more than 2700 sponsored children;
- o 27 schools constructed with 7000 students and 400 teachers;
- o two orphanage centres for boys with 61 boys hosted;
- o one handicapped centre that now hosts 19 girls;
- o day-care centre for 20 children between 2 and 5-year-old;
- o 7 microcredit branches dedicated to the women's group and one dedicated to the sponsored children's mothers. These 8 branches benefit 23500 women;
- o 71 groups of WPC.

1.4.1 Focus on Microcredit Programme

In 1999, IIMC adopted the model of the Grameen Bank, founded by Dr. Md. Yunus in Bangladesh as the first bank for rural women. Dr. Sujit understood that the medical part was not enough to improve the living conditions of the poor people. I was important to include and develop also the economical aspect. The first step was to make the women informed about that programme, explaining the advantages and benefits for them and their families. The programme started with 7 women and now there more than 22000 women and 243 villages involved in the project. The first branch was founded in Hogalkuria and after, other six branches were created: Amoragori, Chackberia, Dhaki, Hatgacha, Kalyanpur and Prasadpur. All these branches are part of the Mahila Udyong unit, that is dedicated to rural women's group. The second unit, Matri Udyong or Mother's Bank, is dedicated to the mothers of sponsored children in the IIMC educational programme. In this

case, women have access to microfinance services not in group and through monthly visit to IIMC headquarter.

The responsible of the project is Alim Sardar who work in IIMC headquarter and about every day visits the branches. In each of the banks, there is a Manager, an Assistant Manager, a Community Development Manager and a Community Organizer (CO) and a Cashier Accountant and all are trained in order to guarantee the proper flow of operations. The Table 2 briefly summarizes the Microcredit Bank System.

<div align="center">

Table 2 Microcredit Banking System

Mahila Udyong		Matry Udyong
7	Number of branches	1
22000	Involved women	1500
243	Covered villages	-
1159	Number of groups	-
79	Employers	2

</div>

Microcredit banks give the women the opportunity to get loans at low interest rates and with that money they are able to start a business and improve their conditions. The direct effect is to make women economically independent and improve the living standards of the whole family. Another important aspect is the social one. There is a big impact on the role that women play within the family and the society, improving their social status, encouraging their children to take primary education and in general contributing to the development of the rural areas.

Group Creation

First step for the creation of a microcredit group is the choice of the village where the programme can be implemented. The women in the village are invited to a first meeting in which an IIMC bank manager introduces the programme and explains how it works and its advantages. Then, the ones that are interested in the project will go for a second meeting, where they provide their personal information

in order to apply for the microcredit group. Once the group is formed, IIMC keeps under control the members for a period of three months and train them how to start a business, how to manage and save money and how to behave in the group with the other women. This training is useful in order to understand if the women are really motivated and if they feel comfortable with the other women in being part of the programme. In the meantime, the women are required to save a certain amount of money each week, so they start to get used to the concept of saving. If the process works well, the group is formed and the women can start their activities.

How It Works

Every week the groups attend meetings and the meeting place is defined in the agreement between all the group members and the CO. In each group, some of the women are provided with specific roles in order to facilitate the coordination of the group and the relation with the bank. The President has the responsibility on the payment of the group, the Cashier collects payments and savings and counts money during the weekly meeting, the Secretary has to control the CO work to avoid potential theft and the recordings in the personal book of each woman, the General Member helps the others and has the power to replace them if it is needed. Each woman has its own Personal Book, which has to be signed by the CO next to every transaction. During the weekly meetings, the CO gathers the loans instalments and the savings deposit in the villages, recording all the transactions. In the last page of the Passbook for Savings & Loan, there is a bullet point with sixteen promises. At the beginning they act the oath: one member reads one by one and the others repeat in chorus.

Services

IIMC microcredit banks give women the opportunity to get loans at a low interest rate, save money and withdraw. In the weekly meetings, women can repay the bank for the loan or save the weekly amount of money. With this money they

can improve their and their families living conditions and they become economically independent. More in depth, these are the three main services offered by IIMC branches:

Loans

In the first step, each woman will get a first loan of 3000 Rs and if the they are reliable and their business grow, they can apply for a further loans up to 15000 Rs. The time dedicated for the repayment of the loan is 44 weeks (almost a year) with an interest rate of 10%. The President, the Secretary and the Cashier are elected by the members of the group and their main purpose is to facilitate the coordination between the group and the IIMC bank. The IIMC microcredit system is strongly focused on its members and if women are in trouble with the repayment of the loan, the bank will grant them more time and support in order to go beyond the difficulty. If the problems persist, the only consequence is the impossibility to get a new loan.

Savings

Women can also deposit savings on their IIMC account and withdraw from them in case of necessity. The purpose is to leave this money in a safe place in order to avoid an improper use like cigarettes and alcohol. IIMC guarantees to women a safe place where keeping savings, in order to have a constant and effective control over resources. The deposit amount is from a minimum of 10 Rupees to a maximum of 50 Rupees per week and the annual interest rate applied on the balance of the monthly savings is 4% and it is paid in April. During the loan repayment, women are highly recommended to continue to make savings, but of course it is not mandatory.

Withdrawals

If a woman has an ongoing loan, she is allowed to withdraw from the savings account only in order to complete the repayment. If there is no loan to be repaid, she can withdraw as much as she needs from her account.

Literature Review

Female empowerment has increasingly become a policy goal, both as an end to itself and as a means to achieving other development goals (Ashraf, Karlan, & Yin, 2008).

Women empowerment has been one of the top priorities of development agencies and governments around the world (Ali & Hatta, 2012).

This section is focused on the research question, by focusing on those papers of the literature related to microcredit first and second women empowerment. More in detail, this review is based on several resources related to the topic of microcredit, with a specific focus on its role in the social aspect of women empowerment. After that review, the research question is developed. Several scientific papers have been read in order to develop this chapter. The bibliographic research showed how broad is the microcredit field and in particular how many different disciplines it covers. Many scientific paper works deal with this topic under different perspectives: from the psychology to international economics, from finance to social innovation and from social sciences to global development. The excursus of the literature review starts with main definitions of Microcredit, identifying the main characteristics. Then a presentation of Microcredit is given, considering why it was born, the context of development and then the attention is pointed at its impacts on empowerment and finally on the critics.

2.1 Microcredit definition

Microcredit is defined by the Microcredit Summit Campaign as "programmes extend small loans to very poor people for self-employment projects that generate income, allowing them to care for themselves and their families". A more specific definition that fits better with the topic of this research said that microcredit is the main element of microfinance programmes and is defined as the provision of small loans to poor women through neighbourhood groups (Garikipati et al., 2016). Therefore, it consists only in a loan disbursement activity and it is a part of broader programme addressed to unbanked poor people, that is microfinance. Muhamad Yunus, the father of microcredit, since the 1990s claimed that credit should be accepted as a human right and how it could play a strategic role in removing poverty from the world (Yunus & Jolis, 2003). Even if the microfinance movement originated in Asia, it varies from country to country where the population density, debt's attitude, group-cohesion, enterprise development, financial literacy, and financial service providers are different (van Rooyen, Stewart, & de Wet, 2012). Each country, especially developed and developing ones, has a different poverty level, so it is impossible to have a common definition that fits each different situation. At least, European Commission tried to make the concept more homogeneous and clear defining it as a microloan up to € 25000 with the business and personal purposes: to funds the development of self-employment and microenterprises or to cover client's personal consumption like rent, emergencies and education. Microcredit impacts on economic and social aspects: it allows the creation of income generating activities and this financial inclusion contributes to social inclusion (EMN). All these definitions underline that the provision of microcredit is not just a matter of economic aspects but it impacts also different aspects of the social and family life. Microcredit is simply the provision of small amount of collateral-free loans to poor group members with the purpose of self-employment and generation of income (Ganle, Afriyie, & Segbefia, 2015).

2.1.1 Characteristics

In particular, the terms "micro", "small" and "poor" are relative to the country of application. Despite the different definitions, there some basic characteristics that are comprehensive and commonly shared:

- size: small transactions and minimum balances (whether loans, savings or insurance);

- target users: micro-entrepreneurs and low income households, most of the time women;

- utilization: for entrepreneurial activities;

- group lending: microcredit programme lend small sums of money to individuals as members of groups and rely on group liability to ensure loan repayment (Kabeer, 2001);

- collateral free loans: some providers require "collateral substitutes" like household assets which are relevant for the borrowers but the value is lower than the loan;

- focus on poor clients: at this point, an appropriate clarification of the term poor is given, since there are several definitions. In 1990, the World Bank defined that "absolute poverty" refers to status where a single person does not have the minimum quantity of income to meet the minimum basic living needs over an extended period of time (like water, food, house and medicines) and it means, in monetary terms, earning less than 1.25$ per day (measured at 2005 international prices). Instead, "relative poverty" is used in the developing countries to classify the part of the population that lives under the average conditions and the limit is set at the 50% of the average income. Another distinction can be made between "economically active poor" and "unbanked poor": the former is related to poor people who might take a loan in order to start a small business, while the latter are those who cannot access to any formal financial services;

- simple application process

- provision of services in underserved communities: in addition to credit, other services are provided like savings, payment and transfer service (tools and procedures to reduce the physical movement of money from one person to the other), and insurance (life insurance and/or health insurance). But that is not all, since there are other services that are more social and developmental like: education, health and nutrition projects, business training, skills development, marketing and technology services;

- market-level interest rates: usually MFI's interest rates are higher than the ones required by the traditional industry, but not so high to gain profit from the poor. The reason is that financial institutions have to cover high transaction costs and to face high level of uncertainty related to household and environmental factors, and the small dimension of the economy in which they operate (reduced quantity in consumption, production, savings, borrowing and income earning).

Microcredit is a small amount of money loaned to a client by a bank or other institutions. Microcredit can be offered, most of the time without collateral, to an individual or through a group lending. Individual lending, in contrast, focuses on one client and does not require other people to provide collateral or guarantee a loan (GDRC | The World Wide Web Virtual Library on Microcredit and Microfinance).

Despite the different meaning, microcredit and microfinance are commonly used as synonymous. Both of them are addressed to the same category of users, poor unbanked people. The purpose of the latter is to extend formal banking services to people who are excluded, for lack of collateral, while the former is one of the services offered by Microfinance Institutions.

2.2 History and Evolution

The idea of micro-lending can be traced in 1846 with Lysander Spooner (Dossey, 2007), the American abolitionist, entrepreneur and legal theorist. He sustained the benefits of small entrepreneurial loans to help poor people to exit from their poverty condition. During the 1970s a huge pioneer of Brazil, ACCION International gave the first microloan and in that time Muhammad Yunus and Elha Bhatt founded respectively Grameen Bank in Bangladesh and the Self-Employed Women's Association Bank in India. They starting to make the basis for the modern concept of microfinance. It is commonly shared that the father of microcredit is the Nobel Prize 2006, Muhammad Yunus. With the Grameen Bank, that means village bank, he started to give the possibility to poor unbanked people to access to credit. In particular, only women were eligible to this programme, they formed little groups and then they had to meet weekly in order to repay the loans. Yunus began to visiting the villages around the University of Chittagong and started its programme in Jorba. He involved 42 women in creating a group in order to finance their bamboo stools business. They did not have funds to buy raw materials and in addition they were overwhelmed by debts with local traders, who would sell women's stools at a price higher than the raw materials. The total amount of the debt was US$27 and Yunus decided to put the money from his own pocket at zero interest rate in order to interrupt the cycle of debt and start the Grameen project. The Grameen Bank project observed a rapid growth in the 1970s and 80s in several microfinance institutions emerging around the world. This huge spread demonstrated that poor people were in conditions and capabilities to repay their loans and hence microfinance was a feasible and real business. In the 1990s, microcredit programmes were characterized by a continuous expansion and the industry realised that it could not go on at this path. As a consequence, many began to enhance their methodologies and to adopt more formal business procedures in order to improve their efficiency and sustainability. According to the Microcredit Summit Campaign (Microcredit Summit Campaign) there are more than 200

million microcredit clients in all the world and 116 million lives in extreme poverty conditions and most of the clients are women, 83,3%. In this context, developing Asian countries are observing a huge increase in this field and India is the leader. Nowadays, it is important to highlight and identify the changing risks of a growing sector (Lascelles & Patel, 2006). Microfinance is a service offered not only by Microfinance Institutions, but also by other players in the sector like commercial banks, insurance institutions, non-bank intermediaries. The high number of competitors has saturated the market and the different suppliers of microfinance services are forced to lower prices in order to be competitive. Another relevant issue is the portfolio of services offered that is constantly increasing. For this reason, suppliers have to diversify their services in order to meet at best clients' needs and to be competitive in the sector. Since the reality of developing countries, but the one of the world in general, is changed and in continuous evolution also the microfinance is evolving over time.

2.2.2 Globalization, Social and Business Innovation

Microcredit can be perfectly analysed under the actual context of extreme globalisation and in this background it has been revalued because the problem of poverty in one country became the problem of the world. Problems that were local now became global. Even if this innovative model was born in one of the poorest country in the world, it has been exported in other countries, both developed and developing countries.

Microcredit has been included in the 10 World- Changing Social Innovations (Mulgan, Tucker, Ali, & Sanders, 2015). "Social innovation is about new ideas that work to address pressing unmet needs" (Cahill, 2010). For example, poverty, homelessness and violence are social problems that need a particular dedicated attention. Social innovation is something that wants to change profoundly the dynamics in any social system. Microfinance is the access to financial services by low-income clients, including consumers and self-employed, who can't benefit from

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banking and related services. Broadly speaking, microfinance is a phenomenon whose objective is to create a world in which as many poor and near-poor households as possible can benefit from the access to a range of high quality financial services, including not only credit but also savings, insurance and fund transfers (Cahill, 2010).

Grameen Bank is incontestably the pioneer of the microfinance, but in addition it has created about 30 business designed with the purpose of poverty alleviation. It consists in a development of social business initiatives within established companies. The concept of the social business model is self-sustaining companies producing goods or services that repay their owners' investments but their first purpose is to serve society and improve leaving conditions of the poor. This socially-oriented organizations of the Grameen Group range from food producer (Danone) to water provider (Veolia Water). Several companies are wants to put their contribution to alleviate poverty and the concept of "social business" is something that exists but is not so common and can be defined as an under construction concept (Yunus, Moingeon, & Lehmann-Ortega, 2010).

2.3 Why Women?

The Microcredit Summit Campaign reports that 80% of the current microfinance clients on the global scale are women. "If the goals of economic development include improved standards of living, removal of poverty, access to dignified employment, and reduction in inequality, the is quite natural to start with women" (Yunus & Jolis, 2003). This is why very often the Grameen Bank is defined not only the bank of the poor but also the bank of the women. In "The banker to the poor" Yunus devoted an entire section explaining why it is better to offer the access to microcredit to women rather than to men. The first reason that pushed the Noble Prize to lend to women was a gender issue, since in Bangladesh traditional banks lent money only to men. So, he desired to fix this imbalance in the system imposing at least 50% of the clients were female (the other commercial banks had only 11%

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of female clients). Another reason was related to the development, because he was convinced that women are more in poverty and hunger. They are more connected for natural and cultural reason to children life and they want to guarantee them a better future. Excluded in work activities, disadvantaged on the economic and social level, women represent the majority of poor people and due to their strong relationship with children they are the future of the country. Men and women have different hierarchy of priorities and for the latter children are in the first place and the house in order to make it a safe and comfortable place. Several microfinance researchers and policy makers have supported the perspective that women targeted in microcredit programmes are the most effective means to deliver wider social benefits. They would strength their bargaining power in the household and they are able to spend resources in order to better benefit the household (Ngo & Wahhaj, 2012). In addition, if loans are addressed to women rather than men, the entire family will benefit economically and women will take advantage of that both in social and personal aspects (Kabeer, 2001). However, women have proved how they can work better and with higher return, how they can guarantee greater reimbursement rates of the debts than men and how the money they managed has a major impact on the family's condition. They understand that this is the only way to exit from poverty conditions and they know that microcredit participation is a big opportunity to gain social acknowledgement and empowerment.

2.4 Women Empowerment

The topic of microcredit has been widely discussed by several researchers and it covers different disciplines. During the literature research, it clearly appears that the topic of microcredit can be analysed under very different perspectives. In this research, it is analysed under a social and in particular the woman empowerment in the society, a recent phenomenon in social sciences field.

The empowerment related to the participation to microfinance programmes has been studied by several authors, considering the important role of microcredit

not only in poverty alleviation but also in improve women's conditions. However, it it is important to underline the fact that there are few researches about the relation of empowerment and the participation to specific groups with the first aim to empower women, like WPC in IIMC.

2.4.1 Women Empowerment Definition

Women's empowerment is a complex concept and very challenging from a methodological perspective in terms of measurement and analysis (Ali & Hatta, 2012). As the concept of poverty differs across countries, also the concept of empowerment differs across the world due to cultural, regional, social, and political background. It can be seen as a process by which people without social power gain a greater control and awareness over their life's events. The most used and explicative definition about women empowerment is the one by Kabeer that defines women empowerment as "the process by which those who have been denied the ability to make strategic life choices acquire such ability" (Kabeer, 1999). Therefore, women empowerment means more a process of change than a current or future state.

Another definition provided by Duflo (Duflo, 2012) says that women empowerment means the ability of women to access to the factors of development, like health, education and rights. For her, is something that is necessary in order to reach the others development goals, it is a prerequisite.

While microcredit is more or less a clear concept with different shades related to each specific situation, women empowerment is not clearly defined and neither the World Bank nor other development agency has developed a rigorous method for defining, measuring and tracking changes in levels of empowerment. Regarding empowerment measurement, there is a general consensus between researchers that empowerment can't be measured directly and it is manifested in more than one dimension (Kabeer, 2000; Swain & Wallentin, 2009; van Rooyen et al., 2012).

Despite the different definitions and interpretations of the concept of women empowerment, this theme has been widely discussed and there are different opinions in the literature about the impact of microcredit on women empowerment.

2.4.2 Microcredit and Women Empowerment

Microcredit has received a great attention not only as a tool to reduce poverty but also empower women. Most of the researches of the literature study the impact of the participation to microfinance project on women empowerment. These studies compare the level of empowerment in two different groups under analysis. Most of the time the treatment group is composed by women participating to microfinance programmes and the control one by women that aren't users of microfinance services. So, the objective is to evaluate the participation to microcredit services generate empowerment or not. Several researchers found out that there are very often modest or sometimes null effect on empowerment. In Angelucci, Karlan and Zinman's study on Compartamos Banco, the conclusion is not well defined and modest positive effects observed on female decision making (Angelucci, Karlan, & Zinman, 2015).

Ali Hatta sustained that a single sole intervention like participation to microfinance programmes cannot extensively improve women's empowerment or lives of women who have been oppressed by the society since ages. In another work, focused on the loan cycle, mixed results on women empowerment emerged. In this case, again two groups of women were compared, one with higher loan cycle and another one with first loan cycles (Weber & Ahmad, 2015).

2.4.3 Gap in the Literature and Research Question

Microcredit has a fundamental role in the process of empower women and it covers a determinant role, but it cannot generate it all alone. Therefore, it is important to underline that there few academic research about how microcredit and other programmes, like social, together can empower more women. This is underlined by Swain and Wallentin in their research "Does microfinance empower women? Evidence from self-help groups in India", published in 2009; this study is the most recent stating that microcredit programmes should be offered paired with other programmes. In particular, the purpose of the research was to evaluate the level of empowerment of women participating in the Self Help Group. The outcome is positive compared to the ones that are not member. But, what is explicitly declared is that policy makers, donors and microfinance institutions that want to use microfinance as a tool for empowering women should also provide other projects like training, workshop on awareness creation, instead of "relying on only on the provision of financial services" (Swain & Wallentin, 2009). The direct impact through microcredit takes place when women participate also to training or workshop creating a greater awareness. Looking at the topic of microcredit and women empowerment, there are several studies that analyse the relation between these two concept, while the impact of other projects in addition to microcredit programmes is under-studied. This is the reason why it was decided to focus this research on the impact of participation to WPC on women empowerment in order to try to cover the gap in the literature of microcredit and women empowerment.

Some years ago, other scholars underlined the same evidence presented by Swain and Wallentin. In particular, Garipikati in "The Impact of Lending to Women on Household Vulnerability and Women's empowerment: Evidence from India" stated that credit alone is unlikely to help women to emancipate and empower themselves, changing her position within the household and in the social environment. Women's empowerment can increase when the microcredit

programme is offered as a part of an integrated programme that includes building group activities (Garikipati, 2008).

In 2005, Holvoet expressed that in order to generate a considerable impact on decision-making aspects, credit must be offered with technical and social awareness training. Integrated programmes has more empowerment than microcredit provision all alone and it is must be combined with other services like welfare services, which include literacy, health, gender and social awareness (Holvoet, 2005).

So, the suggestions emerging from these papers is to study in detail the role of these social and awareness programmes combined with microcredit programmes. In particular, in the specific case of IIMC, the research is aimed at measuring the impact of the participation to Women Peace Council and to microcredit programme on women empowerment. Here the research question is going to be presented in synthesis of the considerations above:

Does the participation to WPC and microcredit programmes increase the level of women's empowerment?

The answer to this research question will be given at the end of the following chapter.

Methodology and Data

In this chapter it will be described the on-field project. First it will be explained how the survey has been developed considering the information collected through the literature analysis. Second it will be explained the sample selection, the collection method and the digitalization of the questionnaires. After these sections, there will an overview on the characteristics of the sample. Going on, the data were organized into variables utilized in the regression analysis. The study was designed to understand/test the impact of the women membership to WPC and microcredit on their empowerment. This work is totally empirical and I exploit survey data gathered during my stay by giving surveys to women clients of IIMC microcredit programme.

3.1 WPC and Women Empowerment

The Women Peace Council project was born as an answer to women's increasing need and desire to emancipate. As most of developing countries, Indian women suffer for discrimination. That is why the aim of Women Peace Council project is to promote the awareness of women rights and their empowerment. The implementation of these basic human rights is the basis for a country sustainable growth and development. Gender inequality is one of the major problems affecting the country: only 8% of parliamentary seats are occupied by women, the literacy rate is lower compared to men, women are burned or forced by their husbands to suicide. The National Crime Records Bureau (NCRB) reports that among the crime against women during 2015 34,6% are committed by husband or relatives and most of the cases were reported in West Bengal, 17,78%. Moreover, rural Indian women are often unconscious about their rights and their social and intellectual potential and

sometimes they lack of self-confidence. So, it is really important to protect and guide women to their empowerment and emancipation and make them conscious of their potential in the society.

This project started in 2008 with the creation of five groups connected to the already existing banks at that time (Chackberia, Dhaki, Hatgacha, Hogalkuria and Prasadpur). Today there are 63 groups because 8 of them have been closed, but the objective is to increase further the number.

Table 3 WPC Groups

Branch	Still working	Closed
Amoragori	-	1
Chackberia	3	-
Dhaki	16	1
Hatgacha	21	1
Hogalkuria	7	4
IIMC Mothers Bank	3	1
Kalyanpur	11	-
Prasadpur	2	-

How It Works

Each group meets two hours per day, five days a week and on average is composed by 10 members and in addition there is a key figure, the convener. She is chosen after IIMC decides to form a new WPC group in a specific village. The convener is an educated woman and she is in charge to represent the group in the village. Her main duty is to facilitate the communication between IIMC and the group. The president is another key role and she helps the convener to organize activities and bureaucracy. In the end, the secretary mainly substitutes the president and the convener in case of absence and she is in charge of checking all the documents.
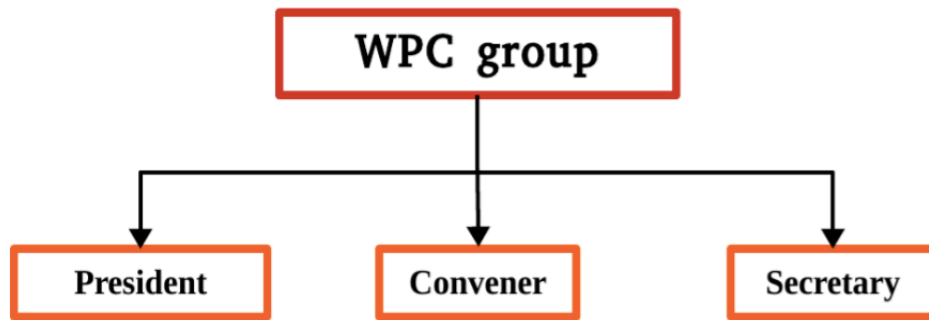
Figure 2 WPC Structure

The process in order to form the group is composed by two steps. First, the branch manager chooses approximately twenty women of the village that are member of the microcredit project. These twenty women are advanced minded and have interest in their own development and have a strong desire to do something for their community. Second, the IIMC WPC team will interview these twenty women and will select only ten of them. After the selection process, all the women of the group will attend an intensive training at IIMC headquarter. During these preparation courses, WPC team volunteers and outside experts encourage and motivate women to self-confidence. After the training, IIMC will officially visit the village in order to find a good location for the daily meetings. The location should be in a visible point close to the main road, so that everyone can see and know that the project is operative in the village. The WPC team keeps track of the work done by each group and their progress. If a group faces some problems, IIMC volunteers are always ready to help women, give advice and find a solution with them. Once every three months, IIMC staff visits the group and all the conveners are expected to go to IIMC headquarter every Monday in order to discuss the work done and set future goals. Every month Dr. Sujit attends a meeting with the purpose to encourage women to a continuous improvement and growth.

Activities

The IIMC Annual Report 2016-2017 declares that "the aim of every Women Peace Council group is to empower women, help them to gain self-confidence and

pave the pathway for their cultural, educational and intellectual development". So, the project covers all the aspects of women's life. During the meetings, women read several articles from different newspapers and discuss them all together. Different topics are discussed: from personal hygiene and healthcare to family planning and vaccinations for children. In addition, they talk about correct nutritional intake, treatment of children with disabilities and how to protect themselves from harassment. In the first three months after the creation of each group, women limit their activities to daily discussions with only the WPC members. After that period, the group begins to interact with other women in the village. The WPC group visits private home and help families to find a solution to their problems. Moreover, they organize awareness camps opened to all the women of the village and celebrate internationally-recognized events in order to promote empowerment and emancipation. The WPC project includes different sub-projects like:

Child Sponsorship

Each WPC group supports about three girls of the village till the class four in order to avoid the drop out of school due to financial difficulties. In exceptional case, they give support to particularly smart girls in order to allow them to attend class nine and ten and then pass the secondary school exam. They guarantee support in terms of books, payment of all school fees and hiring a private tutor for a total per child yearly of Rs 3200. These children are randomly visited by the group in order to check that their work at school is constant and lead to positive results. Then, excellent children are suggested to the educational unit for a child sponsorship under the educational project.

Animal Project

In August 2013, the cow and the goat project started as a part of the WPC project. IIMC gives the possibility to poor women in remote villages to receive a cow or a goat and the agreement is that the first calf will be given to the organization. One important criteria for becoming a beneficiary of the animal is to provide a suitable space to keep the animal. If the calf is female, this is passed on to

other women in need. If the calf is male, this is sold and the proceeds are directed to IIMC funds. Once the first calf is given back to IIMC, the woman beneficiary has full power on her cow or goat and the successive calves can be kept or sold on the market. Generally, women milk the animals every day and the milk is used for family consumption. Any quantity in excess is sold every day on the market and so women are able to get from 30 to 40 Rs per litre and can gain a profit from this activity. Nowadays, 37 cows and 3 goats have been distributed to 40 different women. Every three months the IIMC Women Peace Council team visited the beneficiaries of the project to ensure that the animals are kept in clean and they also provide advices to women on how to take care of the animals. The project is working well and it if very successful. The WPC team expects to increase the project at a pace of 20 beneficiaries per year.

Health Service

This project started in 2014 and each WPC group has two health workers that are selected among the most educated and advanced-minded women of the group. These women attend a training on nutrition, blood pressure, immunization, general health and hygiene and also family planning. Their duty is to inspect the houses of the village and talk to the community in order to spread their knowledge on various health related issues. The future objective is to give them basic medicines that can be distributed in case of necessity to the community.

Woman Excellence Centre

Women excellence centres are community centres that belong entirely to the women of the village where they live. The aim of these centres is to offer a multi-purpose structure where different activities can be organized, like daily activities and occasional events. These spaces can be used for celebration like marriages if the couple cannot afford other places or for the organization of events involving all the women of the village, like theatre shows. These spaces offer also cultural, intellectual and educational time where women can develop their capacities and

potential. Each building has a women's library and a conference room where women can meet and is powered by solar panels.

3.2 The Project

This research has been made possible thanks to the collaboration of no-profit MFI, Indian Institute for Mother and Child (IIMC), base in Kolkata. The project started at the end of September 2016 and the survey collection took place in the period from 30 September to 10 November and the research is going to continue in the next months by other students. So, the on-field project was held in this month and a half in the rural south-west area of Kolkata, India. It is examined how much the participation to the Women Peace Council programme leads to an increase in women empowerment. The study was conducted in the poor rural area where IIMC operates and the sample is composed by a treatment and a control group. The former is composed by women that are member of the Women Peace Councils and microcredit programme, since the condition in order to be part of WPC is to be a microcredit user. The control group is composed by women that are only member of the microcredit project. The questionnaire was submitted to all the women of the sample.

3.2.1 Questionnaire Creation

Since there is a common opinion between scholars that empowerment is a process that is manifested in more than one dimension (Mahmud, 2003), consequently it has been necessary to find different indicators in order to measure this multi-dimensional process. Therefore, the starting point in order to measure in a proper way the empowerment was the creation of a questionnaire ad hoc. In particular, the questionnaire was composed by 28 questions, divided in two parts. The first part is aimed at collecting personal data like: name, age, village name, branch name, group name, microcredit group number, personal number in the group, the distance from home to the WPC, if the woman is/has been/ has never

been a member of the WPC with the relative years of membership and in case if the husband welcomes the participation to the WPC, who is the head of the household and in the end the religion. The last question of this section is referred to the application to WPC, that is if women application to WPC has ever been rejected.

The second part is organized as follows: each question has two columns for the answers and each column is related to a specific period of time. One period is relative to the time of the submission of the survey and it is name "Now". The other period is "In 2007" and this choice was made because in this period it was created the WPC project. So, this choice was made in order to compare two different periods and to better understand the process of change during these years. The questions of this part have been created and chosen after a deep review of the literature. This review was extremely useful to understand which factors are considered indicators of empowerment by researchers, but in any case, there are also in this part questions related to personal information. This second part is structured as follows:

- *marital status*: three options are available and these are married, widow and divorced. Even if it is not so common in India, it was decided to add the divorce alternative in order to catch if some women, more empowered than others, are in this status;

- *number of people including the single woman*: in order to understand the dimension of households;

- *number of children divided by sex*: the division by sex instead of the cumulative number is required in order to understand if is still in practice the sex selection abortion according to Holvoet (Holvoet, 2005);

- *if the woman has her own cell phone*: since cell phone are very common also in developing countries, the objective is to understand if in these rural areas also women can own one;

- *if she can keep her own money for personal spending*: this questions is an index to understand if women can take money for them and decide how to spend it. Several researchers used this questions in the questionnaires created for their studies (Ganle et al., 2015; Hashemi, Schuler, & Riley, 1996; Mahmud, 2003; Yasmin & Ikemoto, 2015);

- *if she is free to move alone outdoor*: this is one of the most important factor since it is good proxy of empowerment and it is a common opinion between several authors (Ganle et al., 2015; Hashemi et al., 1996; Mahmud, 2003; Yasmin & Ikemoto, 2015);

- *say in decisions on*: this question is structured with different alternatives and the involvement in major household decisions is considered a proper measure of empowerment (Angelucci et al., 2015; Ashraf et al., 2008; Duvendack & Palmer-Jones, 2016; Harper, Nowacka, Alder, & Ferrant, 2015; Kabeer, 2001);

- *use of borrowed money*: this is useful to understand how money borrowed are used and for which purposes like children education or health;

- *her main economic activities*: this question can show if women spend their time in taking care of the house, children or if they help the husband in his activity;

- *husband/household head's economic activities*: this question is connected to the previous one;

- *number of rooms in the house, material of the house wall, type of toilet in the house, electricity in the house*: all these questions are used to understand the level of wealth and the women living conditions;

- violence in the house: this is a good element in order to understand if women and children are used to violence in the household according to Harper and Duvendack (Duvendack & Palmer-Jones, 2016; Harper et al., 2015);

- beating the wife is never justified: women in this case can express if they agree or not with the violence, because maybe they are used to this practice in the household.

3.2.2 Database Creation

Once compiled by the women of the sample, all the surveys have been trans littered by one Indian volunteer for the personal data. Then, before starting all the analysis it was necessary to transfer the answers from a paper format to a digital one, using Excel. All the questions and answers have been transferred and to each woman has been assigned a code in order to identify them univocally, since very often they have same surname and name. In particular women participating only to microcredit programmes were coded in this way: GR-Number of the microcredit group- number of the order of collection. Instead, the other group of women, members of the WPC, was coded in a different way: WPC-Number of the WPC group- number of the order of collection. After that, the answers, except for the personal data, have been turned into binary values. For the positive answers (like yes) it was assigned the value 1, while for the negative ones (like no) the value 0. Regarding the questions without answers, the cells were left blank.

3.3 Quasi- Natural Experiment

In the research field, there are different typed of research designs that can be classified according to some key elements. First, if the design uses a random assignment to groups, this is called randomized experiment, commonly called Randomized Control Trial. Several authors used this study design in order to understand the impact of microfinance on women empowerment (Angelucci et al., 2015; Ashraf et al., 2008; Attanasio, Augsburg, De Haas, Fitzsimons, & Harmgart, 2015; Tarozzi, Desai, & Johnson, 2015). Secondly, if the random assignment is not used but there is a control group, this design is called quasi-experimental, otherwise non- experimental design. A further distinction has to be made for what concerns

quasi- experiment, because it is distinguished between quasi- experiment and quasi-natural experiment. The difference is that in the former the criteria for the assignment is selected by the researcher, in the latter the assignment to a treatment occurs "naturally", without the intervention of the researcher. So, both lacks of the random assignment to the control or the treated group. So, some individuals of the sample are exposed to the treatment conditions that are determined by nature or by other factors out of the control of the researcher. Natural experiments are commonly used when there is a clearly defined exposure to a treatment and so the sub- groups are easily identified.

In the specific case of this research, all the individuals of the sample are women accessing to IIMC microcredit program. But, some of them are member of the WPC and they will belong to the treatment group. So, the assignment to one group or to another is not random and this assignment occurs after the selection process needed to become a member of the WPCs.

3.4 Sample Selection

How I selected the banks? I focus my attention on 4 branches out of 7 due to logistics issues: transportation, distance from the Indoor (Sonarpur) and the availability of Alim, the chief of microcredit programme. So the four branches selected are: Chackberia, Hogolkuria, Kalyanpur and Hatgatcha. The research is based on two typology of sample: women that are part only of the Microcredit programme (MC) and women that are member of the Microcredit programme and in addition of the WPC (WPC).

Since the area where IIMC operates is about 9960 km^2, it was necessary to localize the different branches and compute the distances between the headquarter and the branches in order to understand which ones where too far to be visited in one day. For this reasons, it was decided to consider in the sample selection only the women that are clients in the banks located not farther than 10 kilometres from IIMC headquarter. So, Amoragori and Dhaki were excluded from the branches

selection and the other five branches were considered for the sample selection as it can be seen from the Table 4, where the distances between IIMC headquarter and the branches are reported. The related positions in the map are reported in the appendix (Appendix 1).

For what concerns the branches and IIMC location, the geographical coordinates, such as latitude and longitude, were provided by other architecture students involved in IIMC projects in the past. Therefore, it was possible to decide which branches consider for the sample selection before the on-field research. Once on the fieldwork, due to time, logistics and resource constraints and in particular due the availability of the people in charge to help for the distribution and collection of the questionnaires, the branches visited were Chackberia, Hargacha, Hogalkuria and Kalyanpur.

Table 4 Distance between IIMC headquarter and branches (km)

Amoragori	Chackberia	Dhaki	Hatgacha	Hogalkuria	Kalyanpur	Prasadpur
54,3	9,7	51,4	9,7	6	9	9,7

Regarding the meeting point of the groups (both WPC and microcredit), these locations are distant about 10 km from the reference branch and so it was feasible to visit one or two groups in same day. About this last point, it should be made an account. In particular, once the visit was planned, it was possible to collect questionnaires just from one or two groups per day due to two main reasons: the time spent with the women and streets conditions. For what concerns the former, it was necessary to explain to the women the purposes of the project and how was structured the questionnaire. In addition, it was clearly manifested their interest and curiosity in meeting a stranger from a western country, so they really appreciated to spend time and ask questions. For the latter, it must be considered that the on-field research has been taken in a rural area of a developing country, where most of the streets are damaged and full of holes, so even short distances require more time than in a developed country.

Regarding the location of the meeting point of each group, some coordinates of the WPC meeting points were collected during other past projects while the microcredit ones were not available. Therefore, it was necessary to collect the coordinates of these missing groups in order to have as much details as possible for each woman. During the visits to the groups, it was used the Google Maps App in order to localize the position of the meeting point and save the coordinates. If it was not possible to use the application due to connection problems, the coordinates were extracted through the locations services from the photography made with the women after the end of each meeting. This activity was extremely important because it was not possible to define ex-post the location of the meeting points. The reason is that IIMC staff has not a clear idea of the precise location of each meeting point. In particular, they are not able to localize on the map the villages and consequently where the women meet. Therefore, the only reliable instrument in order to gather the coordinates and have detailed data for each woman was the smartphone. In the appendix section, the meeting point of each group is located on the map (Appendix 2) according to the coordinates collected.

Summarizing, the work focuses the attention on 4 branches out of 7 and the distribution of the questionnaires was always supported by Alim Sardar, manager of the microcredit programme, and by Ratna Di, in charge of coordinating all the WPC activities. The clients selected for the sample are:

- Microcredit Programme (MC): women in this case are clients of the microcredit programme and this will be the control group;
- Women Peace Council (WPC): in this case women are clients of the microcredit programme and in addition they are member of the Women Peace Council and it will constitute the treatment group.

For what concerns the microcredit groups, the ones examined are relative to the Chackberia and Kalyanpur branches, while the WPC groups analysed covered three branches out of four available (Hatgacha, Hogalkuria and Kalyanpur). In

Table 5 the WPC and microcredit groups analysed in the research are summarized according to their numbers and the relative branch.

Table 5 Groups Numbers and Relative Branches

WPC groups	Branch	Microcredit groups
-	Chackberia	205, 206, 207
1, 17, 18, 37, 39, 54, 62, 63	Hatgacha	-
20, 38, 40,	Hogalkuria	-
60, 61	Kalyanpur	4, 6, 15, 25, 58, 95, 103

3.5 Descriptive Statistics

This section is dedicated to the analysis of the data collected throw the questionnaires given to the treated group (WPC) and to the control group (MC). The sample is characterized by 227 observations, of which 137 belonging to the treated group and 90 to the control one. The women of the treated group belong to the WPCs, the majority of representatives belongs to the Women Peace Council group as the percentage show in the Graph 1.

60,35%
137
WPC

39,65%
90
MC
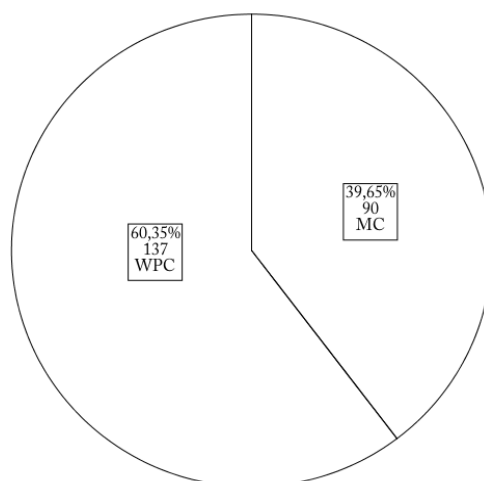
Graph 1 Sample Composition

Relative to the branches, these women come from four different branches: Kolyanpur, Hatgacha, Hogalkuria and Chackberia. In the Table 5, it is possible to see the women interviewed declined for branch and treatment received, where treatment means if they are part or not to WPCs. Women that are part of the first branch, Chackberia, are 40 and only from the microcredit programme. In Hatgacha

branch, there are 74 women from WPC programme and in Hogalkuria 15 from microcredit programme. In the last branch, Kolyanpur, there are both member of the microcredit and WPC programmes for a total of 98 women.

Table 6 Sample Composition Declined for Microcredit Branch (%)

	Chackberia	Hatgacha	Hogalkuria	Kolyanpur	Total
Control Group	44,45	0	0	55,55	90
Treated group	0	54	10,95	35,05	137

In order to better understand the characteristics of the sample, we can use the data collected through the questionnaires, in the section related to personal data. Focusing on the age of the sample, we have 224 values out of 227 available and the women in the sample are on average 35 years old and the range is [18,70]. For both the treated and the control individuals, the average age is comparable. Furthermore, looking at the graph below is possible to observe the age frequency in the sample. For what concerns the marital status, the great majority of women, 93% in 2016 and 85% in 2007, is married.
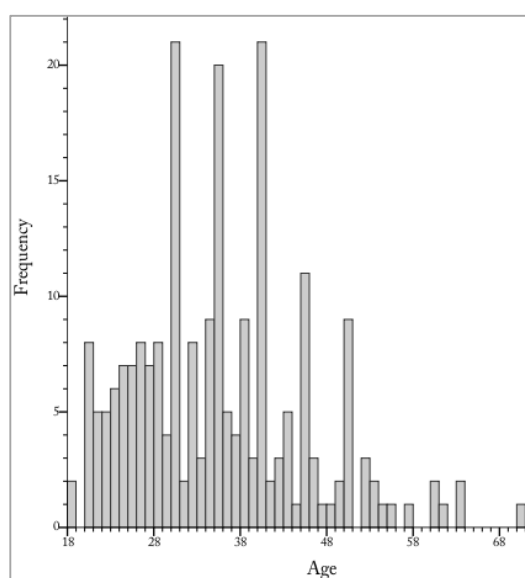
Graph 2 Age Frequency

In general, the nuclear family is composed by 4 people and 2 children. For the children gender, there are no discrepancies between male and female for both

periods, on average each family includes one male and one female child. So, this is positive signal, since there is no evidence of the sex selection abortion, a practice that is very common in those countries where for cultural reasons female children are not valued as male children. Regarding the religion professed, 151 women out of 227 are Hindu while there is a little percentage of Christian (12,33%) and Muslim (15,42%) and 13 women that did not answer to this questions. In addition, concerning the role and the power of women in the household, it must be noticed that the household head is the husband for the majority of the answers, about 88% for the treated group and 87% for the control group. Another evidence of the inferior role of the woman in Indian society compared to man's is represented by the main economic activity practiced: 69% of the control group declared to be housewife in 2016 (63% in 2007) and 96% of the treated one in 2016 (85% in 2007). This data could be the sign of the fact that, staying at home, a woman has the possibility to better manage the financial resources of the family, has more time to take care of the household and to participate to the Women Peace Council activities. For the question if the participation to WPC is welcomed or not by their husbands, most of the answers were positive. For what concerns the owning of a mobile phone and money for personal spending there are no significant discrepancies between the treated and the control group. For the freedom to move alone, 123 women in the treated group are allowed while in the control group just 66.

Table 7 Descriptive Data of Empowerment Variable-1 (%)

	Free to move alone	Own cell phone	Own money for personal spending
Control Group	73	62	94
Treated group	90	55	95

At this point, it is possible to move the attention on the empowerment aspects observing in which decisions women have a say on. There are no substantial differences between the treated and the control group for what concerns the decisions except for the taking a loan decision. In this last case, only 53% of the controlled women can decide to take a loan compared to the 70% of the treated

group. Comparing the data in the two different periods, for both group there is an increase in having a say in decisions concerning health and children education. Regarding the decision on taking a loan and on the use of money, for the treated women it was discovered an increase of 23% and 24% respectively from 2007 to 2016. While for the control group it was recorded an considerable increase of the 30% from 2007 to 2016 just in the use of money.

Table 8 Descriptive Data of Empowerment Variable-2 (%)

	Buy furniture	Buy livestock	Health	Education	Taking a loan	Use of money
Control Group	81	49	73	90	53	60
Treated group	85	46	79	82	70	68

Moving the attention to the use of borrowed money, it is possible to notice from the Table 8 that there is strong difference between the two groups for what concerns the health. Only 9% of the women of the control group use borrowed money for health compared to the treated where the percentage is about 23%. This can be a clear sign that control women are not so conscious about the importance of the health which is one of the main topics discussed during the WPCs.

Table 9 Descriptive Data of Empowerment Variable-3 (%)

	Business	Ceremonies	Dowry	Education	Food/clothes	Health	House	Transport
Control Group	91	2	-	21	4	9	14	2
Treated group	82	4	0,7	31	4	23	19	1

As regard the house, on average each family has 2 rooms in the house both for 2007 and 2016. For what concerns the house wall, the most common material for both groups is the cement and bricks and in some cases mud. In both cases, it is recorded an increase from 2007 to 2016, in particular only 39 out 90 had wall made by cement and bricks for the control group and 84 out of 137 in the treated group. The most common toilet in the house is for both groups the pit latrine and there are no discrepancies between the two different periods. At last, about 90% of the women in both groups have electricity in the house and it is significant the increase of the 50% for the control group from 2007 to 2016. These factors can be a good

proxy of the level of wealth of each household since these elements are strictly related to the economic status.

Table 10 Descriptive Data of House Characteristics Variable (%)

	House wall material: cement/bricks	Toilet house: pit latrine	Electricity
Control Group	74	68	97
Treated group	74	79	93

The last considerations are related to the violence sphere. In particular, most of the women answered that there is no violence in the household and that beating the wife is never justified. Since there are not particular discrepancies between the control and the treated group, in the Table 10 is possible to see the aggregate percentage. It must be noticed that has been decided to include also the questions without answers (classified as not available, n.a.) since that these questions are very particular and sensitive. So, the not available answers are those answers that have been left completely empty for each one of the alternative.

Table 11 Descriptive Data of Empowerment Variable-4 (%)

	Violence on			
	You	Children	No violence	n.a.
2016	1,3	0,4	92,5	5,3
2007	3,5	0,9	83,3	10,6
	Beating the wife is never justified			
	I agree	I don't agree		n.a.
2016	72,2	25,1		2,6
2007	64,3	24,2		11,5

Since the participation to Women Peace Councils has an important role in this study, as said before the number of women participating to WPCs is 137 out of 227. In 2007, year of the birth of WPCs, only 3 women were member of this project. The majority of the women of the sample entered in the WPCs between 2010 and 2014. Just two women were member of the WPC in the past and now they exit the project.

Table 12 Descriptive Data of Participation to WPC Variable

	Average	Std. Error of Mean	Median	Mode	SD	VAR
WPC 2016	,60	,033	1,00	1	,490	,240
WPC 2007	,01	,008	,00	0	,114	,013
WPC2016- WPC2007	,59	,034	1,00	1	,511	,261

3.5 T-test

This test is crucial to understand if the difference between the means of two sample is statistically significant or not. More in depth, it will let us to determine whether difference between two groups is statistically significant. This test is used when there are two experimental conditions and different participants were assigned to each condition, that is independent means t-test. It is used for hypothesis testing the population means and it can only be used when there is not availability of population standard deviation.

The two samples of data are collected and the sample means for the variables are calculated and these means might differ by a little or a lot. If a large difference between the means is observed, it means that the two sample means differ because of the different experimental manipulation executed on each sample, where in this case means women that are member or not of the WPCs. The analysis will be conducted in four main phases: data exploration, first t-test run with missing data, second t-test run without missing data and analysis of the effect size. There are two different versions of t-test: one with equal variances and one with different variances. In this case the variances are assumed equal.

Equal variances	Different variances

$$t = \frac{\bar{X}_T - \bar{X}_C}{S_{X_C,X_T}\sqrt{\frac{1}{n_T} + \frac{1}{n_C}}}$$

$$t = \frac{\bar{X}_T - \bar{X}_C}{S_{\bar{X}_C - \bar{X}_T}}$$

with $S_{X_T,X_C} = \sqrt{\frac{(n_T-1)S_T^2 + (n_C-1)S_C^2}{n_T + n_C - 2}}$

with $S_{\bar{X}_T - \bar{X}_C} = \sqrt{\frac{S_T^2}{n_T} + \frac{S_C^2}{n_C}}$

where

- $\bar{X}_T$ and $\bar{X}_C$ correspond to the means of the treatment group and the control group respectively;

- S_{X_T,X_C} is the unbiased estimator of the common variance of the two sample, regardless of the fact that the means may or may not be equal;

- S_T^2 and S_C^2 are the unbiased estimators of the variances in the specific sample;

- n_T and n_C are the number of individuals in the specific sample.

Like the Normal distribution, also the distribution of the probability of the random variable t is described by a symmetrical bell shape, with a dispersion that decreases with the number of degrees of freedom. While for the Normal distribution, there is one single curve, for the t distribution there is more than one single curve, in particular there is one curve for each degree of freedom. The greater the sample size n, the more the t-Student distribution tends to the Normal distribution.

There are some hypothesises of applicability that must be verified in order to use the t-statistics and they are listed below:

- Data has to be distributed according to a Normal distribution;

- All the observations have to be collected in an independent way (independent samples).

However, the t-Student is much more robust than the Normal distribution, because it remains valid even if the first assumption is not precisely respected.

Most of the time, the null and the alternative hypotheses are designed as follow:

$$H_0: \bar{X}_T = \bar{X}_C$$

$$H_1: \bar{X}_T \neq \bar{X}_C$$

Where, the null hypothesis will be accepted only if the p-values are higher than the critical value, that is defined by the significance level α fixed ex ante.

Data Exploration

Since that there are some missing data in the 227 questionnaires collected, in this section it will be explained how these data would be managed in order to run the test and do not lose the observations with missing answers. We can classify the 28 questions in the survey in five main categories: ID data, personal, numerical, household/house and empowerment questions as it can be seen from the Table 10. In the third column there are further details on the level of accuracy of the answers. Since all the answers came from the questionnaires filled by the women, it was necessary to test their reliability. So, we made a cross check between the official documents provided by IIMC (Statement of Expenses of the month of) and the data collected by other students. So, the first category has all the data available. Regarding the others, the numerical data will be replaced by mean values and the personal and household/house date with most frequent answers. In last category, since there are answers that measure the empowerment, the missing data will not be replaced. The lack of answers in this kind of questions must be taken into account and a mathematical replacement is not a good method to manage these missing data.

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In particular, most of these questions have two alternative answers (Yes and No) and it has been decided to not replace the blank answers through mathematical tools. Women maybe preferred to not show their actual status and instead of answer to the questions, they leave them blank. So, these observations with not available answers are not complete and cannot be used. For this reason, in the analysis conducted in the research, the sample dimension will be reduced of about 60 observations and the considerations will be made on the left over observations.

Table 13 Summary of Questions Categories and Missing Data

Category	Questions	Details
ID data	1.Name 3.Village of your house 4.Microcredit Branch Name 5.Microcredit Group Name 6.Microcredit Group Number 7.Microcredit Personal Number in the group	Cross check between IIMC document and past projects
Personal	8.How far is the Women Peace Council from your home? 9.Are you a member of the Women Peace Council? 11.What is your religion? 12.You are: married, divorced, widow 20.Main economic activities you 28.Has your application to WPC ever been rejected?	No cross check Substitution with the most frequent answer
Numerical	2.Age 13.How many people live in your household (including you)? 14.How many children do you have? 22.How many rooms has your home?	No cross check Mean substitution
Household/house	10.Who is the head of your household? 21.Main economic activities: husband/household head 23.The walls of your home are made by: 24.The toilet in your house is: 25.Do you have electricity in your house?	No cross check Substitution with the most frequent answer
Empowerment	15.Do you have your own cell phone? 16.Are you allowed to keep your own money for personal spending? 17.Are you free to move alone outdoor? 18.You have a say in decisions on: 19.How does your household use borrowed money? 26.Is there any violence in your household? 27.Beating the wife is never justified	No cross check No replacement of missing data

3.6 Correlation Analysis

In order to assess if there is a relationship between the variables, the correlation analysis is computed.

The coefficient used in in analysis is the most common and it is the Pearson correlation coefficient. It is the relation between the covariates of the 2 variables cov_{xy} and the product of the standard deviations s_x and s_y. The standardized covariance is known as correlation coefficient and is defined by the equation:

$$r = \frac{cov_{xy}}{s_x s_y} = \frac{\sum(x_i - \bar{x})(y_i - \bar{y})}{(N-1)s_x s_y}$$

The variable $\bar{x}$ and $\bar{y}$ are the mean values and N is the dimension of the sample, that is the number of observations. From the standardization of the covariance, the results can assume values that lie in the range [-1, +1]. Where a coefficient of +1 indicates that the two variables are perfectly positively correlated, so when a variable increases, the other increases by a proportional amount. Equally, a coefficient of -1 shows a perfect negative relationship. If one variable increases, the other decreases by a proportional amount.

In general, the commonly used measure of the size of an effect are:

- $r = \pm.1$: represents a small effect;
- $r = \pm.3$: represents a medium effect;
- $r = \pm.5$: represents a large effect.

In addition, the analysis does not give further indication of the direction of the causality, so it does not say nothing about which variables influences the other and causes the change.

3.7 Linear and Multiple Linear Regression Models

The linear regression model, developed in statistics field, are very often used in psychology and social studies for the analysis of empirical data. Linear models are frequently applied also in economic field, since economic phenomena are strictly related to each other and through the variations of two or more variables is possible to find and understand the relations between them.

A simple linear regression evaluates the linear relationship between two continuous variables with the aim to predict the value of the dependent variable based on the value of the independent. More in details, it will allow to: determine if the linear regression between these two variables is statistically significant, determine how much a variation in the dependent variable is explained by the independent one, understand the path and the size of any relation between the variables and predict possible values of the dependent variables according to different values of the independent variable.

The model is generally composed by two sets of variables: the variable Y_i, that is the dependent or outcome variable, and the variable X_i, the independent or predictor variable. The model is composed by three other elements: β_0 the intercept, also known as the constant, β_1 is the slope parameter or the slope coefficient and ε_i is the error.

$$Y_i = \beta_0 + \beta_1 X_i + \varepsilon_i \quad (1)$$

- Y_i: outcome variable;
- β_0: intercept;
- β_1: slope parameter;
- X_i: predictor variable;
- ε_i: the error.

This model is most often used to determine the change in dependent variable for one unit change in the independent variable and the slope coefficient can be used to determine this change. Once the slope of the coefficient is understood, the

second objective of the linear regression can be achieved. That is, the prediction of the value of one variable can be made when you know the value of another variable. More specifically, the value you are predicting is the dependent variable and the value that you know is the independent variable. Usually, the objective is not to make predictions, but to determine if differences in the independent variable can explain differences in the dependent variable. Moreover, the objective is to be able to quantify the degree to which the independent variable explains any variations in the dependent one.

A multiple regression model is used to predict a continuous dependent variable given multiple independent variables and this model allows to define the contribution of each of the predictors in determining the outcome. So, in this case the objective is to analyse the contribution of more than one independent variable in the definition of the dependent one.

$$Y_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \cdots + \beta_k X_{ki} + \varepsilon_i \quad (2)$$

- Y_i: outcome variable;
- β_0: intercept;
- β_k: slope parameter for each independent variable X_{ki} ;
- X_{ki}: predictor variables;
- ε_i: the error.

Also in this case the multiple regression model is useful to predict the value of one variable when you have the value of other variables. In addition, when the goal is not to predict but to determine how much of the variation in the dependent variable can be explained by all independent variables, the multiple regression can show the relative and specific contribution of each independent variable on the total. The parameter β_1 represents the change in the mean response corresponding to a unit change in X_{1i} when all the other X_{ki} are held constant. Finally, ε_i is a random variable and it is the contribution of all other factors that are not observed, which may affect the value of the outcome variable Y_i.

3.7.1 Instrumental Variables Regression Model

In the standard linear regression model, errors in the dependent variable are assumed to not be correlated with the independent variables. When this assumption is not verified, the linear regression with ordinary least squares (OLS) is no more reliable for the provision of optimal model estimates. This is the reason why the technique applied in this case uses instrumental variables. So, the most developed method of estimation of a linear model with instrumental variables is also known as the two-stages least squares (2SLS). The two stages least squares regression analysis is statistical technique that is the extension of the ordinary least squares method (OLS) composed by two stages. Therefore, it is used when the error term is correlated with the independent variables.

So, the instrumental variables (IV) regression is a method used in order to obtain an estimator of the unknown coefficients of the regression function when the independent variable X is correlated with the error term, u. In order to understand how the IV regression works, think that the variation in X has two parts: one is correlated with u (and causes the problem) and a second part that is uncorrelated with u. If there is the possibility to isolate the second part, in this case it is possible to focus on those variations of X that are uncorrelated with u and neglect the variations of X that bias the OLS regression. So, the information of the uncorrelated part of X is collected through one or more additional variables, called instrumental. These instrumental variables are used as a tool to isolate the part in X that is uncorrelated with u, which allows to estimate regression coefficients.

Instrumental variables regression has a specific terminology in order to distinguish between variables that are correlated with the error term u from one that are not. The variables that are correlated with the error term are called endogenous variables, while the uncorrelated ones are called exogenous variables.

The general IV regression model is composed by four types of variables: the dependent variable, Y; X that are the problematic endogenous regressors, potentially correlated with the error term; other regressors that are not correlated with the error term, included exogenous variable and named W; and the instrumental variables, Z. In addition, the last component is the error term that represents the measurement error and omitted factors. So, the general instrumental variables regression model is:

$$Y_i = \beta_0 + \beta_1 X_{1i} + \cdots + \beta_k X_{ki} + \beta_{k+1} W_{1i} + \cdots + \beta_{k+r} W_{ri} + u_i \qquad (3)$$

- Y_i: the dependent variable, $i = 1, \dots, n$;
- u_i: error term;
- $X_{1i}, \dots, X_{ki}$: k exogenous regressors, potentially correlated with u_i;
- $W_{1i}, \dots, W_{ri}$: r included exogenous regressors, uncorrelated with u_i;
- $\beta_0, \beta_1, \dots, \beta_{k+r}$: unknown regressor coefficients;
- $Z_{1i}, \dots, Z_{mi}$: m instrumental variables;

3.7.2 Two Stages Least Squares

In order to estimate the β coefficients, it is worthy to use the Two Stages Least Squares model. This method is composed by two stages with the objective to calculate the estimator. The first stage decomposes the X into two components: the problematic one that may be correlated with the regression error and the other part that is uncorrelated with the error. The second step uses the problem free component in order to estimate the β.

When there is just one endogenous regressor X and other exogenous variables, the equation is:

$$Y_i = \beta_0 + \beta_1 X_i + \beta_2 W_{1i} + \cdots + \beta_{1+r} W_{ri} + u_i \quad (4)$$

- Y_i: the dependent variable, $i = 1, \dots, n$;
- u_i: error term;

- X_i: endogenous regressor, potentially correlated with u_i;
- $W_{1i}, \dots, W_{ri}$: r included exogenous regressors, uncorrelated with u_i;
- $\beta_0, \beta_1, \dots, \beta_{1+r}$: unknown regressor coefficients;
- $Z_{1i}, \dots, Z_{mi}$: m instrumental variables;

The first-stage regression of 2SLS puts in relation X to the exogenous variables W_{ri} and the instruments Z_{mi}.

$$X_i = \pi_0 + \pi_1 Z_{1i} + \cdots + \pi_m Z_{mi} + \pi_{m+1} W_{1i} + \cdots + \pi_{m+r} W_{ri} + v_i \quad (5)$$

- X_i: endogenous variable correlated with the error term, $i = 1, \dots, n$;
- v_i: error term;
- $Z_{1i}, \dots, Z_{mi}$: m instrumental variables;
- $W_{1i}, \dots, W_{ri}$: r included exogenous regressors, uncorrelated with u_i;
- $\pi_0, \pi_1, \dots, \pi_{m+r}$: unknown regressor coefficients;

So, in the first stage of the 2SLS, the unknown coefficients of the equation (5) are computed by the standard OLS and in this step the predicted values $\widehat{X_1}, \dots, \widehat{X_n}$ are computed. In the second stage of 2SLS, the equation (4) is estimated by OLS and the X_i is replaced by the predicted values from the first stage. In the end, the Y_i is regressed on $\widehat{X_\iota}$ and $W_{1i}, \dots, W_{ri}$ using OLS and consequently the $\beta_0, \beta_1, \dots, \beta_{1+r}$ are estimated.

3.8 Model Application

In order to answer to the research question, it has been decided to use the Two Stages Leas Squares model described in the previous chapter. In particular, the model has been developed with the objective to explain the relation between independent variables and the dependent one. More in deep, how much the independent variable is influenced by explanatory variables. The statistic software used for the analysis, SPSS, gives the possibility to compute different type of regression. So, the two stages were implemented in order to follow the procedures.

For the independent variables, not all the variables in the questionnaire have been used in the model but only a group of selected ones. It was decided to use the variables that show differences in mean between treated and control group through the t-test analysis.

Given the theoretical explanation in the previous chapter, in this case the Y_i variable is an empowerment variable measured in 2016 and Xi are a group of variables selected after the t-test. The final model is composed by 11 independent variables. In this case there is a single endogenous regressor and some additional exogenous variables, uncorrelated with the error term.

So, the equation of interest is:

$$empowerment_{2016i}$$
$$= \beta_0 + \beta_1(WPC_{2016} - WPC_{2007})_i + \beta_2 \#WPCyear_i$$
$$+ \beta_3 empowerment_{2007i} + \beta_4 age_i + \beta_5 \#people_i$$
$$+ \beta_6 \#children_i + \beta_7 religion_i + \beta_8 eaw_i + \beta_9 eah_i + \beta_{10} walls$$
$$+ \beta_{11} toilet_i + v_i \quad (6)$$

- $(WPC_{2016} - WPC_{2007})_i$: the independent variable that will be predicted in the first stage;
- $\beta_0, \ldots, \beta_{11}$: unknown coefficients;
- $(WPC_{2016} - WPC_{2007})_i$: treatment variable;
- $\#WPCyear_i$: this variable measures the number of year of membership to the WPC. In this case is taken into account also women that have been member in the past, but they are not member anymore;
- $empowerment_{2007i}$: this variable indicates all these variables defined as measures of empowerment in 2007, as it has been explained for the Equation (6);
- age_i: women age;
- $\#people_i$: number of people in the house, including the woman;
- $\#children_i$: number of children with no distinction by gender;

- $religion_i$: this variable has been reduced to a dichotomous variable: hindu,1, and other, 0;

- eaw_i: economic activity of the woman. This variable has been reduced to a dichotomous variable: housewife,1, and other,0;

- eah_i: economic activity of the husband or household head. This variable has been reduced to a dichotomous variable: agriculture,1, and other,0;

- $walls_i$: the wall material variable is cement/bricks 1, and other 0;

- $toilet_i$: the toilet variable is pit latrine 1, and other, 0;

- v_i: error term.

For what concerns the treatment variable, it is worthy to focus on the meaning of this variable. This is very important since the treatment is the participation or not to WPCs. The attention will be on this variable in order to measure if the participation to WPCs has an impact on empowerment variables. This variable can assume three different values: -1, 0 and 1. The first condition exists when women have been member of the WPCs and now they are out of the program. The second condition is valid when women have never been in the project or if they entered in 2007 and exit in 2016. In the end, the last case, that is the more interesting for the impact measurement, subsists when women are member of the WPCs now but they were not in 2007.

The variable $(WPC_{2016}\text{-}WPC_{2007})_i$ is correlated with the error term that represents other factors that affect the empowerment, such as behaviour and personal interests. Since $(WPC_{2016}\text{-}WPC_{2007})_i$ is an endogenous regressor, the population first stage of 2SLS will relate the endogenous variable to the exogenous variables and to the instrumental variable and the equation will be:

$$(WPC_{2016} - WPC_{2007})_i$$

$$= \pi_0 + \pi_1 distance_i + \pi_2 \#WPCyear_i + \pi_3 empowerment_{2007i}$$
$$+ \pi_4 age_i + \pi_5 \#people_i + \pi_6 \#children_i + \pi_7 religion_i$$
$$+ \pi_8 eaw_i + \pi_9 eah_i + \pi_{10} walls_i + \pi_{11} toilet_i + v_i \quad (7)$$

- $(WPC_{2016} - WPC_{2007})_i$: the independent variable that will be predicted in the first stage;

- $\pi_0, \ldots, \pi_{11}$: unknown coefficients;

- $distance_i$: the instrumental variable that measure the distance from home village to the nearest WPC and unit measure is kilometres;

- $\#WPCyear_i$: this variable measures the number of year of membership to the WPC. In this case is taken into account also women that have been member in the past, but they are not member anymore;

- $empowerment_{2007i}$: this variable indicates all these variables defined as measures of empowerment in 2007, as it has been explained for the Equation (6);

- age_i: women age;

- $\#people_i$: number of people in the house, including the woman;

- $\#children_i$: number of children with no distinction by gender;

- $religion_i$: this variable has been reduced to a dichotomous variable: hindu,1, and other, 0;

- eaw_i: economic activity of the woman. This variable has been reduced to a dichotomous variable: housewife,1, and other,0;

- eah_i: economic activity of the husband or household head. This variable has been reduced to a dichotomous variable: agriculture,1, and other,0;

- $walls_i$: the wall material variable is cement/bricks 1, and other 0;

- $toilet_i$: the toilet variable is pit latrine 1, and other, 0.

The instrumental variable is the distance from the house of each woman to the nearest WPC meeting point. This distance has been computed through Excel using

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the GPS coordinates of women's village and WPCs' meeting point. So, this instrumental variable regression will permit a consistent estimation of the regression coefficients in the Equation (6).

In the first stage of 2SLS, the unknown coefficients in Equation (7) will be estimated by the standard multiple linear regression and in addition the predicted values of the endogenous variable (WPC_{2016}-$WPC_{2007})_i$ is computed.

In the second stage of 2SLS, again Equation (6) is estimated by multiple linear regression, except for the variable (WPC_{2016}-$WPC_{2007})_i$ that is be replace by its predicted values from the stage one. That is, $empowerment_{2016i}$ is regressed on the predicted variable and on the exogenous variables through the multiple linear regression and the unknown regressor coefficients in (6) are estimated.

The linear model has been calculated in both stages for 165 observations. The number of observations has been reduced from 227 to 165 due to presence of some missing answers. In particular, this blank answers could not be replaced through mathematical model or by average values, because indexes of empowerment. In particular the five questions for which has been decided to not replace missing data are: if the woman has her own cell phone and money for personal spending, if she free to move alone, if there is any violence in the house and if beating the wife is never justified.

Empirical Analysis

This chapter has been developed with the aim to present the main steps followed and the statistical methods described in the previous section and the corresponding results.

4.1 T-test

The statistical t-test allows to compare the means of two groups in order to define possible covariates that will be used in future estimations. Under the hypothesis of equal variances and independent groups, two different distributions have been defined according to the treatment received. If the two groups present a tendency that is statistically significant for a specific variable, this can be considered a regressor. Here below, the tests in which the variables are statistically significant are reported and among the 22 variables available in the dataset 18 variables are presented in the Table 13. According to the results in the table, it can be noticed how the variable *religion* shows statistically significant results for all the three alternatives with *Sig.<.01.* Another relevant result is reported by the variable *own money for personal spending* in 2007 where the p-value is lower than the threshold .01. For what concerns the *free to move alone outdoor* variable, again the evidence shows a statistically significant value. It must be noticed a significant statistical difference between the two groups in the variable *say a decision on: taking a loan* and *use of borrowed money for health* both in 2007 and 2016. So, summing up, it has been seen that the results in Table 13 show a significant degree of imbalances in observed characteristics between the treatment and the control group.

Table 14 Baseline Summary Statistics and t-test

		Mean (1)	SD (2)	Mean difference (T-C) (3)	p-value (4)
Age		36,3577	9,49593	3,23455	,015
Religion	Hindu	,80	,399	,203	,001
	Muslim	,01	,085	-,370	,000
	Christian	,19	,394	,168	,000
# of people living in the household	*Now*				
	≤2	,11	,313	,087	,014
	3	,24	,429	,130	,015
	4	,34	,476	,010	,880
	5	,17	,375	-,165	,004
	6	,09	,294	,006	,879
	≥7	,04	,205	-,067	,053
	In 2007 ≤2	,09	,284	-,001	,973
	3	,17	,375	,023	,638
	4	,47	,501	,100	,136
	5	,58	1,565	-,094	,662
	6	,08	,273	,003	,946
	≥7	,05	,221	-,060	,094*
# of male children	*Now*				
	0	,26	,442	,029	,619
	1	,52	,502	,063	,358
	2	,17	,375	-,054	,309
	≥3	,05	,221	-,038	,264
# of female children	*Now*				
	0	,43	,497	,175	,007
	1	,39	,490	-,061	,361
	2	,14	,347	-,039	,427
	≥3	,04	,188	-,075	,027
# of male children	*In 2007*				
	0	,07	,249	,066	,013
	1	,44	,498	,149	,024
	2	,15	,354	-,032	,523
	≥3	,07	,249	-,023	,518
# of female children	*In 2007*				
	0	,45	,499	,023	,734
	1	,38	,487	,080	,220
	2	,14	,347	-,050	,313
	≥3	,04	,188	-,052	,097
Own cell phone					
	Yes	,55	,500	-,075	,267
	No	,45	,500	,086	,201
	n.a.	,00	,000	-,011	,218
	In 2007				
	Yes	,31	,463	-,005	,943
	No	,61	,490	-,027	,678
	n.a.	,09	,284	,032	,372
Own money for personal spending	*Now*				
	Yes	,95	,221	,004	,884
	No	,03	,169	-,015	,544
	n.a.	,02	,147	,011	,548
	In 2007				
	Yes	,80	,399	,170	,004
	No	,09	,294	-,161	,001
	n.a.	,10	,304	-,009	,832
Free to move alone outdoor	*Now*				
	Yes	,90	,304	,164	,001
	No	,08	,273	-,097	,026
	n.a.	,02	,147	-,067	,021
	In 2007				
	Yes	,70	,460	,134	,039
	No	,22	,415	-,077	,173
	n.a.	,08	,273	-,057	,215
Say in decisions	*Now*				
	Buying furniture	,85	,362	,036	,484
	Buying livestock	,46	,500	-,029	,670
	Health	,79	,410	,055	,340
	Children education	,82	,388	-,082	,089
	Taking a loan	,70	,460	,167	,010
	Use of money	,68	,469	,079	,226
	In 2007				
	Buying furniture	,77	,425	,066	,266
	Buying livestock	,44	,498	,038	,572
	Health	,65	,479	,083	,210
	Children education	,71	,456	,019	,759
	Taking a loan	,57	,497	,080	,236
	Use of money	,55	,500	,092	,177
Used of borrowed money	*Now*				
	Business	,82	,388	-,094	,051
	Ceremonies	,04	,188	,014	,545
	Dowry	,01	,085	,007	,419

	Mean (1)	SD (2)	Mean difference (T-C) (3)	p-value (4)
Education	,31	,463	,095	,113
Food/Cloths	,04	,188	-,008	,765
Health	,23	,425	,145	,005
House	,19	,394	,045	,378
Transport	,01	,120	-,008	,671
In 2007				
Business	,74	,442	,048	,431
Ceremonies	,03	,169	-,004	,861
Dowry	,01	,085	,007	,419
Education	,28	,453	,085	,151
Food/Cloths	,04	,205	-,001	,982
Health	,20	,405	,149	,002
House	,14	,347	,083	,047
Transport	,01	,120	,003	,823
Your main economic activities *Now*				
Housewife	,96	,188	,275	,000
Agriculture	,07	,249	-,112	,008
Carpentry	,00	,000	-,011	,218
Fish culture	,07	,249	,055	,050
Labourer	,04	,205	,010	,694
Sewing	,12	,331	-,098	,051
Shop owner	,01	,120	-,030	,172
Transport	,01	,120	,015	,252
Unemployed	,01	,120	-,030	,172
Other: indicate	,03	,169	-,193	,000
In 2007				
Housewife	,85	,362	,213	,000
Agriculture	,07	,249	-,057	,143
Carpentry	,00	,000	-,011	,218
Fish culture	,06	,235	,058	,020
Labourer	,04	,188	,003	,900
Sewing	,09	,294	-,083	,068
Shop owner	,01	,120	-,008	,671
Transport	,01	,085	,007	,419
Unemployed	,01	,085	-,026	,146
Other: indicate	,03	,169	-,104	,003
Husband/household head's main economic activity *Now*				
Housewife	,02	,147	-,023	,339
Agriculture	,44	,498	,149	,024
Carpentry	,04	,188	-,041	,175
Fish culture	,14	,347	,128	,001
Labourer	,35	,479	,173	,005
Sewing	,01	,120	-,097	,001
Shop owner	,06	,235	-,008	,801
Transport	,09	,294	,050	,159
Unemployed	,02	,147	,011	,548
Other: indicate	,04	,188	-,408	,000
In 2007				
Housewife	,04	,205	,022	,391
Agriculture	,37	,485	,050	,442
Carpentry	,04	,188	-,030	,303
Fish culture	,11	,313	,098	,004
Labourer	,29	,456	,114	,051
Sewing	,01	,085	-,070	,005
Shop owner	,07	,249	,032	,289
Transport	,07	,249	-,012	,729
Unemployed	,01	,120	,015	,252
Other: indicate	,03	,170	-,148	,000
Material of house wall *Now*				
Cement/bricks	,74	,438	,000	,999
Tin/metal sheet	,02	,147	-,034	,180
Mud	,23	,420	,060	,276
Wood	,03	,169	-,015	,544
In 2007				
Cement/bricks	,61	,489	,180	,008
Tin/metal sheet	,02	,147	,000	,987
Mud	,29	,456	-,130	,043
Wood	,01	,086	-,048	,027
The toilet in your house *Now*				
Pit latrine	,82	,388	,140	,015
Modern toilet	,15	,362	-,158	,005
Shared	,03	,169	,018	,366
In 2007				
Pit latrine	,77	,420	,040	,489
Modern toilet	,11	,313	-,002	,970
Shared	,12	,322	-,039	,401
Violence in your household *Now*				
On you	,01	,085	-,015	,338
On children	,00	,000	-,011	,218
No violence	,94	,235	,042	,246
n.a.	,05	,221	-,016	,623

	Mean (1)	SD (2)	Mean difference (T-C) (3)	p-value (4)
In 2007				
On you	,04	,205	,022	,391
On children	,00	,000	-,022	,080*
No violence	,85	,362	,036	,484
n.a.	,11	,313	-,035	,436
Beating the wife is never justified *Now*				
I agree	,76	,429	,056	,362
I don't agree	,21	,410	-,063	,289
n.a.	,03	,169	,007	,750
In 2007				
I agree	,66	,474	,053	,416
I don't agree	,24	,429	-,040	,484
n.a.	,09	,284	-,016	,694

Notes: sample size n=227, of which 90 assigned to the control group and 137 to the treatment group. Colum (1) and (2) report the mean value and the standard deviations for the treatment group. Column (3) shows the difference between the means in column (1) and the means for the control group. Column (4) shows the p-values for the t-test (2- tailed), which shows if there is or not significant difference between the means of the two samples. Asterisks denote statistics significant ate 10 (*), 5(**), or 1(***) percent level.

4.2 Correlation Analysis

In this section, the main dependent and independent variables are analysed, highlighting the significant Pearson correlation coefficients, where these coefficients are significant at level 1% (**) and 5% (*) two- tailed. It is important to notice that this analysis does not give any indication of the direction of causality, so it does not explain which variable causes the other to change. In particular the analysis will be presented according to the variable categories.

Personal Variables

Table 15 Correlation Matrix for Personal Variables

	Distance house from WPC	WPC2016-WPC2007	Years WPC	What is your religion? Hindu (1), Other (0)	Now_Married	2016_Housewife	Has your application to WPC ever been rejected? Yes (1), No (0)
Age	-,247**	,111	,279**	-,047	,085	,069	-,299**
Distance house from WPC	1	-,757**	-,498**	-,575**	-,493**	-,244**	-,031
WPC2016-WPC2007	-,757**	1	,566**	,372**	,385**	,293**	,019
Years WPC	-,498**	,566**	1	,121	,236**	,376**	,031
Who is the head of your household? My husband	,001	,108	,074	,086	,202**	,019	,602**
What is your religion? Hindu (1), Other (0)	-,575**	,372**	,121	1	,198*	,167*	,061
12.1_Now_Married	-,031	,019	,031	,061	,176*	,033	1
n people in the house 2016	,215**	-,165*	-,080	-,154*	-,020	-,009	,165*
n children 2016	,257**	-,258**	-,106	-,202**	-,119	,010	-,015
Cell phone_2016	-,007	-,078	,004	,001	-,081	,068	,112
Cell phone_2007	-,102	,066	-,002	,058	,094	,156*	,019
Own money_2016	-,082	,076	,153	,040	,031	,003	-,037
Own money_2007	-,295**	,231**	,205**	,119	,162*	,056	-,091
Free to move_2016	-,358**	,214**	,215**	,306**	,074	,043	-,076
Free to move_2007	-,318**	,178*	,209**	,279**	,160*	,098	-,125
2016_Buying furniture	-,051	-,009	,042	-,068	,184*	-,145	,018
2016_Buying livestock	,172*	-,087	-,132	,126	-,016	-,137	-,011
2016_Health	,018	,035	-,007	-,109	,075	-,177*	,053
2016_Children education	,039	-,019	-,080	-,002	,036	-,074	,126
2016_Taking a loan	-,110	,121	,028	,007	,098	-,067	,113
2016_Use of money	-,047	,055	-,074	,044	,104	-,170*	,051
2007_Buying furniture	-,016	,022	,138	-,072	,058	-,099	-,012
2007_Buying livestock	,073	-,016	-,061	,142	-,020	-,087	-,031
2007_Health	-,023	,028	,049	-,087	,017	-,110	,000
2007_Children education	-,062	,001	,011	,095	,011	-,074	-,033
2007_Taking a loan	-,065	,116	,007	,011	,029	-,104	,074
2007_Use of money	-,018	,073	-,071	,103	-,017	-,152	,007
2016_Business	,142	-,071	,001	-,100	,028	-,014	,312**
2016_Ceremonies	-,083	,018	-,099	,055	,078	-,099	,041

	Distance house from WPC	WPC2016-WPC2007	Years WPC	What is your religion? Hindu (1), Other (0)	Now_Married	2016_Housewife	Has your application to WPC ever been rejected? Yes (1), No (0)
2016_Dowry	-,050	,058	-,020	,051	,031	-,040	,016
2016_Education	-,200**	,166*	,108	-,082	,193*	-,017	,076
2016_Food/Cloths	,095	-,052	-,101	-,039	-,072	-,115	,048
2016_Health	-,199*	,205**	,166*	-,194*	,119	,000	-,041
2016_House	-,122	,063	-,117	,135	,078	,026	-,074
2016_Transport	,163*	-,076	-,104	-,110	-,076	-,069	,029
2007_Business	,015	,089	,124	-,036	,055	,037	,190*
2007_Ceremonies	-,001	-,045	-,123	,126	-,015	-,099	-,120
2007_Dowry	-,050	,058	-,020	,051	,031	-,040	,016
2007_Education	-,139	,139	,085	-,051	,142	-,029	,069
2007_Food/Cloths	,107	-,052	-,143	,023	,009	,025	-,092
2007_Health	-,208**	,221**	,148	-,153*	,140	-,038	,018
2007_House	-,167*	,148	-,038	,227**	,085	,014	-,023
2007_Transport	,094	-,026	-,070	-,049	,045	-,056	,023
2016_Housewife	-,493**	,385**	,236**	,198*	1	,119	,176*
2016_Agriculture	-,125	,139	,163*	,039	,059	-,117	,039
2016_Cement/bricks	-,092	,026	,054	,107	,126	-,012	,084
2007_Cement/bricks	-,283**	,204**	,146	,165*	,237**	,025	,132
2016_Pit latrine	-,172*	,131	,247**	-,027	,099	,183*	,091
2007_Pit latrine	-,079	,113	,133	-,002	,113	,070	,077
2016_No violence	-,200**	,114	,040	-,016	,278**	,080	,162*
2007_No violence	-,164*	,082	-,121	,019	,212**	-,076	,082
2016_I agree	,079	,025	-,094	-,063	-,091	-,013	-,041
2007_I agree	,077	,009	-,093	-,067	-,110	-,019	-,051
Has your application to WPC ever been rejected? Yes (1), No (0)	-,244**	,293**	,376**	,167*	,119	1	,033

Notes: sample size 165 observations, the correlation is statistically significant for level 1% (*) and the correlation is statistically significant for level 5% (**) both two- tailed.

- The *distance house from WPC* and the $WPC_{2016} – WPC_{2007}$ have a significant Pearson correlation coefficient (*Sig*.<.01) and the value is high. This means that the effect is large and as one variable increases the other decreases. If the distance between the house village increases, the participation to WPCs decreases;

- the $WPC_{2016} – WPC_{2007}$ and the *number of children* in 2016 are statistically significant at 5% level, but the effect is low between the two variables. The participation variable shows a statistically significant level (*Sig*.<.01) with the variable *number of people in the house* in 2016, but the effect is small;

- again for what concerns the participation variable and *who is the head of your household*, those two variables are not correlated and are not statistically significant. This means that the household's head does not impact the variable $WPC_{2016} – WPC_{2007}$;

Husband and Household Variables

Table 16 Correlation Matrix for Husband and Household Variables

	Who is the head of your household? My husband	2016_Agriculture	2016_Cement/bricks	2007_Cement/bricks	2016_Pit latrine	2007_Pit latrine
Age	-,293**	,068	,052	-,010	,020	-,093
Distance house from WPC	,001	-,125	-,092	-,283**	-,172*	-,079
WPC2016-WPC2007	,108	,139	,026	,204**	,131	,113
Years WPC	,074	,163*	,054	,146	,247**	,133
Who is the head of your household? My husband	1	-,050	,109	,103	,041	,102
What is your religion? Hindu (1), Other (0)	,086	,039	,107	,165*	-,027	-,002
Now_Married	,602**	,039	,084	,132	,091	,077
n people in the house 2016	,032	-,009	,014	-,022	,014	-,111
n children 2016	,041	-,024	-,015	-,040	-,082	-,076
Cell phone_2016	,020	-,030	,200**	,123	,002	,035
Cell phone_2007	-,003	-,088	,052	,130	,123	,158*
Own money_2016	-,034	-,009	,140	,070	-,018	,053
Own money_2007	,005	-,077	-,062	,286**	,105	,191*
Free to move_2016	-,070	,123	,051	-,066	-,027	-,132
Free to move_2007	-,042	,004	-,030	,100	,019	,142
2016_Buying furniture	,031	-,073	,225**	,282**	-,027	-,089
2016_Buying livestock	,083	-,121	,137	,162*	-,204**	-,165*
2016_Health	-,011	,053	,004	,108	-,200*	,061
2016_Children education	,147	,139	,077	,045	-,099	-,114
2016_Taking a loan	,144	-,029	,015	,224**	-,026	-,063
2016_Use of money	,077	,015	,083	,183*	-,049	,004
2007_Buying furniture	,089	-,063	,193*	,068	,017	,030
2007_Buying livestock	,064	-,070	,136	,180*	-,117	-,141
2007_Health	-,051	,101	-,030	,080	-,075	,105
2007_Children education	,061	,086	,012	,067	-,008	-,002
2007_Taking a loan	,106	,072	,006	,156*	-,029	,067
2007_Use of money	,035	,039	,076	,110	-,071	,080
2016_Business	,451**	,031	,063	,067	,029	,009
2016_Ceremonies	,038	-,084	-,035	,029	-,041	-,029
2016_Dowry	,015	,101	-,134	-,094	,044	,047
2016_Education	,060	,212**	-,061	-,034	,011	-,012
2016_Food/Cloths	-,107	-,059	-,062	-,043	,062	,009
2016_Health	-,061	,162*	-,149	-,006	-,061	,070
2016_House	-,183*	,077	,024	,053	-,143	-,078
2016_Transport	,026	-,106	-,025	-,072	-,029	-,021
2007_Business	,301**	,086	-,023	-,055	,061	,032
2007_Ceremonies	,038	-,151	-,109	-,037	-,117	-,029
2007_Dowry	,015	,101	-,134	-,094	,044	,047
2007_Education	,053	,164*	-,024	-,068	-,042	-,036
2007_Food/Cloths	,044	,000	-,062	-,101	-,004	,072
2007_Health	,005	,201**	-,132	,025	-,036	,062
2007_House	-,036	,130	-,063	,052	-,210**	-,141
2007_Transport	,022	-,086	-,062	-,134	,063	,067
2016_Housewife	,202**	,059	,126	,237**	,099	,113
2016_Agriculture	-,050	1	-,064	,030	,001	-,013
2016_Cement/bricks	,109	-,064	1	,593**	-,103	-,069
2007_Cement/bricks	,103	,030	,593**	1	-,065	,087
2016_Pit latrine	,041	,001	-,103	-,065	1	,394**
2007_Pit latrine	,102	-,013	-,069	,087	,394**	1
2016_No violence	-,031	,122	,270**	,191*	,095	-,095
2007_No violence	-,047	,131	,105	,182*	,113	,097
2016_I agree	,128	-,093	-,014	-,119	,035	,070
2007_I agree	,113	-,075	-,046	-,133	,035	,129
Has your application to WPC ever been rejected? Yes (1), No (0)	,019	-,117	-,012	,025	,183*	,070

Notes: sample size 165 observations, the correlation is statistically significant for level 1% (*) and the correlation is statistically significant for level 5% (**) both two- tailed.

- For what concerns the variable *household's head: my husband*, it can be noticed that it is significantly positively correlated with the use of borrowed money for business variable (*2016_Business*). That means

that as the household's head is the husband, the more money will be used for business activity, presumably the husband's one;

- considering the *Agriculture* variable as the household's head main economic activity, the result of the correlation with the use of borrowed money for *2016_Education* variable is significantly positive, but the effect size is small;

- it is interesting to see that the material house variable (*Cement/bricks*), both in 2016 and 2007, is significantly correlated with the variable that explains on which decisions a woman has a say (*Buying furniture*). This can be also interpreted as a measure of the wealth of the household. It seems that if women live in a cement/bricks house, they are likely to use money for house furniture.

Empowerment Variables

For what concerns these variables, not all the combinations between the variables are reported. In particular,

- Considering the variable that indicates the possibility to have money for personal spending (*Own money_2007*), this has a statistically significant correlation with the number of years in WPCs variable (*Years WPC*). This means that as the number of years of membership increases, the level of empowerment increases even if the size impact is low;

- Again, the number of years of participation to WPC is significantly correlated to the freedom to move alone variable (*Free to move_2016/2007*) both for 2016 and 2007. The correlation is positive and the size effect is small.

Table 17 Correlation Matrix for Husband and Household Variables

	Age	Distance house from WPC	WPC2016-WPC2007	Years WPC	Who is the head of your household? My husband	What is your religion? Hindu (1), Other (0)	Now_Married	n people in the house 2016	n children 2016
Cell phone_2016	-,168*	-,007	-,078	,004	,02	,001	,112	,006	-,112
Cell phone_2007	-,121	-,102	,066	-,002	-,003	,058	,019	-,107	-,09
Own money_2016	,031	-,082	,076	,153	-,034	,04	-,037	-,049	-,022
Own money_2007	,093	-,295**	,231**	,205**	,005	,119	-,091	-,112	-,019
Free to move_2016	,14	-,358**	,214**	,215**	-,07	,306**	-,076	-,071	-,151
Free to move_2007	,198*	-,318**	,178*	,209**	-,042	,279**	-,125	-,174*	,024
2016_Buying furniture	,152	-,051	-,009	,042	,031	-,068	,018	-,121	,057
2016_Buying livestock	-,082	,172*	-,087	-,132	,083	,126	-,011	,048	,067
2016_Health	-,03	,018	,035	-,007	-,011	-,109	,053	,03	,001
2016_Children education	,032	,039	-,019	-,08	,147	-,002	,126	,117	,202**
2016_Taking a loan	-,013	-,11	,121	,028	,144	,007	,113	,069	,006
2016_Use of money	-,118	-,047	,055	-,074	,077	,044	,051	,011	-,078
2007_Buying furniture	,256**	-,016	,022	,138	,089	-,072	-,012	-,098	,161*
2007_Buying livestock	,046	,073	-,016	-,061	,064	,142	-,031	-,005	,061
2007_Health	,093	-,023	,028	,049	-,051	-,087	0	-,027	,014
2007_Children education	,136	-,062	,001	,011	,061	,095	-,033	,032	,14
2007_Taking a loan	,043	-,065	,116	,007	,106	,011	,074	-,012	,038
2007_Use of money	-,051	-,018	,073	-,071	,035	,103	,007	-,045	-,005
2016_Business	-,128	,142	-,071	,001	,451**	-,1	,312**	,078	,11
2016_Ceremonies	-,021	-,083	,018	-,099	,038	,055	,041	-,032	-,012
2016_Education	,086	-,200**	,166*	,108	,06	-,082	,076	-,098	-,1
2016_Food/Cloths	,002	,095	-,052	-,101	-,107	-,039	,048	-,012	-,014
2016_Health	,169*	-,199*	,205**	,166*	-,061	-,194*	-,041	-,08	-,017
2016_House	,009	-,122	,063	-,117	-,183*	,135	-,074	-,047	-,102
2016_Transport	-,029	,163*	-,076	-,104	,026	-,11	0,029	-,034	,033
2007_Business	-,059	,015	,089	,124	,301**	-,036	,190*	,056	,058
2007_Ceremonies	-,055	-,001	-,045	-,123	,038	,126	-,12	-,032	-,012
2007_Education	,097	-,139	,139	,085	,053	-,051	,069	-,104	-,075
2007_Food/Cloths	-,098	,107	-,052	-,143	,044	,023	-,092	-,087	-,065
2007_Health	,111	-,208**	,221**	,148	,005	-,153*	,018	-,074	-,028
2007_House	-,012	-,167*	,148	-,038	-,036	,227**	-,023	-,036	-,039
2007_Transport	,022	,094	-,026	-,07	,022	-,049	,023	-,057	-,007
2016_No violence	,202**	-,200**	,114	0,04	-,031	-,016	,162*	,081	,117
2007_No violence	,037	-,164*	,082	-,121	-,047	,019	,082	,032	,015
2016_I agree	,071	,079	,025	-,094	,128	-,063	-,041	,004	,072
2007_I agree	,08	,077	,009	-,093	,113	-,067	-,051	,018	,061

Notes: sample size 165 observations, the correlation is statistically significant for level 1% (*) and the correlation is statistically significant for level 5% (**) both two- tailed.

4.3 Regression Results

The results are presented by analysing the following parameters and the values they take in order to describe the relation between the variables in the model and consequently answer to the research question.

- *B*: this is the value that represents the change in the outcome associated with a unit of change in the predictor, if the effects of the other predictors are held constant. In general, the value of the regression coefficients represents the change in outcome when a unit changes in

the predictor and if the predictor significantly impacts on the ability to predict the outcome, this value should be different from 0;

- *Sig.*: this value is used in order to asses if the predictor is making a significant contribution to the model. The smaller the value of *Sig.* associated to a predictor, the greater the significance of this predictor.

4.3.1 First Stage Regression Results

In this stage, according to the equation (8) the dependent variable is (WPC_{2016}-WPC_{2007})$_i$ and it is kept fixed for each regression computed. For what concerns the independent variables and the instrumental variable, these are held constant, except for the empowerment variables in 2007. These variables are: own cell phone, own money for personal spending, free to move alone, no violence in the house, beating the wife is neve justified. The other empowerment variables are say in decision on: buying furniture, buying livestock, health, children education, taking a loan, use of money. The last group is the use of borrowed money: business, ceremonies, dowry, education, food/clothes, health, house and transport. Therefore, 19 blocks of regression have been computed and each block has been run with a different empowerment variable. In the Table 17 the variables used in each block are explained.

$$(WPC_{2016} - WPC_{2007})_i$$
$$= \pi_0 + \pi_1 distance_i + \pi_2 \#WPCyear_i + \pi_3 empowerment_{2007i}$$
$$+ \pi_4 age_i + \pi_5 \#people_i + \pi_6 \#children_i + \pi_7 religion_i$$
$$+ \pi_8 eaw_i + \pi_9 eah_i + \pi_{10} walls_i + \pi_{11} toilet_i + v_i \quad (8)$$

Table 18 Variables Used in the First Stage

Independent Constant Variables	Instrumental variable	$distance_i$	
	Other variables	$\#WPCyear_i$, age_i, $\#people_i$, $\#children_i$, $religion_i$, eaw_i, eah_i, $walls_i$, $toilet_i$	
Independent Changing Variables *empowerment*$_{2007i}$	(1) *Cell phone_2007*	(7) 2007_Buying livestock	(13) 2007_Ceremonies
	(2) *Own money_2007*	(8) 2007_Health	(14) 2007_Dowry
	(3) *Free to move_2007*	(9) 2007_Children education	(15) 2007_Education
	(4) 2007_No violence	(10) 2007_Taking a loan	(16) 2007_Food/Cloths
	(5) *2007_I agree*	(11) 2007_Use of money	(17) 2007_Health
	(6) *2007_Buying furniture*	(12) 2007_Business	(18) 2007_House
			(19) 2007_Transport

In the following table, the columns report the relevant parameters of the model and each line is referred to a different empowerment variable where dependent variable for each of the 19 regression blocks is (WPC_{2016}-WPC_{2007})$_i$.

Table 19 Coefficients of the First Stage Regression Model

| Block | Coefficients | | | | |
| | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
	B	Std. Error	Beta		
(1)	-,153	,018	-,703	-8,413	,000
(2)	-,153	,018	-,704	-8,319	,000
(3)	-,154	,018	-,708	-8,521	,000
(4)	-,151	,018	-,697	-8,183	,000
(5)	-,152	,018	-,702	-8,545	,000
(6	-,153	,018	-,706	-8,447	,000
(7)	-,158	,018	-,728	-8,638	,000
(8)	-,152	,018	-,703	-8,426	,000
(9)	-,152	,018	-,703	-8,437	,000
(10)	-,150	,018	-,693	-8,352	,000
(11)	-,152	,018	-,701	-8,492	,000
(12)	-,153	,018	-,708	-8,523	,000
(13)	-,152	,018	-,703	-8,437	,000
(14)	-,152	,018	-,701	-8,424	,000
(15)	-,152	,018	-,699	-8,352	,000
(16)	-,155	,018	-,714	-8,522	,000
(17)	-,149	,019	-,687	-7,890	,000
(18)	-,151	,018	-,696	-8,328	,000
(19)	-,156	,018	-,718	-8,585	,000

Notes: dependent variable: WPC_{2016}-WPC_{2007}, for each block; instrumental variable: *distance*; other independent variables: *#WPCyear$_i$, age$_i$, #people$_i$, #children$_i$, religion$_i$, eaw$_i$, eah$_i$, walls$_i$, toilet$_i$;* independent variables for each block: (1) Cell phone_2007, (2) Own money_2007, (3) Free to move_2007, (4) 2007_No violence, (5) 2007_I agree, (6) 2007_Buying furniture, (7) 2007_Buying livestock, (8) 2007_Health, (9) 2007_Children education, (10) 2007_Taking a loan, (11) 2007_Use of money, (12) 2007_Business, (13) 2007_Ceremonies, (14) 2007_Dowry, (15) 2007_Education, (16) 2007_Food/Cloths, (17) 2007_Health, (18) 2007_House, (19) 2007_Transport.

Taking into account the Equation (8) and according to the results of the regressions, it was decided to put in one table all the results relative to the variable *distance$_i$* for each regression block. The results in the Table 18 shows that for all the 19 blocks of regression as the distance increase, the rate of participation to the WPC decreases. This is explained by the b-values that indicates a negative relationship between the independent variable and the instrumental variable. So, the distance affects empowerment indirectly through the participation to WPC. The b-values varies between -,158 and -,149. So, as the distance from the village to the closest WPC increases by one kilometre, the participation to the WPC decreases.

In addition, in order to asses if the predictor is making a significant contribution to the model, the *Sig.* values must be considered. If the value in the column labelled *Sig.* is less than .05 (p<.05), it means that the instrumental variable distance is statistically significant. So, the smaller the value of *Sig.*, the greater the contribution of the predictor considered. In this case, the p-value is .000 for all the cases and it means p<.001. So, the instrumental variable is statistically significant at 0,1% and so the predictor is a strong instrument for the model.

For what concerns the other variables used in this stage, there are no significant considerations to be highlighted.

4.3.2 Second Stage Regression Results

Once the first stage has been concluded and the predicted values of the variable (WPC_{2016}-WPC_{2007})$_i$ estimated, the second stage is run. All the predictor variables are held constant and the variables of the participation to WPC are the predicted variables estimated in the first stage. For what concerns the empowerment variables, these change and 18 blocks of regression are computed. In this case, the empowerment variable *used of borrowed money for the dowry* (in 2007 and 2016) has not been used since the data available do not allow to make considerations on the independent variable. This is the reason why the blocks are 18 and not 19 as in the first stage.

Also in this stage, the element used in order to assess if women participating to WPCs are more empowered than the women in the control group is the *Sig.* reported as the output of the regression. Again, if a t test for a b-value is significant (*Sig.*<.05 or <.10) the predictor is making a significant contribution to the model.

Since the empowerment is something that can be measured and analysed through different dimensions, the regression results' analysis will be conducted under this perspective. These considerations reflect the structure of the questionnaire where different levels of empowerment are considered. In the following results' interpretation, only regressions with statistically significant

(WPC_{2016}-WPC_{2007})$_i$ variable will be reported and presented. This choice has been made since this variable identifies the participation to WPC and consequently being part of the treatment or the control group. The results will be presented according to the different empowerment perspectives and only the relevant blocks of regressions are deeply analyses. For what concerns the other blocks of regression, the related tables which collect the entire set of regressions are reported in the appendix section (Appendix 5).

Personal Empowerment

Table 20 Regression Results for the Personal Empowerment Variable

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	,509	,122		4,190	,000
Age	,003	,003	,082	1,088	,278
2016_Pit latrine	-,040	,052	-,054	-,776	,439
2016_Cement/bricks	,044	,050	,061	,885	,377
2016_Housewife	-,134	,072	-,145	-1,853	,066
2016_Agriculture	,059	,044	,090	1,338	,183
n people in the house 2016	,020	,013	,117	1,586	,115
n children 2016	-,049	,024	-,167	-2,066	,041
What is your religion? Hindu (1), Other (0)	,059	,058	,085	1,021	,309
Years WPC	-,007	,013	-,056	-,522	,602
Free to move_2007	,326	,053	,448	6,119	,000
WPC_{2016}-WPC_{2007}	,182	,101	,235	1,808	,073

Notes: dependent variable *2016_Free to move*, *WPC_{2016}-WPC_{2007}* is the unstandardized predicted variable

In this case, the independent variable is the *freedom to move alone outdoor* and it is possible to notice that the participation to the WPC project (i.e. unstandardized predicted value) has a significant contribution on the empowerment variable (*Sig.*<.10). For what concerns the interpretation of this variable, the result proofs that the participation to WPC allows women to move alone in the rural area. First of all, it was observed during the on-field research that women go alone to the daily meetings of the WPC and consequently they are more used to move unaccompanied compared to the women of the control group. So, if a woman of the treatment group goes every day for five days a week to the WPC meetings, she has more chance to move alone and without control. In comparison, women of the control group are used to go alone just once a week to the meetings for the repayment of the loan. In this case, it must be noticed that often borrowers invest

the loan in the business that is run by their husbands, so control group women maybe are allowed to go alone just for the collection of the loan.

Entrepreneurial Empowerment

Table 21 Regression Results for the Entrepreneurial Empowerment Variable

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	,386	,134		2,876	,005
Years WPC	,018	,014	,094	1,259	,210
Age	-,007	,003	-,122	-2,315	,022
What is your religion? Hindu (1), Other (0)	,087	,062	,080	1,392	,166
n people in the house 2016	,013	,014	,049	,942	,348
n children 2016	,002	,026	,004	,072	,942
2016_Housewife	,112	,080	,078	1,402	,163
2016_Agriculture	-,049	,049	-,048	-,992	,323
2016_Cement/bricks	,009	,056	,007	,153	,878
2016_Pit latrine	-,127	,057	-,109	-2,213	,028
2007_Buying livestock	,763	,048	,766	15,824	,000
WPC$_{2016}$-WPC$_{2007}$	-,233	,111	-,192	-2,101	,037

Notes: dependent variable *2016_Buying livestock*, *WPC$_{2016}$-WPC$_{2007}$* is the unstandardized predicted variable

The Table 20 shows the results where the independent variable is *you have a say in decision on: buying livestock*. Based on the output of the regression, it is possible to say that being a member of the WPC has a significant contribution to the independent variable of the model. In this case, the participation variable (i.e. unstandardized predicted value) is statistically significant at 5% (*Sig.*<.05). This result suggests that women of the treatment group have a higher decision power compared to the controlled women. WPC women decide how to invest the loan and start a new business. For what concerns the livestock, several projects under WPC project are related to the breeding of animals like cows and goats (Animal project). So, women can learn how to milk the animals and they can use the milk for family consumption or sell it to other families. Controlled women do not have this possibility and so once again most of them use the loan to invest in husbands' business.

Financial Empowerment

Table 22 Regression Results for the Financial Empowerment Variable

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	,216	,135		1,597	,112
Years WPC	-,009	,014	-,050	-,610	,543
Age	-,003	,003	-,065	-1,150	,252
What is your religion? Hindu (1), Other (0)	-,067	,062	-,066	-1,079	,282
n people in the house 2016	,028	,014	,111	2,020	,045
n children 2016	-,004	,026	-,009	-,152	,880
2016_Housewife	,045	,080	,034	,565	,573
2016_Agriculture	-,095	,049	-,098	-1,918	,057
2016_Cement/bricks	,004	,055	,004	,070	,945
2016_Pit latrine	-,028	,057	-,026	-,486	,628
2007_Taking a loan	,714	,050	,749	14,381	,000
$WPC_{2016}-WPC_{2007}$	,195	,115	,172	1,703	,091

Notes: dependent variable *2016_Taking a loan*, $WPC_{2016}-WPC_{2007}$ is the unstandardized predicted variable

Based on the Table 21, it is possible to see that the participation to the WPC project has a significant contribution on the empowerment variable: *you have a say in decision on: taking a loan* with a *Sig.*<.1. Women of the treatment group have the power to decide when taking a loan. This is a signal that WPC women can express their opinion on decision related to the loan and it means they can actively participate to this type of decisions and are not subjected to their husbands' sole decisions. In addition, these loans can be used to start a new business and not to fund men's ongoing activities. Also in this case, controlled women maybe are used as a source of loan by their husbands in order to invest the borrowed money in their activities.

Family Empowerment

Table 23 Regression Results for the Family Empowerment Variable

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-,074	,046		-1,611	,109
Years WPC	-,012	,005	-,173	-2,510	,013
Age	,000	,001	,016	,324	,747
What is your religion? Hindu (1), Other (0)	-,060	,022	-,147	-2,799	,006
n people in the house 2016	-,001	,005	-,011	-,227	,820
n children 2016	,006	,009	,034	,659	,511
2016_Housewife	,019	,027	,035	,697	,487
2016_Agriculture	,017	,017	,043	,980	,329

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
2016_Cement/bricks	,035	,019	,082	1,838	,068
2016_Pit latrine	,030	,020	,069	1,518	,131
2007_Ceremonies	,862	,045	,862	19,275	,000
WPC_{2016}-WPC_{2007}	,104	,039	,227	2,681	,008

Notes: dependent variable *20016_Ceremonies*, *WPC_{2016}-WPC_{2007}* is the unstandardized predicted variable

For this regression the empowerment variable is *how does your household used borrowed money: ceremonies*. The participation to the WPC project has a significant contribution on this variable (*Sig.*<.01). Ceremonies include weddings, funerals and religious festivities. Ceremonies represent indeed one of the channels which savings should not be invested upon. Then again reasonably, women are entitled to choose independently how to use their money. For what concerns this aspect, it must be noticed that religion has a fundamental role in Indian people's life. So, this is a strong cultural factor that could not be changed or influenced. During the on-field research there was the Durga Puja festivity and it was extremely impressive to see how much they are devoted and involved in these celebrations.

Children Education

Table 24 Regression Results for the Children Education Variable

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	,022	,119		,186	,852
Years WPC	-,020	,013	-,115	-1,595	,113
Age	,000	,003	,004	,084	,933
What is your religion? Hindu (1), Other (0)	-,135	,056	-,134	-2,428	,016
n people in the house 2016	,000	,012	-,001	-,030	,976
n children 2016	-,003	,023	-,008	-,145	,885
2016_Housewife	,044	,071	,033	,618	,538
2016_Agriculture	,067	,044	,070	1,519	,131
2016_Cement/bricks	-,028	,049	-,026	-,560	,576
2016_Pit latrine	,029	,051	,027	,578	,564
2007_Education	,776	,048	,763	16,124	,000
WPC_{2016}-WPC_{2007}	,238	,101	,211	2,356	,020

Notes: dependent variable *20016_Education*, *WPC_{2016}-WPC_{2007}* is the unstandardized predicted variable

In this regression, the participation to WPC makes a significant contribution on the empowerment variable *how does your household used borrowed money: education* with *Sig.*<.05. Women of the treatment group decide to used microcredit to finance children education. During the daily meetings, women discuss about different topics not strictly related to their social condition such as gaining self-confidence or their healthcare. The other topics touched are related to the family planning and to children education and health. During these meetings, women can understand how much is important the education for children and in particular that the practice of child marriage, when very young girls are married (child bride), should be stopped. So, the results evidence how treated women are more conscious about the importance of the use of money for education compared to the control group.

The results presented above are the most relevant findings among the 18 regression blocks computed for the analysis. For what concerns the independent variables presented, the data show a significant level of empowerment for the WPC women. In addition, different aspects of the empowerment are touched and women are emancipated under different dimensions. This is a positive signal that reflects the main purposes defined by WPC project. The objectives cover all the spheres of women's life and not only their social emancipation. An increasing attention is dedicated to all the aspects of children life from their health to education. During the daily meetings women read different articles from newspaper and discuss all together and this is the first source in order to improve their knowledge about different life aspects.

For what concerns the other independent variables, there were no significant impacts on these empowerment variables stemming from the participation to WPCs. The hope is that a continuous participation to WPCs will lead women to be emancipated under all the different aspects of empowerment.

Another important aspect that must be taken in to account is the violence. The participation to this empowerment project could be a risk for what concerns husbands' reactions. On one hand the objective it to empower women and make them aware of their social role, on the other hand husbands could not support and agree with this project, mainly for cultural reasons, becoming violent towards their wives. In the specific case of this study, it seems that violent behaviours towards women of the treatment group are not reported.

Conclusions

Women empowerment is a phenomenon that continues gaining importance thanks to its spread, both in developing and developed countries. Across policy-makers, governmental and non-governmental institutions and MFIs, there is the common opinion that women emancipation is a key factor for the future growth and development in the developing countries, but that the current level of women empowerment in these countries is still very low. Microfinance, since it was born in 1983 with Muhammad Yunus, has been declared the main tool to improve women conditions both in financial and social aspects. Many researchers have studied the impact of microfinance on women empowerment and different results emerged. Therefore, there is lack of a common opinion on the effects of credit access on women's condition improvement. Some researchers suggest that giving access to sole microcredit programs is not so worthy in terms of empowerment, microcredit should be provided with other projects such as trainings or workshops on awareness creation.

This is the rationale behind the present dissertation, which aims at reporting the results of an empirical study conducted in an Indian MFI: IIMC. As a matter of fact, this non-governmental institution offers to the borrowers of its microcredit program the possibility to become a member of WPC project. This program was born with the aim of answering to women's need and desire of emancipation.

In order to evaluate whether the participation to WPCs is effective in increasing the empowerment and awareness of the treated women, and at the same time identifying possible future improvement, the statistical method of the Two Stages Least Squares (2SLS) was deployed. This model allows to evaluate the level empowerment in two stages. The chosen methodology was applied due to the

presence of an endogenous variable, thus it was necessary to use an instrumental variable, identified in the distance from the house to the nearest WPC.

Giving the last considerations, it is important to specify how the objective of this research is to create a groundwork for future studies and provide suggestions for IIMC.

Thus, by studying how the participation to WPCs and other regressors impact on the different dimensions of empowerment (independent variables), it was discovered that treated women profit from the participation to this project where a higher level of empowerment is reported compared to the control group. More extensively, the major positive contribution was given on five particular aspects: individual, entrepreneurial, financial, family empowerment and education. Therefore, the relations and discussion arisen during the WPC daily meetings with the other members group, is confirmed to be highly beneficial in improving the emancipation of the treated women.

At this point, it is worthy to conclude the research with few suggestions for future research, focusing on the future improvement of the women empowerment project.

It would be interesting to collect more details regarding different empowerment aspects. So, the questionnaire could touch more psychological and social factors in order to have a more detailed and specific research. There might be some personal aspects and factors that can be further investigated, providing to the research a wider overview.

In addition, it would be interesting to extend the research in terms of location as well: focusing not only in the area close to IIMC headquarter, but also in those areas that are more distant from the headquarter, such as Amoragori and Dhaki.

Regarding the project itself, first of all IIMC should continue, with the aim of extending the project further. In addition, a good opportunity could be to elect the

most motivated member of each WPC as leaders with the aim of spreading within their microcredit group members the learning acquired during WPCs meetings. In this way, the topics discussed during the meetings would be replicated and the knowledge transferred to the other women in order to empower them. Following this rationale, the discussion could be arranged after all the procedures for the loan repayment, meaning once a week. It is important to recognize that it might represent a potential benefit for the women that are not member of the WPC; as the latter will have the possibility to get in touch with topics related to awareness, family planning and children's education. Although the beneficial effect would be less intense than for women actively participating to the WPC, it would still offer them a great opportunity.

After all considerations, it emerges how additional research can be done in order to provide further evidence on the importance of women empowerment and in regards of the offering of emancipation projects, adding to the microcredit programmes.

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Appendix

Appendix 1 Location of the branches under analysis
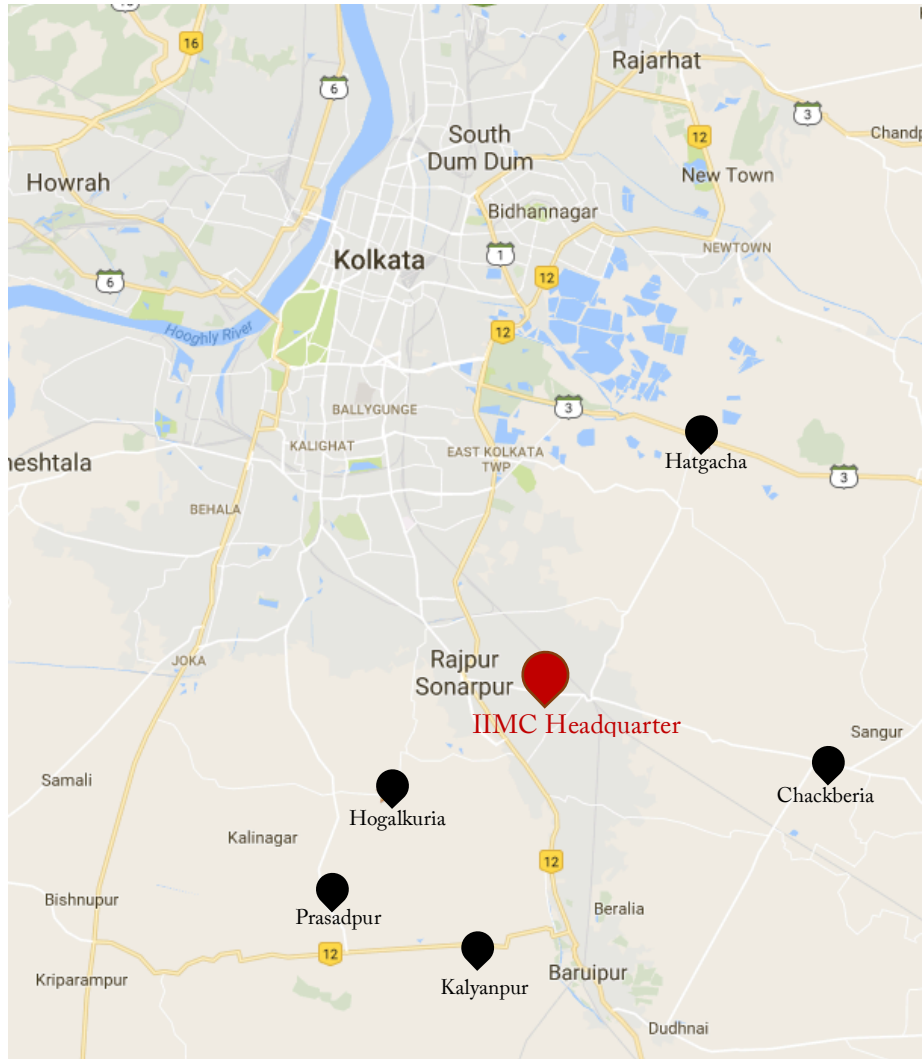
Note: Prasadpur branch is not included in the sample analysis but has been identified for completeness.

Appendix 2 Location of Microcredit (MC) and Women Peace Council (WPC) groups analysed in the research

Appendix 3 English version questionnaire

1 - Name	
2 - Age	
3 - Village (of your house)	
4 - Microcredit Branch Name	
5 - Microcredit Group Name	
6 - Microcredit Group Number	
7 - Microcredit: Personal Number in the group	

8 - How far is the closest Women Peace Council from your <u>home</u>?	☐ Less than 15 minutes ☐ Between 15 minutes and 1 hour ☐ More than 1 hour ☐ I do not know where the WPCs are		
9 - Are you a member of the Women Peace Council?	☐ Yes Since _____ Does your husband welcome your participation to WPC? ☐ Yes ☐ No	☐ I have been a member in the past Since _____ to _____ Did your husband welcome your participation to WPC? ☐ Yes ☐ No	☐ I have never been a member Would your husband welcome your participation to WPC? ☐ Yes ☐ No
10 - Who is the head of your household?	☐ My husband ☐ Me ☐ Another man ☐ Another woman		
11 - What is your religion?	☐ Hindu ☐ Muslim ☐ Christian ☐ Others ☐ None		

	NOW	**IN 2007**
12 - You are:	☐ Married ☐ Divorced ☐ Widow	☐ Married ☐ Divorced ☐ Widow
13 - How many people live in your household (including you)?	Total:	Total:
14 - How many children do you have?	Male: Female:	Male: Female:
15 - Do you have your own cell phone?	☐ Yes ☐ No	☐ Yes ☐ No
16 - Do you have your own access to internet?	☐ Yes ☐ No	☐ Yes ☐ No
17 - Are you allowed to keep your own money for personal spending?	☐ Yes ☐ No	☐ Yes ☐ No
18 - Are you free to move alone outdoor?	☐ Yes ☐ No	☐ Yes ☐ No
19 - You have a say in decisions on:	☐ Buying furniture ☐ Buying livestock ☐ Health ☐ Children education ☐ Taking a loan ☐ Use of money	☐ Buying furniture ☐ Buying livestock ☐ Health ☐ Children education ☐ Taking a loan ☐ Use of money

	NOW	**IN 2007**
20 – How does your household use borrowed money:	☐ Business ☐ Ceremonies ☐ Dowry ☐ Education ☐ Food/Cloths ☐ Health ☐ House ☐ Transport	☐ Business ☐ Ceremonies ☐ Dowry ☐ Education ☐ Food/Cloths ☐ Health ☐ House ☐ Transport
21 - Main economic activities: YOU	☐ Housewife ☐ Agriculture ☐ Carpentry ☐ Fish culture ☐ Labourer ☐ Sewing ☐ Shop owner ☐ Transport ☐ Unemployed ☐ Other: indicate _____	☐ Housewife ☐ Agriculture ☐ Carpentry ☐ Fish culture ☐ Labourer ☐ Sewing ☐ Shop owner ☐ Transport ☐ Unemployed ☐ Other: indicate _____
22 - Main economic activities: HUSBAND/HOUSEHOLD HEAD	☐ Housewife ☐ Agriculture ☐ Carpentry ☐ Fish culture ☐ Labourer ☐ Sewing ☐ Shop owner ☐ Transport ☐ Unemployed ☐ Other: indicate _____	☐ Housewife ☐ Agriculture ☐ Carpentry ☐ Fish culture ☐ Labourer ☐ Sewing ☐ Shop owner ☐ Transport ☐ Unemployed ☐ Other: indicate _____
23 - How many rooms has your home?	Number:	Number:
24 - The walls of your home are made by:	☐ Cement/bricks ☐ Tin/metal sheet ☐ Mud ☐ Wood	☐ Cement/bricks ☐ Tin/metal sheet ☐ Mud ☐ Wood
25 - The toilet in your house is:	☐ Pit latrine ☐ Modern toilet ☐ Shared	☐ Pit latrine ☐ Modern toilet ☐ Shared
26 - Do you have electricity in your house?	☐ Yes ☐ No	☐ Yes ☐ No
27 - Is there any violence in your household?	☐ On you ☐ On children ☐ No violence	☐ On you ☐ On children ☐ No violence
28 - Beating the wife is never justified.	☐ I agree ☐ I don't agree	☐ I agree ☐ I don't agree

Has your application to WPC ever been rejected? Yes No

Appendix 4 Bengali version questionnaire

১. নাম :

২. বয়স :

৩. গ্রাম :

৪. মাইক্রোক্রেডিট শাখার নাম :

৫. মাইক্রোক্রেডিট দলের নাম :

৬. মাইক্রোক্রেডিট দলের নাম্বার :

৭. মাইক্রোক্রেডিট বইয়ের নাম্বার :

৮. তোমার বাড়ি থেকে মহিলা শান্তি পরিষদ দল কত দূরে ?

☐ পনেরো মিনিটের কম
☐ পনেরো মিনিট থেকে এক ঘন্টার মধ্যে
☐ এক ঘন্টার বেশী
☐ আমি জানিনা কোথায় মহিলা শান্তি পরিষদ আছে

৯. তুমি কি মহিলা শান্তি পরিষদের সদস্যা ?

☐ হ্যা ☐ আমি আগে সদস্যা ছিলাম ☐ আমি কোনোদিনই সদস্যা ছিলাম না

কবে থেকে : _____ কবে থেকে : _____
                       কবে পর্যন্ত : _____

তোমার স্বামী কি এটা সমর্থন করেন ?	তোমার স্বামী কি এটা সমর্থন করতেন ?	তোমার স্বামী কি এটা সমর্থন করবেন ?
☐ হ্যা	☐ হ্যা	☐ হ্যা
☐ না	☐ না	☐ না

১০. তোমার বাড়ির প্রধান কে ? ☐ স্বামী ☐ আমি ☐ অন্য পুরুষ ☐ অন্য স্ত্রীলোক

১১. তোমার ধর্ম কি ? ☐ হিন্দু ☐ মুসলিম ☐ খ্রিষ্টান ☐ অন্য ☐ কিছু না

	এখন	২০০৭-এ
১২. তুমি	☐ বিবাহিত ☐ বিবাহ-বিচ্ছিন্না ☐ বিধবা	☐ বিবাহিত ☐ বিবাহ-বিচ্ছিন্না ☐ বিধবা
১৩. তোমার বাড়িতে কতজন থাকে (তোমাকে নিয়ে) ?	মোট : _____	মোট : _____
১৪. তোমার কতজন ছেলেমেয়ে ?	ছেলে : _____ মেয়ে : _____	ছেলে : _____ মেয়ে : _____

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	এখন	২০০৭-এ
১৫. তোমার নিজের মোবাইল ফোন আছে ?	☐ হ্যা ☐ না	☐ হ্যা ☐ না
১৬. তোমার জমানো টাকা নিজের প্রয়োজনে খরচ করতে পারো ?	☐ হ্যা ☐ না	☐ হ্যা ☐ না
১৭. তুমি একা একা স্বাধীনভাবে বাড়ির বাইরে যেতে পারো ?	☐ হ্যা ☐ না	☐ হ্যা ☐ না
১৮. এইসব ব্যাপারগুলিতে তোমার মতামত নেওয়া হয় ?	☐ আসবাবপত্র কেনা ☐ গৃহপালিত পশু কেনার সময় ☐ স্বাস্থ্য ☐ শিশুদের শিক্ষা ☐ ধার নেওয়া ☐ খরচ করা	☐ আসবাবপত্র কেনা ☐ গৃহপালিত পশু কেনার সময় ☐ স্বাস্থ্য ☐ শিশুদের শিক্ষা ☐ ধার নেওয়া ☐ খরচ করা
১৯. ধার নেওয়া টাকা কোন কাজে লাগাও	☐ ব্যবসা ☐ উৎসব-অনুষ্ঠান ☐ পণ ☐ শিক্ষা ☐ খাদ্য / জামাকাপড় ☐ স্বাস্থ্য ☐ বাড়িঘর ☐ যাতায়াত	☐ ব্যবসা ☐ উৎসব-অনুষ্ঠান ☐ পণ ☐ শিক্ষা ☐ খাদ্য / জামাকাপড় ☐ স্বাস্থ্য ☐ বাড়িঘর ☐ যাতায়াত
২০. তুমি কি কাজ কর ?	☐ গৃহিনী ☐ কৃষিকাজ ☐ ছুতোর ☐ মৎস্যচাষ ☐ শ্রমিক ☐ সেলাইয়ের কাজ ☐ দোকানমালিক ☐ গাড়িচালক ☐ বেকার ☐ অন্যকিছু : _____	☐ গৃহিনী ☐ কৃষিকাজ ☐ ছুতোর ☐ মৎস্যচাষ ☐ শ্রমিক ☐ সেলাইয়ের কাজ ☐ দোকানমালিক ☐ গাড়িচালক ☐ বেকার ☐ অন্যকিছু : _____

	এখন	২০০৭-এ
২১. তোমার স্বামী / বাড়ির প্রধান কি কাজ করে ?	☐ গৃহিনী ☐ কৃষিকাজ ☐ ছুতোর ☐ মৎস্যচাষ ☐ শ্রমিক ☐ সেলাইয়ের কাজ ☐ দোকানমালিক ☐ গাড়িচালক ☐ বেকার ☐ অন্যকিছু : _____	☐ গৃহিনী ☐ কৃষিকাজ ☐ ছুতার ☐ মৎস্যচাষ ☐ শ্রমিক ☐ সেলাইয়ের কাজ ☐ দোকানমালিক ☐ গাড়িচালক ☐ বেকার ☐ অন্যকিছু : _____
২২. বাড়িতে কটি ঘর আছে ?	সংখ্যা : _____	সংখ্যা : _____
২৩. বাড়ির দেওয়ালগুলো কি দিয়ে তৈরী ?	☐ সিমেন্ট / ইট ☐ টিন ☐ মাটি ☐ কাঠ	☐ সিমেন্ট / ইট ☐ টিন ☐ মাটি ☐ কাঠ
২৪. বাড়ির পায়খানাটি কি ধরণের ?	☐ কূপ পায়খানা ☐ আধুনিক পায়খানা ☐ নেই	☐ কূপ পায়খানা ☐ আধুনিক পায়খানা ☐ নেই
২৫. বাড়িতে ইলেকট্রিক আছে ?	☐ হ্যা ☐ না	☐ হ্যা ☐ না
২৬. বাড়িতে বড় ধরণের অশান্তি / মারধের হয় ?	☐ তোমার উপর ☐ শিশুদের উপর ☐ হয় না	☐ তোমার উপর ☐ শিশুদের উপর ☐ হয় না
২৭. স্ত্রী কে মারধের করা কখনোই উচিত নয়	☐ আমি সহমত ☐ আমি সহমত নই	☐ আমি সহমত ☐ আমি সহমত নই

২৮. কখনো কি মহিলা শান্তিপরিষদের জন্য আবেদন করেছেন আর তা বাতিল করা হয়েছে ?

☐ হ্যা   ☐ না

Appendix 5 Regression Results for all the other empowerment dependent variables

Table 25 Regression Results for Cell phone_2016 Variable

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	,583	,185		3,145	,002
Age	-,006	,004	-,111	-1,511	,133
2016_Pit latrine	-,060	,079	-,052	-,757	,450
2016_Cement/bricks	,228	,076	,200	2,994	,003
2016_Housewife	-,274	,110	-,191	-2,492	,014
2016_Agriculture	,030	,068	,029	,444	,658
n people in the house 2016	,030	,019	,113	1,584	,115
n children 2016	-,034	,036	-,075	-,952	,342
What is your religion? Hindu (1), Other (0)	-,076	,085	-,070	-,893	,373
Years WPC	,002	,020	,012	,112	,911
Cell phone_2007	,560	,071	,529	7,929	,000
$WPC_{2016}-WPC_{2007}$	,130	,155	,107	,836	,405

Table 26 Regression Results for Own money_2016 Variable

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	,813	,074		10,993	,000
Age	-,001	,001	-,035	-,430	,668
2016_Pit latrine	-,026	,030	-,066	-,873	,384
2016_Cement/bricks	,064	,029	,162	2,186	,030
2016_Housewife	-,017	,042	-,034	-,399	,691
2016_Agriculture	,012	,026	,034	,459	,647
n people in the house 2016	,000	,007	,002	,031	,975
n children 2016	-,005	,014	-,033	-,376	,707
What is your religion? Hindu (1), Other (0)	,003	,033	,009	,099	,921
Years WPC	,011	,008	,175	1,520	,131
Own money_2007	,207	,036	,439	5,737	,000
$WPC_{2016}-WPC_{2007}$	-,058	,060	-,139	-,966	,336

Table 27 Regression Results for 2016_No violence Variable

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	,394	,056		7,043	,000
Age	,002	,001	,111	1,769	,079
2016_Pit latrine	,010	,021	,029	,481	,631
2016_Cement/bricks	,071	,021	,201	3,450	,001
2016_Housewife	,047	,029	,105	1,587	,115
2016_Agriculture	,011	,018	,036	,626	,532
n people in the house 2016	,001	,005	,014	,221	,825
n children 2016	,013	,010	,093	1,365	,174
What is your religion? Hindu (1), Other (0)	-,026	,023	-,077	-1,126	,262
Years WPC	,000	,006	,005	,048	,962
2007_No violence	,402	,042	,594	9,622	,000
$WPC_{2016}-WPC_{2007}$	,026	,043	,069	,605	,546

Table 28 Regression Results for 2016_I agree Variable

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	,083	,070		1,185	,238
Age	,000	,001	-,010	-,309	,757
2016_Pit latrine	,008	,029	,008	,275	,783
2016_Cement/bricks	,027	,028	,028	,946	,345
2016_Housewife	,026	,041	,021	,626	,532
2016_Agriculture	-,016	,025	-,018	-,623	,534
n people in the house 2016	-,006	,007	-,026	-,828	,409
n children 2016	,010	,013	,027	,768	,444
What is your religion? Hindu (1), Other (0)	,003	,032	,003	,100	,920
Years WPC	,001	,007	,005	,116	,908
2007_I agree	,905	,029	,938	31,411	,000
$WPC_{2016}-WPC_{2007}$	-,022	,057	-,022	-,386	,700

Table 29 Regression Results for 2016_ Buying furniture Variable

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	,405	,116		3,498	,001
Years WPC	-,012	,012	-,102	-1,029	,305
Age	,001	,002	,019	,264	,792
What is your religion? Hindu (1), Other (0)	-,062	,052	-,089	-1,196	,234
n people in the house 2016	-,013	,012	-,074	-1,072	,285
n children 2016	-,003	,022	-,010	-,133	,894
2016_Housewife	,145	,067	,157	2,160	,032
2016_Agriculture	-,019	,042	-,029	-,466	,642
2016_Cement/bricks	,076	,047	,103	1,593	,113
2016_Pit latrine	-,020	,048	-,026	-,410	,682
2007_Buying furniture	,497	,058	,576	8,583	,000
WPC_{2016}-WPC_{2007}	,035	,095	,045	,370	,712

Table 30 Regression Results for 2016_Health Variable

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	,535	,122		4,390	,000
Years WPC	-,001	,013	-,097	-,097	,923
Age	-,005	,002	-,116	-1,958	,052
What is your religion? Hindu (1), Other (0)	-,074	,055	-,086	-1,346	,180
n people in the house 2016	,014	,012	,066	1,131	,260
n children 2016	-,001	,023	-,002	-,036	,971
2016_Housewife	,094	,070	,083	1,341	,182
2016_Agriculture	-,016	,044	-,020	-,379	,705
2016_Cement/bricks	,009	,049	,010	,183	,855
2016_Pit latrine	-,146	,051	-,160	-2,896	,004
2007_Health	,623	,046	,720	13,433	,000
WPC_{2016}-WPC_{2007}	,050	,099	,052	,501	,617

Table 31 Regression Results for 2016_Children education Variable

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	,523	,113		4,629	,000
Years WPC	-,008	,012	-,070	-,686	,494
Age	-,003	,002	-,092	-1,272	,205
What is your religion? Hindu (1), Other (0)	-,035	,052	-,052	-,672	,502
n people in the house 2016	,008	,011	,052	,744	,458
n children 2016	,035	,022	,128	1,632	,105
2016_Housewife	,054	,066	,062	,821	,413
2016_Agriculture	,071	,041	,113	1,729	,086
2016_Cement/bricks	,054	,046	,077	1,170	,244
2016_Pit latrine	-,048	,047	-,068	-1,015	,312
2007_Children education	,416	,049	,553	8,440	,000
WPC_{2016}-WPC_{2007}	,014	,094	,019	,154	,877

Table 32 Regression Results for 2016_Use of money Variable

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	,305	,150		2,037	,043
Years WPC	-,016	,016	-,093	-1,034	,303
Age	-,004	,003	-,075	-1,202	,231
What is your religion? Hindu (1), Other (0)	-,096	,068	-,094	-1,415	,159
n people in the house 2016	,020	,015	,079	1,300	,196
n children 2016	-,026	,029	-,063	-,923	,357
2016_Housewife	,135	,088	,101	1,535	,127
2016_Agriculture	-,013	,054	-,014	-,239	,811
2016_Cement/bricks	,031	,061	,029	,499	,618
2016_Pit latrine	-,010	,063	-,009	-,155	,877
2007_Use of money	,657	,054	,696	12,119	,000
WPC_{2016}-WPC_{2007}	,128	,124	,113	1,027	,306

Table 33 Regression Results for 2016_Business Variable

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	,567	,113		4,997	,000
Years WPC	,004	,011	,037	,386	,700
Age	-,004	,002	-,119	-1,735	,085
What is your religion? Hindu (1), Other (0)	-,021	,050	-,031	-,431	,667
n people in the house 2016	-,001	,011	-,003	-,048	,962
n children 2016	,022	,021	,078	1,049	,296
2016_Housewife	,055	,064	,061	,858	,392
2016_Agriculture	,004	,040	,006	,099	,921
2016_Cement/bricks	,061	,044	,085	1,363	,175
2016_Pit latrine	,009	,046	,013	,206	,837
2007_Business	,488	,048	,634	10,227	,000
WPC$_{2016}$-WPC$_{2007}$	-,101	,090	-,133	-1,124	,263

Table 34 Regression Results for 2016_Food/Cloths Variable

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	,007	,087		,080	,937
Years WPC	-,004	,009	-,045	-,397	,692
Age	,002	,002	,076	,960	,339
What is your religion? Hindu (1), Other (0)	-,011	,040	-,023	-,275	,784
n people in the house 2016	,003	,009	,022	,284	,777
n children 2016	-,006	,017	-,029	-,339	,735
2016_Housewife	-,046	,052	-,074	-,887	,376
2016_Agriculture	-,024	,032	-,053	-,740	,460
2016_Cement/bricks	-,009	,036	-,019	-,259	,796
2016_Pit latrine	,038	,037	,075	1,018	,310
2007_Food/Cloths	,476	,072	,476	6,642	,000
WPC$_{2016}$-WPC$_{2007}$	,001	,072	,002	,016	,988

Table 35 Regression Results for 2016_Health Variable

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	,057	,076		,754	,452
Years WPC	-,001	,008	-,008	-,151	,880
Age	,003	,002	,071	1,914	,057
What is your religion? Hindu (1), Other (0)	-,082	,038	-,093	-2,172	,031
n people in the house 2016	-,004	,008	-,019	-,539	,590
n children 2016	-,003	,015	-,009	-,227	,821
2016_Housewife	-,020	,045	-,017	-,451	,653
2016_Agriculture	-,023	,028	-,027	-,799	,426
2016_Cement/bricks	-,033	,032	-,036	-1,046	,297
2016_Pit latrine	-,045	,033	-,048	-1,388	,167
2007_Health	,917	,040	,863	22,746	,000
WPC$_{2016}$-WPC$_{2007}$	,080	,068	,081	1,173	,242

Table 36 Regression Results for 2016_House Variable

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	,003	,106		,030	,976
Years WPC	-,024	,011	-,171	-2,059	,041
Age	,003	,002	,084	1,470	,144
What is your religion? Hindu (1), Other (0)	-,057	,049	-,072	-1,154	,250
n people in the house 2016	,000	,011	-,002	-,030	,976
n children 2016	-,036	,021	-,108	-1,729	,086
2016_Housewife	,005	,063	,005	,085	,933
2016_Agriculture	-,004	,039	-,006	-,108	,914
2016_Cement/bricks	,071	,044	,085	1,611	,109
2016_Pit latrine	,040	,046	,047	,852	,396
2007_House	,897	,065	,767	13,826	,000
WPC$_{2016}$-WPC$_{2007}$	,051	,091	,057	,558	,578

Table 37 Regression Results for 2016_Transport Variable

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	,076	,034		2,211	,029
Years WPC	,000	,004	-,008	-,113	,911
Age	-,001	,001	-,058	-1,141	,256
What is your religion? Hindu (1), Other (0)	-,021	,016	-,071	-1,291	,199
n people in the house 2016	,000	,004	,002	,033	,973
n children 2016	,005	,007	,040	,718	,474
2016_Housewife	-,042	,021	-,109	-2,035	,044
2016_Agriculture	-,007	,013	-,026	-,553	,581
2016_Cement/bricks	,013	,014	,042	,891	,374
2016_Pit latrine	-,022	,015	-,069	-1,457	,147
2007_Transport	1,005	,056	,823	17,902	,000
$WPC_{2016}-WPC_{2007}$	,017	,029	,051	,581	,562