The wealth effects of microcredit: evidence from rural China

Zuowen Li[1,2]

1 Institute of Geographical Sciences and Natural Resources Research, Chinese Academy of Sciences
Jia 11 Datun Road, Anwai, Beijing 100101, China
2 School of Economics and Management, Henan Polytechnic University
No. 2001, Century Avenue, Jiaozuo City, Henan Province 454003, China
Email: lizuowen@hpu.edu.cn

***Abstract*—This paper evaluates the wealth effects of microcredit program operated by China Foundation for Poverty Alleviation (CFPA) in rural China. Results indicate that although the program has no potential to improve the housing conditions (measured by house value) of its participants during a relatively short period, it contributes to increase their accumulation of consumer durables (measured by purchased value). Moreover, the clients that persistently participated in the program benefited more than other two types of participants.**

Keywords-microcredit; wealth effects; rural China; DID methods

I. INTRODUCTION

Credit plays an important role in rural development. However, the farmers are often excluded from the formal credit markets due to lack of collateral. To fill this gap, microcredit, originating first in rural Bangladesh, has been used as an important credit model for providing credit services to rural population in many developing countries, including China.

As a financial institution innovation, microcredit adopts a set of new credit techniques, such as group lending, repayment by installments, and regular central meetings, to ensure high repayments. Since the 1990s, the influence of international best practices such as Bangladesh Grameen Bank, popularized microcredit in the development field of rural China (Jiao and Yang, 2006).

According to Du (2008), Chinese microcredit, especially microcredit programs operated by non-government organizations (NGOs), generally heavily depend on funding supports from foreign and/or domestic donors to cover their high transactions costs. Therefore it is important to examine whether microcredit can really contribute to improve the well-beings of its clients. However, although there are many empirical studies to assess the welfare effects of microcredit in several developing countries, including Bangladesh, Bolivia, and Thailand (see, for example, a review by Goldberg (2005)), there are few, if any, efforts to be focused on such assessment on Chinese microcredit programs.

The main objective of this paper is to asses the wealth effects of microcredit on rural households in china. Specifically, the paper focuses on whether microcredit program run by China Foundation for Poverty Alleviation (CFPA) can increase its clients' assets value (including housing value and consumer durables), which is important indicator to measure the wealth level of Chinese rural households.

The remainder of this paper is structured as follows. Section 2 describes the data used in the paper. Section 3 presents the methods of impact evaluation employed in this paper. Empirical findings on program impact are presented in section 4 and section 5 concludes the study.

II. DATA

The microcredit program operated by China Foundation for Poverty Alleviation (CFPA) is surveyed and examined to asses its impact. CFPA microcredit program started its operation in later half of 1990s, and has currently become the biggest non-government organization (NGO) microcredit program in rural China.

A large-scale field survey was implemented by Center for Chinese Agricultural Policy (CCAP) in May, 2010 and in total, 1995 effective samples were obtained. The survey areas were selected in Xinbin county of Liaoning province and in Huai'an county of Hebei province, where CFPA began its microcredit program from 2006.

The sampling design adopted a quasi-experimental method, that is, clients (treatment group) and non-clients (control group) of CFPA microcredit were randomly sampled from program villages and non-program villages, respectively. Particularly, to ensure the number of clients participating in program in different years to be distributed approximately uniformly, two types of clients i.e. clients participating in 2006/7 (including afterwards participating in 2008/9) and clients beginning to participate in 2008/9 were sampled respectively. Finally, 749 clients and 1246 non-clients were selected and successfully interviewed. It should be noted that in order to achieve analysis purpose, this paper categorizes the clients as three types. Table 1 presents the number of three types of clients and non-clients.

To asses the impact of CFPA microcredit program, it is necessary to obtain the information both after participating in the program and before participating in the program. Therefore the survey adopted a structured questionnaire to help interviewees to recall the previous status, including Household head/spouse characteristics and Household characteristics. Especially, the information on the change in house value and the value of consumer durables purchased

during 2006-2009 of sample households was documented in detail from 2005 to 2009. Table 2 presents the descriptive statistics of sample households in 2005.

III. METHODS

The data obtained enable us to employ a difference-in-difference method (DID) to compare the outcomes (i.e. assets value of rural households) in 2009 (after CFPA microcredit program intervened in surveyed areas) and in 2005 (before CFPA microcredit program started in the area) for three types of clients to those non-clients during the same periods. This comparison produces what we call basic DID estimators (Model 1).

Because of the obvious characteristics difference in 2005 among three-typed clients and non-clients presented in table 2 (the omitted t-test rejected equality-hypotheses for most variables), we follow Li et al.(2004) and also, in addition to the basic DID estimator, employed three extended DID approaches: an "unrestricted" version (Model 2)that includes the assets value in 2005 or pre-program outcomes as right hand variables; an "adjusted" version (Model 3) that includes a series of control variables from 2005 and an unrestricted & adjusted model (Model 4) that combines the features of both the "unrestricted" and "adjusted" models. In sum, the models to be estimated are:

$$\Delta Assets_i = \alpha + \delta_1 PN_i + \delta_2 NP_i + \delta_3 PP_i + \varepsilon_i \quad (1)$$

$$\Delta Assets_i = \alpha + \delta_1 PN_i + \delta_2 NP_i + \delta_3 PP_i + \gamma Assets\_05_i + \varepsilon_i \quad (2)$$

$$\Delta Assets_i = \alpha + \delta_1 PN_i + \delta_2 NP_i + \delta_3 PP_i + \beta X_i + \varepsilon_i \quad (3)$$

$$\Delta Assets_i = \alpha + \delta_1 PN_i + \delta_2 NP_i + \delta_3 PP_i + \gamma Assets\_05_i + \beta X_i + \varepsilon_i \quad (4)$$

Where, i is an index for the household, $\Delta Assets_i$ is the increase in the assets value (house value and consumer durables value, respectively) of household i from 2005 to 2009; *PN, NP* and *PP* are the three treatment variables representing participating in 2006/7 but dropping out in 2008/9, starting to participate in 2008/9, participating both in 2006/7 and in 2008/9, respectively. δ_1, δ_2, and δ_3 are the parameters of interest. Finally, the term *X* is a vector of covariates that are included to capture the characteristics of household head/spouse and households. In addition, *X* also includes a set of village dummy variables in the following regression analysis.

TABLE I. THE SAMPLE DISTRIBUTION BY HOUSEHOLDS TYPES

	total	Xinbin	Huai'an
Clients (a)	749	408	341
Participating in 2006/7 only	146	81	65
Participating in 2008/9 only	394	203	191
Participating both in 2006/7 and in 2008/9	219	115	104
Non-clients (b)	1246	605	641
Total (a+b)	1995	1013	982

TABLE II. MEAN CHARACTERISTICS OF CLIENTS AND NON-CLIENTS GROUP IN 2005

	Clients			Non-clients
	2006/7 only	*2008/9 only*	*2006/7 & 2008/9*	
Household head/spouse characteristics				
gender of household head, 1=male;0=female	0.96	0.97	0.98	0.98
Age of household head, year	43.60	42.20	42.84	45.16
Education attainment of household head, year	7.26	7.53	7.65	7.27
% of non-agricultural labor time of household head	15.20	18.71	19.82	18.06
Age of spouse, year	41.07	39.65	40.17	42.36
Education attainment of spouse, year	5.88	6.10	6.50	5.87
% of non-agricultural labor time of spouse	27.60	36.88	39.61	14.09
Household characteristics				
Number of household members	3.66	3.76	3.82	3.75
Ratio of household members younger than 16	0.13	0.15	0.16	0.11
Ratio of household members older than 60	0.07	0.04	0.05	0.08
Ratio of female household members	0.46	0.49	0.49	0.50
Highest education attainment in family, year	9.47	9.55	9.80	9.46
Has a village cadre in family? 1=yes;0=no	0.09	0.11	0.17	0.18
Holding of arable land, mu	10.11	10.08	10.48	11.38
Value of house, ('000 yuan)	21.04	26.26	26.61	18.10
Purchase value of durable assets, ('000 yuan)	3.87	6.97	6.28	4.10

TABLE III. REGRESSION RESULTS OF MODEL(1)-(4) ACCORDING TO PARTICIPATION TYPES

	Model (1)	Model (2)	Model (3)	Model (4)
Section A: houses (yuan)				
1. households participating in 2005/6 only? 1=yes	-362	-1073	-1416	-1575
	(-0.28)	(-0.89)	(-1.06)	(-1.26)
2. households participating in 2008/9 only? 1=yes	766	-1199	-380	-1491*
	(0.90)	(-1.53)	(-0.41)	(-1.70)
3. households participating both in 2005/6 and in 2008/9? 1=yes	1989*	-71.8	585	-454
	(1.88)	(-0.07)	(0.52)	(-0.43)
Number of observations	1995	1995	1995	1995
Adjusted *R*-squared	0.002	0.167	0.077	0.185
Section B. Consumer durables (yuan)				
1. households participating in 2005/6 only? 1=yes	-220	-138	-384	283
	(-0.38)	(-0.29)	(-0.65)	(0.57)
2. households participating in 2008/9 only? 1=yes	1634***	635**	1435***	518
	(4.39)	(2.05)	(3.46)	(1.48)
3. households participating both in 2005/6 and in 2008/9? 1=yes	1720***	959**	1277**	759*
	(3.71)	(2.50)	(2.54)	(1.80)
Number of observations	1995	1995	1995	1995
Adjusted *R*-squared	0.015	0.326	0.053	0.336

Note: Figures in parentheses are value of t statistics. ***,**,and * represent statistical significance at 1%, 5%, and 10%, respectively.

IV. RESULTS

Using model (1)-(4),we estimated the impact of CFPA microcredit program on household house value and consumer durables respectively. The results of the DID analysis are presented in table (3). We will focus mainly on the results of the unrestricted & adjusted specification (Model 4). We do so because this regression has a high goodness of fit (or adjusted R-square) statistic. This better fit demonstrates the importance of capturing beginning assets (reflecting the wealth-level) and other covariates.

For the impact on housing value, a somewhat surprising finding is that participation in microcredit program has an adverse effect: the coefficients of the three-typed client's treatment indicators are all negative (section A, column 4). A possible explanation is that participating households mobilized their economic resources to invest in income-generating projects and activities and consequently reduced the expenditure on improving their housing conditions. However, it is necessary to point out that except for the coefficient on the households participating in 2008/9, the coefficients on the other two-typed households are statistically insignificant.

A relatively optimistic finding arises in the impact of microcredit on consumer durables. The positive coefficients on the three-typed treatment indicators show that microcredit helped to increase consumer durables value of clients. But this increase is very different among three clients (see section B, column 4). Specifically, for clients participating in microcredit program both in 2005/6 and in 2008/9, the average increase in consumer durables value is 759 Yuan and is statistically significant; but for the clients participating in microcredit program in 2005/6 only and those in 2008/9 only, the average increases are only 283 Yuan and 518 Yuan, respectively, moreover, they are all statistically insignificant.

Despite that we cannot definitely know why the impact of microcredit on consumer durables is so different among three-typed clients, interviews with clients in field survey by the author provided partial answers to this question. Those clients involved in microcredit persistently (i.e. households participating both in 2005/6 and in 2008/9) had generally more profit-making chance to invest and get success in their business. In contrast, those clients participating in 2006/7 but exiting afterwards either used the loan on daily consumption or, though the loan was used in investment, they experienced business failure and suffered loss. As to the clients beginning to participate in the program in 2008/9, their status is approximately the mixture of former two-typed clients.

V. CONCLUSIONS

Despite the existence of large database of studies on evaluating the impacts of microcredit in other developing countries, few efforts were focused on such assessment on Chinese microcredit programs. This paper, using a large-scale sampling survey data collected in 2010, examine the wealth effects of CFPA microcredit program on rural households in China.

The paper comes to two major conclusions. First, although CFPA microcredit program does not have potential to improve the house value of its participants during a relatively short (4-year) period, it contributes to increasing the accumulation of consumer durables of its participants. Second, the impacts of microcredit are different in terms of client types. Moreover, compared to other two types of participants, the clients persistently participating in the program benefited more from the program base on the value of consumer durables.

These findings have some policy implications. Above all,

based on the positive impacts of microcredit on rural households in China in terms of value of consumer durables, Chinese government should support the development of microcredit program operated by NGOs such as CFPA. Second and more importantly, the structure and implementation of the microcredit programs, itself, should be reshaped to promote efficient use of the credit facility, so that more and more clients can benefit from the programs

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