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Mediation Effect of Recipients' Characteristics on the Effectiveness of Microfinance on Income and Consumption

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Abstract

Our based paper from Orazio et al.(2015) found evidence that getting access to group lending had a positive effect on woman consumption but not on their income.Yet, much remains unclear which kind of recipient can benefit most from the microfinance program. We try to get more insights about the role of recipients' characteristics with the same experiment data Orazio et al.(2015) who did a randomized field experiment in rural Mongolia.Try to discover whether woman.

Keywords

Rural Mongolia, woman, microfinance, income , consumption, difference-in-difference, logistic regression.

1. Introduction

Microfinance, referred to as "microfinance", is an unique poverty alleviation measure of financial product designed to serve poor farmers according to their business capacity, loan repayment ability, production mode and lifestyle. Microfinance does not require collateral, and it is widely believed internationally that this is a financial product specially designed for the low-income people and is one of the most effective ways to alleviate poverty households. Loans target poor farmers, who have no property to mortgage and find it challenging to find guarantees, so they choose "propertyless mortgages".

Microfinance has the following characteristics: First, the amount is small. Each loan and deposit amount is less than the country's annual GDP per capita. Second, the operation is simple. Given the characteristics of low-income families with low education level and to transaction costs, the documents, forms and procedures required for microfinance are simple and easy to operate. The third is the operation mode close to the customer. To keep transaction costs low for WeFinance's customers, we can operate close to them and realize door-to-door financial services, such as door-to-door services through mobile depositors, setting up workstations in villages, using automated teller machines (ATMs) in remote areas, and maintaining close contact with local communities. The fourth is timely and reliable transactions. Due to the need of farmers to prepare for farming, timely access to loans and savings is essential for low-income customers.(Xiong Jie, 2008)

Furthermore, MFIs have the potential to play a variety of roles in accelerating the socioeconomic development of a country. Their primary roles are, among other things: (i)Filling a gap in the financial services sector by offering microfinance or microfinance to people who do not have access to traditional credit; (ii)reducing poverty, unemployment and gender inequality; (iii) empowering women through microfinance, training, education and social awareness-raising; (iv) promoting the

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local economy by supporting small businesses; (v) Reducing the income gap between urban and rural areas and promoting rural development. This paper will focus on the third point, the relationship between microfinance and the enhancement of women's welfare (Rahman et al., 2017).

Over the past few decades, microfinance institutions have been viewed as banks for low-income people. Under microfinance schemes, loans are small and are usually repaid in daily, weekly or monthly installments. MFIs generally lent to groups rather than individuals to ensure greater loan security, although lending to individuals has become more common.Today, MFIs offer a wide range of credit products for the poor called "microfinance" (UNFPA 2010).

Microfinance has developed today, its business model has been relatively mature and has helped many poor people eliminate poverty. The livelihood capacity of microfinance farmers participating in poverty alleviation has been significantly improved, reflected in the growth of natural、physical 、social and financial capital(Chen Cuini, 2022).The poverty alleviation microfinance policy has significantly promoted the income of poor households. The higher the degree of marketization in the area where the poor households are located, the higher the income of the poor households. In areas where financial institutions or county-level governments are stationed in villages, the poverty alleviation microfinance policy has a more significant effect on poverty reduction (Jie et al., 2022). However one problem is that people such as rural women do not seem to benefit much from microfinance projects. A study by Li Yi found that rural women were the main labour force in rural areas and the poorest strata of the population, and lack of financial resources was the main cause of their poverty(Li Yi 2014).

The proceeds of microfinance are used to capitalize on small businesses, enabling them to be self-sufficient and ultimately lift themselves escape poverty. By means of microfinance, low-income people can obtain loans unsecured or a stable income, provided that they use these loans to start a business. Consequently, we anticipate an increase in household income and consumption for these families, ultimately raising the overall standard of living. (Rahman et al., 2017)

1.2 background of the program

Governments and NGOs in countries with microfinance schemes often introduce and implement a range of credit schemes targeted at low-income people.Many of these programs are specifically targeted at women.This is because women have less access to credit and more limited access to the labour market than men.Furthermore, Women have less decision-making power in the household, have higher returns than men and are more likely to share the benefits of credit with other family members, especially children. (Pitt et al., 2006; Hashemi et al., 1996 and Kato & Kratzer, 2013). Most importantly, women make up half the population of each country, but in almost every country, women have higher unemployment rates than men. Therefore, their active participation in economic activities is necessary for economic growth and building. (Sarumathi & Mohan, 2011)

Referring to a recent World Bank report, it is argued that discriminatory societies have increased poverty, slower economic growth, and weak governance, resulting in lower living standards for all. Women’s empowerment is therefore crucial, but it is also a global challenge as women have traditionally been marginalized in male-dominated societies, especially in developing countries. International aid donors, governments, policymakers and other development experts all consider microfinance as an essential strategic tool for empowering women and involving them in the development process (Ali & Hatta, 2012).

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Against the above background, we have decided to conduct our experiment with XacBank, he author focused on economically disadvantaged women in rural areas (Attanasio et al., 2015). At the time of our experiment, poorer and female borrowers were almost entirely excluded from access to business credit. Xacbank's expansion aimed to open poor rural women. The purpose of both group and individual loans was to allow women to finance small-scale entrepreneurial activities.

1.3 Contribution of this research

This paper is largely based on Orazio et al. (2015), the original paper which provides evidence from a randomized field experiment with 1148 poor women in 40 villages in rural Mongolia.To measure and compare the impacts of the two types, the experiment was divided into three groups: villages were randomly assigned to receive group loans, individual loans, or no XacBank loans. The evaluation is based on two rounds of data collection: baseline and followup survey. The authors found that about half of the loans were used for household consumption rather than business investment. Consistent with the findings of the BASE PAPER, this paper also finds that the characteristics of the respondents have no effect on household income. However, this research build on the original paper by examining differences in the impact of respondents' characteristics on household consumption: food consumption and total monthly/annual consumption. This paper draws on research on the role of women's characteristics, such as education and age, on the role of microfinance programs in raising women's consumption and income levels. For example, how do educated women handle the funds they receive through loans compared to uneducated women, and how does this affect their household income and consumption. On the other hand, how women of all ages handle their loans, which age groups are more affected and what causes this.

Investigating the impact of recipient characteristics on the effectiveness of microfinance on income and consumption can provide valuable insights into the effectiveness of microfinance programs and how they can be better tailored to different individuals.

1.4 Outline of this thesis

This chapter provides an overview of the development of the Mongolia microfinance project and reviews empirical models used to analyze access to credit. Chapter 2 reviewed the overview of rural microfinance. It points out the current lack of research on the impact of poverty characteristics on the effect of microfinance and introduces the assumptions our paper used. Chapter 3 discusses the data and methodology of the study. Chapter 4 summarizes the significant findings of our study and conclusions. Chapter 5 points out the implications of research findings and lists.

Chapter 2 Literature review

2.1 An overview of rural microfinance

Research over the past decade has provided important information on the impact of microfinance on rural household consumption (food and non-food), income inequality, income generation and household welfare (Mahjabeen, 2008； Ziemba, 2018; Muhumed, 2016; Hermes, 2014). Dr Yunus & Rubana 2008; Smith 2015; Perder 2017; Wu 2018 all show that microfinance has a positive effect on supporting women's income-generating activities, increasing women's income and consumption levels, reducing income inequality and improving welfare. Noeleen Heyzer, Executive Director of the United Nations Foundation for Women (UNIFEM, 2014) argues that microfinance not only means that women have money but that women can use this money to escape poverty and gain control. Microfinance increased women's economic income decision-making power, asset ownership, and

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political and legal awareness (Hashemi et al., 1996; Cheston & Kuhn, 2002). This enables women to make decisions about the education and health of their children, especially girls.The children of these women do not suffer from hunger, disease and illiteracy (Vidik, 1999; Afrane, 2002). This has positively impacted on the sustainable alleviation of poverty among poor women. This means microfinance is an effective development strategy with important policy implications for poverty reduction and income increase.

But some studies that argue that microfinance in Bangladesh disempowers women. Karim's ethnographic work examines women's interactions with five of the largest NGO microfinance providers: the Grameen Bank, the Bangladesh Development Board, Prosika, the Forum for Human Development, and the Society for Social Advancement. Karim argues that indebted and poor women are inappropriately used as a development tool for development, with 95% of loans controlled by men. Rahman's research shows that the relative vulnerability of women in Bangladesh's male-dominated society encourages NGOs to target women and provide them with loans in order to make a profit. Loans are given to women but end up being taken by men. (Karim, 2008 & Rahman, 1999

2.2 The history of microfinance

The development history of international microfinance：Divided into the main purpose and central mission of microfinance institutions, international microfinance can be divided into three stages of development.

1) Stage of emphasizing microfinance coverage and loan repayment rate: the rise of microfinance to the mid-80s of the 20th century. The subsidized microfinance model is adopted the welfarist microfinance model.

2) Stage of emphasizing the operating costs of microfinance: Since the mid-80s of the 20th century, the subsidized microfinance model has been criticized because its operating income is difficult to cover its operating costs, making microfinance unsustainable. In the mid-90s of the 20th century, in order to cover more poor groups in the microfinance business, unsubsidized market interest rates were implemented.

3) Emphasize the stage of sustainable development of microfinance: Microfinance stage: explore how to increase the coverage and repayment rate of microfinance while ensuring that the income of microfinance business can cover its costs. It advocates strengthening the sustainability of microfinance institutions through all-around institutional reform, to promote the development of poor areas and ultimately achieve the goal of poverty alleviation and prosperity.

There are two microfinance models, mainly for rural women, one in Bangladesh (GB model) and the other in Latin America (FINCA model)（Li Yi, 2014）

2.3 Lack of studies on the role of recipient’s characteristics

However, insufficient research supports the extent to which microfinance affects rural women with different characteristics and the extent to which it contributes to women's income and consumption levels. The problem that seems to be widespread is that these loans have helped to raise the standard of living of some poor women, but their impact has been uneven. In the original paper, the authors evaluated the impact of joint responsibility microfinance schemes for women through randomized field experiments in Mongolia, demonstrating that access to group loans positively impacts women's

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entrepreneurship and household food consumption but not on total household hours worked or income. At the same time, personal loans do not play a significant role in poverty alleviation, and group lending may have a more significant impact on poverty alleviation by discouraging borrowers from using loans for non-investment projects. Meijuan(2022)'s study found that microfinance has different income-increasing effects for farmers with different income levels, different use of funds, and different income-increasing effects. But the groups studied in this article are households that have been lifted out of poverty and marginal households that are vulnerable to poverty, and the research objects are biased. Moreover, the sample size is too small, only 400 rural households, 370 valid questionnaires, and the impact of different user characteristics on the effect of microfinance cannot be comprehensively analyzed.

At the same time, some scholars believe that microfinance has no impact on income. When examining the impact of microfinance on the Gini Index for 30 developing countries in Africa, Asia, Latin America and Europe, the results show that microfinance has neither a positive nor a negative impact (Mahmoud & Hebatallah, 2018).

Similarly, whether women's educational level, age, religious beliefs and other characteristics affect the effectiveness of microfinance has not been studied in the original text. In past studies, A study by Karlan and Zinman (2011) in the Philippines found that microfinance increased household income and consumption, particularly for those who were initially poorer. While age was not the primary focus of the study, it suggests that microfinance can positively affect income and consumption across different demographic groups. Morduch's subject (1999) in Bangladesh shows that microfinance positively impacted on income and consumption, particularly for female borrowers. Although age was not explicitly analyzed, the study highlights the importance of gender in microfinance outcomes, which may indirectly relate to age differences. Adams and Von Pischke (1992) survey examined microfinance programs in various countries and found that they had positively affected on income and consumption. The study did not specifically analyze age, but it suggests that microfinance can benefit individuals of different age groups. These findings provide a general understanding of the positive impact of microfinance on income and consumption. While they do not directly focus on the role of age, they indicate that microfinance programs can have positively affect on individuals from various backgrounds, which may indirectly vary based on age. So the purpose of this paper is to analyze Mongolian structured interview data to illustrate the extent to which microfinance provided by financial institutions to Mongolia increases the consumption and income of poor women, why microfinance has such a small effect, and what needs to be done to increase the positive effect of microfinance on poor women's income and consumption.

Among the recipients' characteristics, such as gender, age, education and initial economic standards, woman's education seems to be the most crucial effectiveness on income and consumption. But this is not researched in the base paper, so this paper want to find the answer in my article. Whether education has a positively impacts on the income and consumption of poor women, as stated in the references. Several studies have found a positive correlation between higher education levels and increased income among microfinance recipients. For example, a research by Banerjee and Duflo (2014) presents that higher education levels were associated with higher income gains from microfinance programs in India. Higher education levels have been associated with increased consumption levels among microfinance recipients. A Pitt et al. (1999) project found that education positively impacted household consumption, with higher education levels leading to increased spending on essential goods and services. Education has been found to influence business performance positively microfinance recipients. A survey by Khandker et al. (2010) found that microfinance borrowers with higher education levels had higher business profits and sales than those with lower education levels in Bangladesh. Education can enhance microfinance recipients'

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entrepreneurial skills and capabilities, improving business outcomes. A subject by Rahman and Khanam (2014) shows that higher education levels were associated with better business management skills and increased profitability among microfinance borrowers in Bangladesh. On the question of the role of recipient characteristics on the effectiveness of microfinance on income and consumption, this paper argues that there is a positive rather than a negative impact. However, the positive impact of the recipient's education only affects improving the recipient's consumption, rather than income. This research argues that mainly because educated women are more inclined to invest borrowed money in high-return production activities or investment projects, and their knowledge and insight can help them choose better production and business activities, so they can continue to increase their income. Uneducated women, on the other hand, tend to have a narrower outlook, do not have such investment and planning capacity, and will focus their money on immediate hedonistic consumption, so such women have lower incomes and consume more.

Therefore, based on the above discussion, in order to test our conjecture in the model, we propose the following hypothesis:

In order to prove that the level of education has no effect on the household income of rural women in Mongolia, this paper sets the null hypothesis: recipient's education would not increase rural microfinance program's impact on income improvement. And alternative hypothesis: recipient's education would increase rural microfinance program's impact on income improvement.

In addition, this paper examines the impact on the level of education on the level of household consumption. So set the null hypothesis: recipient's education would not increase rural microfinance program's impact on improving consumption. And alternative hypothesis: recipient's education would increase rural microfinance program's impact on improving consumption. The significance of studying the educational factor is that if the level of tertiary education improves the welfare of rural women's families and enhances microfinance to improve the status quo of poverty in impoverished areas, it will be necessary to make education in rural areas more widely available.

Another factor that may affect the effectiveness of microfinance studied in this paper is age. In order to find out how the size of age affects the effectiveness of microfinance for rural women in Mongolia, we set the null hypothesis: recipient's age would not increase rural microfinance program's impact on income improvement. And alternative hypothesis: recipient's age would increase rural microfinance program's impact on income improvement.

Besides, there is the impact on the level of consumption. This research set the null hypothesis: recipient's age would not increase rural microfinance program's impact on improving consumption. And alternative hypothesis: recipient's age would increase rural microfinance program's impact on improving consumption. The significance of studying whether age improves household welfare is that if rural women of different ages have different effects on microfinance. Afterwards we can adopt different forms and quantities of loans according to the different effects of different age groups in future loan distribution, which will greatly enhance the ability of microfinance to help improve the poverty situation in rural areas.

Chapter 3 Research data and methodology

3.1 Description of the experiment

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There was a 75 percent probability that XacBank would start lending in their village during the experiment and that lending could take the form of either individual or group loans. Group loans, are a joint guarantee group formed by several farmers to apply for a loan from a microfinance institution jointly. Any member of the group takes out a loan, and the other members bear joint and several guarantee liability. Individual loans refer to the fact that the individual lender applies for a loan from a microfinance institution alone, and the individual independently bears the guarantee responsibility.

Specifically, of the 40 study villages, 15 will be assigned to group lending, 15 to individual lending, and 10 to a no-credit control group, and asked to form prospective groups of about seven people.

This experiment consists of five main steps:

Step 1: Baseline Survey - Measures factors such as income, consumption, savings, entrepreneurial activity and labour supply, as well as asset ownership and debt, as well as information on respondents' education, age and sensitivity to economic shocks, and supervisors' expected income as a proxy for household living standards. In addition, the experiment considers the impact of factors such as the main socioeconomic, demographic and geographic characteristics of the village on the experiment's results.

Step 2: After completing the baseline survey, three survey teams were formed simultaneously at the village level and randomly assigned to ensure that respondents from all three types of villages were interviewed simultaneously at the same time in a central location in each village.

Step 3: The treatment period for XacBank's lending in group and individual loan villages lasted one and a half years from March 2008 to September 2009.

Step 4: In October 2009, a follow-up survey was conducted to assess the participants' economic activity and poverty status and obtain information on utilizing the XacBank loans. A second village survey was also conducted to collect information on village characteristics that may have changed (e.g., prices of important consumer goods) and information on repayment of all loans throughout the experiment.

Step 5: Finally, in October 2011, one individual loan and two group loan villages were revisited to conduct structured interviews and discussions with several borrowers about their experiences with the loan program to 15 people each.

3.2 Model specification

In order to investigate whether respondent characteristics (factors such as education level, age, etc.) have an impact on the household welfare of the women interviewed, we set the dummy variables education high, education voc, and continuous variable
age as independent variables. Education high is set with two choices of 0 and 1, where 0 represents women with no higher education, and 1 represents women with higher education. Education voc represents the level of lower-middle education, where 0 represents women with no lower-middle education and 1 represents women with lower-middle education.

Our basic interaction regression model:

$$Y = \beta 0 + \beta 1X1 + \beta 2X2 + \varepsilon$$

- Y: the dependent variable (income or consumption)

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- X1: education
- X2: age
- ε: is the error term.

This model aims to measure recipient characteristics' impact on the effectiveness of rural microfinance programs. We used the experimental data of Orazio et al. (2015) (using OLS and regression model). This paper uses regression and quantitative methods to test the hypotheses formulated in the literature review.

3.3 Description of the study area

3.3.1 Sample selection

Sample: Total number of women interviewed was 1,148, from 40 soum centers (henceforth: villages) across five provinces. By removing invalid data (uncollected samples and data with no reference significance), we finally located the sample size at 960.

Location: Northern Mongolia. Microfinance is known to have originated in Bangladesh but has also taken root in countries with smaller populations. One of them is Mongolia, which has half of India's land area but less than 1% of India's population. This low population density mean it is costly to issue, monitor and collect microloans for remote borrowers, especially in rural areas. Mongolian microfinance has traditionally been provided as individual rather than group loans, so in this experiment, we chose to issue loans in the form of individual and group microfinance. We chose to experiment XacBank, Mongolia's second-largest microfinance institution. While XacBank provides loans to both men and women, our experiment focused on economically disadvantaged women in rural areas. In the Mongolian region, with the exception of a few small NGOs, microfinance in Mongolia is provided by two commercial banks, namely Khan Bank and XacBank Bank. While these two main loans are to relatively wealthy herders with high-quality livestock collateral, poorer female borrowers are almost wholly excluded from commercial credit. 78% of bank loans (including microfinance) take place in Ulaanbaatar, the capital of Mongolia, although only 36% of Mongolian households live there (Ministry of Foreign Affairs, 2009). The only credit available to rural women is informal or micro-consumer loans for the purchase of mobile or small electrical appliances. The purpose of the expansion of XacBank is to provide access to commercial credit for this hitherto excluded group of poor rural women. （Orazio et al. 2015）

Time: February 2008 when XacBank loan officers and represents times of the Mongolian Women's Federation (MWF) organized information sessions in all 40 villages.It was when Xacbank first started releasing credit information.
Duration: The project was planned to last a year and a half.

3.3.2 Data source and data description

Data source: The data used in this paper all from experiments from Orazio et al. (2015)

The relationship between income & consumption and age & education

Table 1 Summary statistics

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	N	Mean	SD	Min	p25	Median	p75	p95	Max
hhincome	707	1172290.6	5311341.940	5000	208400	524000	978400	2599415	1.182e+08
Consumption food	707	20453.816	21292.562	400	5080	11400	32900	64700	99200
Consumptionmonth	707	88782.689	95037.359	400	24300	58000	119000	264800	711800
Consumption year	707	854710.83	848437.031	6000	332000	599000	1100000	2538000	5895000
age	707	39.849	8.844	19	33	40	46	55	68
edulow	707	0.115	0.319	0	0	0	0	1	1
eduvoc	707	0.211	0.408	0	0	0	0	1	1
eduhigh	707	0.885	0.319	0	1	1	1	1	1

One thousand one hundred forty-eight questionnaires were distributed, but only 707 were effectively returned. Excluding invalid data, we set the sample size at 707. (N=707) The sample size in the base paper data analysis is only 611, while the sample size in this paper is 707, more than in the base paper. This is due to the fact that we selected fewer variables, only age and education, and the missing data is not as large. The data shows that the average income of rural women in Mongolia is 1172290.6 and the standard deviation is 5311341.940. Such a high standard deviation implies a high degree of volatility and instability of household income in the sample. Among the respondents, the lowest income of poor women is negative at 5000 and the highest is 1.182e+08, which shows a large income gap between the respondents and there is a clear gap between the rich and the poor. The median is 524000 and the 25th, 75th and 95th percentiles are 208400, 978400 and 2599415 respectively.The huge gap between the rich and the poor can challenge microfinance poverty alleviation programs. In addition, the age of the respondents were also uneven. The data shows that the average age of the women interviewed was 39.849 with a median age of 40. The youngest age was 19 years, the oldest was 68 years and the standard deviation is 8.844 and the 25th percentile, 75th percentile and 95th percentile were 33, 46 and 55 respectively, indicating a wide age range.

Secondly, in terms of the level of education of the respondents, the survey shows that the mean value of women with low education is 0.115 with a standard deviation of 0.319, indicating that 11.5% of the women in the sample have a low level of education; the mean value of women with medium education is 0.211 with a standard deviation of 0.408, indicating that 21.1% of the women in the sample have a medium education; and the mean value of women with higher education is 0.885 with a variance of 0.319, indicating that 88.5% of the women in the sample have higher education. In the model we have chosen education as a dummy variable, labeled 1 for educated and 0 otherwise. Edulow、eduvoc all have 1 at the 95th percentile and 0 before that, indicating that there are fewer respondents with low to moderate education. Nevertheless, eduhigh has a 1 at the 25th percentile, indicating that there are more women with higher education. Although the average level of women with higher education is higher than that of other women with secondary and lower education, there are still some women with only lower education or no education.

In the household food consumption expenditure, the survey data shows that the mean value is20453.816, the standard deviation is 21292.562, the minimum value is 400, the maximum value is

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99200, and the median value is 11400. It can be seen that the household food consumption expenditure varies a lot among different interviewees, and most of the households' food consumption expenditure is centered around 11400. The 25th percentile, 75th percentile and 95th percentile are 5080, 32900 and 64700 respectively.Furthermore, in the monthly consumption expenditure of the respondents, the mean is 88782.689, standard deviation is 95037.359. The minimum value is 400, maximum value is 711800 and median is 58000. The 25th, 75th and 95th percentile are 24300, 11900 and 264800 respectively. The mean value of annual consumption expenditure is 854710.83, standard deviation is 848437.031, minimum value is 6000, maximum value is 5895000 and median value is 599000. The 25th, 75th and 95th percentile are 332000, 1100000 and 2538000 respectively.

3.4 overview of sample

The study found that microfinance can increase rural women's consumption: including food consumption and total consumption expenditure. This is mainly because microfinance can promote investment and entrepreneurship, benefiting the entire family and increasing income generation. The theory of empowerment points out that the poor face a long-term lack of various powers, which will inevitably prevent them from enjoying more resources. Microfinance is a process of empowerment and empowerment. It increases the personal power of poor women: family Event decision-making power, the ability to purchase items, access to and control over economic resources, women's rights in family planning and parenting, and more. Microfinance enables many poor rural women to gain control over funds. It greatly enhances rural poor women's self-confidence and sense of social responsibility, thereby improving rural poor women's ability to participate in social activities. During the process, poor rural women communicated with various departments dealt with various problems in business operations. They took the initiative, which won them social respect and the right to participate in social activities on an equal footing. The awakening of consciousness has great significance (Xiaohong 2020). In addition, Dai Yun found in a study of women who received microfinance in Tianjin, China, that the self-perceived social status of microfinance female audiences improved mainly in terms of family member relationships and personal social efficacy. Women with high school education and above have higher scores in each dimension of self-perceived social status; women with non-agricultural household registration have no significant age difference in their perception of social status improvement, while women with agricultural household registration have significant age differences, which are reflected in the total score of social status and individual social efficacy. (Dai yun, 2016) However, this study found that the microfinance project did not significantly increase the income of rural women, which may be due to their limited ability to obtain resources and did not achieve the desired effect in terms of income generation, so it did not provide them with Bring sustainable economic income growth. However, there are also studies that microfinance can increase rural women's economic income and improve their skills. (Xianmei et al. 2002) The difference in the results of the two studies is due to the different characteristics of the interviewees. Rural women in China will spend more money from loans on agriculture and animal husbandry rather than medical care and children’s education In terms of other aspects, the money they earn in the next year will be used to expand production and operation, so they can generate sustainable economic growth. In addition, differences in geographical location and national political factors, customs and culture will lead to different results.

Another important reason is that we plan to grant loans to rural women, a group that is generally of low literacy, narrow in the world and of low status in the family. Some women's loans tend to be appropriated by male family members, such as their husbands. Once the loan is appropriated, they will not be able to change their economic conditions. Even more, when the man uses the loan for other additional purposes, the woman will have to find her way to repay the loan within the repayment period. Such behaviour exacerbates the hardship of rural women and even escalates domestic

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violence. This finding is consistent with the findings of some scholars, Xu Guangyi (2002) pointed out that women's microfinance has a limited role for women in poor rural areas. Limitations in the level of science and technology, poor cultural skills, and limited access to information will lead to inefficient use of funds. Besides, lack of matching funds making it challenging to develop large-scale operations.

Chapter 4 Research results and findings

4.1 Characteristics of household income

Table 2 income and education & age

	(1) ln income
eduvoc	0.196 (0.180)
eduhigh	0.048 (0.126)
ln age	0.405*** (0.084)
_cons	11.457*** (0.280)
N	707
adj. R-sq	0.008
Standard errors in parentheses * p<0.1, ** p<0.05, *** p<0.01	

Notes: Outcomes at follow-up were regressed on baseline measures of treatment indicators, baseline covariates, and outcome variables. Coefficients and standard errors (in parentheses). All variables were measured at the household level. Standard errors are clustered at the village level. We conduct multiple hypothesis tests including the eduvoc、eduhigh and age variables.

*** Significant at the 1 percent level.

** Significant at the 5 percent level.

* Significant at the 10 percent level.

(based on p-values unadjusted for multiple-hypothesis testing).

‡‡‡ Significant at the 1 percent level.

‡‡ Significant at the 5 percent level.

‡ Significant at the 10 percent level.

(when correcting for multiple-hypothesis testing)

source: Baseline and follow-up household surveys and author calculations.

One of the main objectives of the microfinance program is to encourage women to invest or start their own businesses, with the ultimate goal of reducing poverty and improving welfare. To assess the extent to which the program has achieved these two goals, we first examined the impact on household income of women who received microfinance to see if there was a general increase in their daily income (Orazio et al. (2015). The survey shows that the effect of educational attainment is not

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significant in the sample, which means that the null hypothesis that the educational attainment of the recipients does not increase the income-enhancing effect of the rural microfinance programme is not significantly rejected. In addition, the data shows that women with lower level of education have a positive correlation with household income with a correlation coefficient of 0.196, which means the household income of rural women with lower education is 0.196 units higher than that of those with no education. And the standard deviation is 0.180 which is fluctuating and the P-value is 0.338 which also does not significantly reject the original hypothesis at 10 per cent level. Therefore the original hypothesis is valid. Further, there is also a positive correlation between the level of tertiary education and increase in income with a correlation coefficient of 0.048, which means the household income of rural women with tertiary education is 0.048 units higher than that of those with no education. Compared to medium education, the correlation is smaller. The standard deviation is 0.126 and the volatility is also smaller than that of the former. P-value is 0.720, which does not reject the original hypothesis even at the level of 10 per cent. From this we can conclude that higher level of education indeed does not lead to a significant increase in household income. Furthermore, let us see whether age has any effect on household income. The correlation coefficient between age and income is 0.405, which means that for every unit increase in age, there is a significant correlation of 0.405 units increase in income. The standard deviation is 0.084, which is less volatile. P-value is 0.009, which means that the original hypothesis is significantly rejected at 1% level, indicating that age has a significant increase effect on household income. From this we can conclude that the level of education has no positive or negative effect on household income but age has a positive effect on household income.

To summarize, only age has an impact on the level of household income, all other factors have no impact.

4.2 Characteristic of household consumption

In this section, we continue to analyze whether the microfinance received by borrowers contributes to improving household well-being, a key objective of the program. To this end, we estimate the program's impact on households' annual and monthly consumption expenditures and the likelihood of consuming certain items (food). We use detailed information on consumption patterns derived from the survey, where food consumption is measured in the past week (at the disaggregated level and overall) and non-durable and durable consumption in the past month and year, respectively（ Orazio et al. 2015).

Table 3 consumption and education & age

	Consumption food	Consumption month	Consumption year
eduvoc	0.301*	0.003	-0.008
	(0.123)	(0.055)	(0.085)
eduhigh	-0.175	0.518***	0.399**
	(0.119)	(0.084)	(0.113)
age	0.485**	0.598*	0.586**
	(0.168)	(0.234)	(0.169)
_cons	7.616***	8.205***	10.756***
	(0.627)	(0.880)	(0.585)
N	707	707	707
adj. R-sq	0.018	0.033	0.036
Standard errors in parentheses * p<0.1, ** p<0.05, *** p<0.01			

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Notes: Outcomes at follow-up were regressed on baseline measures of treatment indicators, baseline covariates, and outcome variables. Coefficients and standard errors (in parentheses). All variables were measured at the household level. Standard errors are clustered at the village level. We conduct multiple hypothesis tests including the eduvoc、eduhigh and age variables.

*** Significant at the 1 percent level.
** Significant at the 5 percent level.
* Significant at the 10 percent level.
(based on p-values unadjusted for multiple-hypothesis testing).

‡‡‡ Significant at the 1 percent level.
‡‡ Significant at the 5 percent level.
‡ Significant at the 10 percent level.
(when correcting for multiple-hypothesis testing)
source: Baseline and follow-up household surveys and author calculations.

The data shows that the correlation coefficient between medium education and food consumption expenditure is 0.301 (positive), which shows a positive correlation, i.e., consumption of foodstuffs is 0.301 units higher among rural women with a medium education than among those with no education. The standard deviation is 0.123 which is less volatile. P-value is 7.0% which rejects the original hypothesis at 10% level. Shows that increase in medium education can increase the household food consumption. The correlation coefficient between the level of higher education and food consumption expenditure is -0.175 (negative), which is a negative correlation. i.e., household consumption food of rural women with high level of education is 0.175 units lower than that of those with no education. The standard deviation is 0.119, which is less volatile. However, the P-value is 21.6 per cent means that the original hypothesis cannot be significantly rejected even at the 10 per cent level and there is no correlation between the level of education and household food consumption. This is because the difference in perceptions, women with low and middle level of education are more aware of the health benefits of healthy food than those with no education. So when they get a loan, they will be more willing to spend money on food expenditure to improve their lives, which will lead to an increase in the Engel's index. However, women with higher education will be more aware of the importance of knowledge and money, so they will be more willing to spend their loans on projects that can bring long-term benefits such as investment and entrepreneurship as a way to improve the long-term financial situation of their families. So there is a situation that women with higher education have lower expenditure on household food consumption.The correlation coefficient between age and household food consumption expenditure is 0.485 (positive), which is positively correlated. i.e., for every unit increase in age, the household's food consumption expenditure increases by 48.5 per cent units. The standard deviation is 0.168 which is highly volatile. P-value is 4.5% means that the null hypothesis is significantly rejected at 5% level which indicates that change in age has a significant effect on increase in household food consumption. This is because the fact that older rural people tend to need more nutrition to replenish their bodies. People in rural areas tend to be less optimistic about the economy and less focused on food supplementation when they are young and strong. But when they get older, they tend to suffer from a variety of health problems, at which point they need more nutritional supplements. In addition, the growth of their children will also require more food supplies, which will naturally lead to an increase in household food consumption expenditure.

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In the sample data, the correlation coefficient between the level of medium education and monthly household consumption expenditure is 0.003 (positive), which shows a positive correlation. i.e., the monthly household consumption of rural women with medium education is 0.003 units higher than that of those with no education. The standard deviation is 0.055 with low volatility. P-value is 95.3%, which is not a significant rejection of the null hypothesis even at the 10% level. Indicate that the level of medium education does not have a significant affect on monthly household consumption. The correlation coefficient between the level of higher education and monthly household consumption expenditure is 0.518 (positive), and the two are positively correlated. This means that the monthly household consumption of rural women with higher education is 0.518 units higher than that of those without. The standard deviation is 0.084 with low volatility. P-value of 0.4%, significantly rejects the null hypothesis at 1% level, which means that higher education significantly increases the monthly consumption expenditure of households. In addition, the correlation coefficient between age and monthly consumption expenditure is 0.598 (positive), which shows a positive relationship. That is, for every unit increase in age, the household monthly consumption increases by 59.8 per cent units. The standard deviation is 0.234 with higher volatility. P-value of 6.3% means that the original hypothesis of "age has no effect on monthly household consumption expenditure" is significantly rejected at 10% level. Overall, the factor of medium education does not affect monthly household consumption. Age and tertiary education has an impact on monthly household consumption expenditure. However, the effect of age is small, while the effect of higher education level is large. This is because the fact that other women tend to be willing to spend a small amount of money on small items such as food, clothes and other household items. Therefore the total monthly expenditure does not change much. In contrast, highly educated women are more willing to spend money on big items, such as investments in business, children's education, and good health care. In contrast, these items are much more expensive than clothing, food, and entertainment. Using logistic regression modelling, Rahman et al. (2017) found that the MFI programme had a significant positive impact on women's ability to independently spend small amounts.

We have analyzed the survey data and found that the correlation coefficient between medium level of education and annual household consumption expenditure is -0.008. This means that the annual household consumption of rural women with medium education is 0.008 units lower than that of those with no education.The standard deviation is 0.085, which is highly volatile. P-value is 93.2% which means that the null hypothesis is not significantly rejected even at 10 per cent level. Thus we conclude that the level of lower and middle level education does not affect the level of annual household consumption. On the contrary, the correlation coefficient between the level of tertiary education and annual household consumption expenditure is 0.399, which means that the household year consumption of rural women with higher education is 0.399 units higher than that of those without. The standard deviation is 0.113 which is highly fluctuating. P-value is 2.4% which significantly rejects the original hypothesis at 5% level, thus the level of higher education has a significant positive effect on annual household consumption. Furthermore, the correlation coefficient between age and annual household consumption expenditure is 0.586 which means that for every unit increase in age, the level of annual consumption increases by 5.86 per cent. The standard deviation is 0.169 which is highly fluctuating. The P-value is 2.6% which significantly rejects the original hypothesis at 5% level, which indicates that age has a significant effect on annual household consumption level. This is because women with higher level of knowledge are more willing to spend money on important things and hence total annual consumption tends to increase.

Chapter 5 Discussion

5.1 Discussion and major findings

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Rural women have always been at the bottom of the social ladder due to their limited capacity and access to resources. However, the increased empowerment of women after participating in microfinance programs has greatly improved their ability to express their views and make independent decisions to meet their personal needs, purchase household assets, and utilize therapeutic and recreational facilities. Our study finds that age has a significant effect on household income, while education level has no effect at all. Medium education and age have an effect on household food consumption expenditures, while education high has no significant effect. Education high has a significant effect on monthly household consumption expenditures, while age has only a slight effect. Education high and age have an effect on annual household consumption, while medium education has no effect on annual household consumption.

However, microfinance may not always empower all women, but most women do gain some degree of empowerment through this opportunity. Therefore, it has the potential to impact women's empowerment strongly. Providing microfinance to women strengthens women's financial base, enhances their economic contribution and decision-making capacity in their households and communities, improves well-being, reduces subordination and strengthens women's voices. (Orazio et al. 2015）

5.2 Implications of the research findings

This paper investigates 1148 rural women in Mongolia, analyzes their characteristics and economic situation. After providing microfinance to these women, the study continued to analyze whether there was any change in their lives: income and consumption levels. The research found that microfinance had no impact on the income of the rural women interviewed but rather on consumption, both in terms of expenditure on foodstuffs and total monthly or annual consumption.The article analyzes as comprehensively as possible the reasons for this result. It casts doubt on the ability of microfinance to help the poor to change their economic conditions. It suggests that the role of microfinance is still minimal at this stage and that it is crucial to reflect on the causes of this phenomenon and to make recommendations to improve the situation. From a sociological point of view, this paper will help all sectors of society to pay more attention to microfinance programs and the poor, especially rural women as the lowest social group. Helping rural women to get rid of poverty is also helping the country to realize the poverty eradication program. Only when they eliminate poverty will the country's economic development not be dragged down. From the research point of view, this paper bridges the gap of the impact of microfinance on the consumption level of rural women, which can provide a reference basis for rural microfinance programs and is of value and research significance.

5.3 Research limitations

Nevertheless, like many other studies, this study have some limitations. First at all, unobserved characteristics of individuals, households and villages/districts, and endogenous variations in decision-making involved in the program may affect the accuracy of the estimates. Secondly, some unobserved objective factors: such as unobserved attitudes and characteristics of husbands, wives and other family members, pre-existing women's empowerment and independence, etc. (Rahman et al. 2017) In addition, because the millions of active microfinance borrowers and a large number of MFIs using different models, the narrow sample selected for this study does not allow general conclusions to be drawn about microfinance and women's household welfare. This paper measured different levels of women's well-being based on data obtained from qualitative interviews and observations. Still, women's well-being is a concept that, like cognitive skills and quality of life, cannot be measured directly. (Swain & Wallentin 2007) Finally, the experimental data came from 15 years ago, in 2008. These data are old, and changes in 15 years may bias the results of the experiment at that time from the current state of microfinance today.

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5.4 Recommendations for future microfinance

It is clear that microfinance alone cannot fully empower women or improve the lives of women who traditionally male-dominated societies have long oppressed. It also shows that microfinance has many limitations and therefore cannot effectively empower poor women. Capacity building of these poor women is essential to enjoy empowerment. In order to be empowered through capacity building, microfinance must be complemented by providing these poor women with substantial skills training and educational opportunities to raise their social and political awareness. Therefore, microfinance institutions and other non-governmental organizations must adopt a holistic approach to organizing appropriate entrepreneurship training for group members. Microfinance institutions should monitor whether loans allocated to women are used for legitimate purposes and ensure that women have complete control over the loans. Besides, the Government should also adopt a comprehensive program such as a separate integrated training and education unit for these poor women to enhance their capacity building and productivity. Various social development activities such as adult education、trade-related technical and vocational training must be provided to these women to enhance their income-generating activities, empowering them. Therefore, new microfinance models that consider poor women as entrepreneurs and stakeholders should be developed to effectively empower them and increase their income generation, thereby transforming lives of poverty. (Rahman et al. 2017)

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