

The Demand for Micro-credit As a Determinant for Microfinance Outreach—Evidence from China¹

Revised Draft

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Paper presented at the ACESA 2006 Emerging China: Internal Challenges and Global Implications, Victoria University, Melbourne, 13-14 July 2006.

¹ This paper is part of the Ford Sponsored Project 'NGO Microfinance Institutions in China. The author would like to thank the financial support provided by Ford Foundation, Beijing and the research assistance provided by Liu Xichuan and other students from Zhejiang University. The author also would like to thank for the comments provided by Professor Bob Gregory, Dr Yanrui Wu and other participants of ACESA annual conference 2006 in Melbourne, Australia.

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Abstract

The studies on the outreach of microfinance programs have so far focused on the supply side: the higher transactional costs incur when a microfinance program (MFP) reaches out to the poor. Using a large household survey dataset from China, this study examines the low outreach achieved by three MFPs in China from a perspective of demand. The study found that the Grameen model microfinance programs in China have failed to target the very poor automatically in the poor areas, as the demand for micro-loans is positively related to the household incomes, the opportunities for off farm investment and the educational level of female borrowers. Many poor households rationed themselves out of the micro-credit market. The study concludes that the current microfinance programs in China, even failed to target the very poor in the very poor areas of China, have contributed positively to poverty reduction. To improve the outreach of microfinance programs to the poor, it is important to raise the demand for micro-loans from the poor by removing the other constraints and by tailoring the micro-loan products to the need of the poor. More importantly, direct fiscal support would be more important for the very poor in the poor areas.

JEL O16, O17,

Key words: Microfiance, Credit Demand, Outreach

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1. Introduction

One great promise perceived of microfinance is a win-win position -- microfinance alleviates poverty whilst achieving operational and financial sustainability for the service providers (Morduch 1999a).² The implication is that a well-performed microfinance program (MFP) can achieve its poverty objective with least cost. The microfinance industry uses a concept 'outreach' to indicate the extent of poverty targeting and other social objectives achieved by MFPs. In a detailed analysis of outreach, Navajas et al. (2000) divide outreach into six modalities including worth, cost, depth, breadth, length and scope. The depth of outreach relates the poverty level to which individuals are excluded from the formal financial system (Paxton 2002). The industry employs another concept 'sustainability' to measure the extent of subsidies required for a MFP to provide its services to the poor clients. Two well-known indexes for measuring financial sustainability of MFPs (MFIs) are 'Subsidy Dependence Index' (Yaron 1992) and Financial Self-sufficiency Ratio³.

It is however widely believed that there is a trade-off between outreach and sustainability due to the high transaction costs, high risk and lower expected returns for providing microfinance services to the poor. According to von Pischke (1996), all types of lending face a trade off between outreach and sustainability within a medium term horizon such as three to five years. Paxton (2002) found an obvious trend between outreach and sustainability: the deeper the outreach to under-served clients, the more reliant the microfinance institution is on subsidies.

Studies on the trade-off between outreach and sustainability have essentially been a supply side study, focusing on the service providers and the relationship between the extent of outreach achieved and the levels of subsidies received by MFIs. A reduction in cost is expected to contribute to an improvement in sustainability, which might lead to a better outreach outcome. A microfinance finance institution (MFI) can improve its sustainability by choosing to serve a large cross section of the population (Paxton (2002), or serve a population with a higher level of incomes. On the other hand, at a given level of sustainability, subsidies from the donors and national government enable a MFI to deepen its outreach to the poorer clients. Morduch (1999b) argues for openly addressing the costs and benefits of subsidization for the poverty-focused programs such as the Grameen Bank of Bangladesh.

The studies on the supply side of the depth of outreach are based on the implicit assumption that the poor demand micro-loans and other services provided by MFIs. The depth of outreach achieved by a particular MFI is shaped by not only the supply but the demand factors as well. This study attempts to address the relatively low

² Financial sustainability refers to long-term operation of MFPs with no subsidies.

³ See CGAP MFI Evaluation Guide.

outreach achieved by MFIs from a perspective of the demand for micro-loan services.⁴ The objectives of this study are dual: to analyse the factors that determine the household demand for micro-loans in a rapidly changing economic environment and to understand the behaviour of the very poor with regard to their demand for micro-loans. This study has important policy implications for the MFIs to reach their micro-loan services out to the poorer communities and households, for the national governments and donors in designing their credit and fiscal policies for poverty reduction.

This paper is based on a large rural household survey in four poor counties of China conducted in mid 2005. Special attention is given to the impact of rural transformation on the household demand for micro-loans. The survey areas and sampling of the study are documented in Section II. Outreach achieved by the four MFPs in the sample areas is analysed in Section III. Section IV examines the demand for micro-loans from the sample households. The households with no demand for micro-loans are examined in Section V. Conclusions and policy implications are drawn in Section VI.

II. Survey Areas and Households

Three principles were applied when we selected MFPs for study in 2005: representatives of ongoing MFPs in China, operational and financial performance and program duration. Three of the four programs selected are Grameen replicates due to the fact that most ongoing MFPs in China are Grameen replicates. It is of little policy relevance to study the outreach of those MFPs and their clients that are not aimed at operational and institutional sustainability, as these programs would disappear quickly. All the four MFPs selected are among the best-performed MFPs in China.⁵ All the four programs selected had been in operation for over four years. Of them, three were operational for over eight years. Nanzhao and Linxian are the two earliest MFPs in China. Usually, a MFP needs three to five years to establish its lending system and its client base.

Three of the four MFIs selected are managed by the three leading MFIs: China International Centre for Economic and Technical Cooperation (CICETE), Funding the Poor Cooperatives (FPC) and China Foundation for Poverty Alleviation (CFPA).⁶ As shown in Table 1, CZWSDA is one of the best UNDP programs in China whereas UNDP has over 30 MFPs replicating Grameen Model of microfinance in China; Nanzhao FPC is the best of the four FPC programs in China; and Zhuoquan is one of the best CFPA programs in China while the latter has seven ongoing MFPs all over

⁴ The low outreach here refers to the fact that the MFPs have not been able to provide their micro-loans to the poor in the project areas.

⁵ The best MFPs in China do not imply that these programs are financially viable. Few MFPs in China can be regarded as financially viable as these programs are usually small in scale and located in remote and poor areas of the county.

⁶ The MFI in Chifeng of Inner Mongolia Autonomous Region has been managed mainly by the local Women's Federation. CICETE is responsible mainly for the provision of technical support, training and program monitoring and supervision.

China. The program in Linxian is a type of village banking model of microfinance as the program is village based and operated by a village committee comprising of three members: one program coordinator who is also the accountant of the village fund, one cashier and one loan official. Linxian MFP is selected for comparison with the other three Grameen replicates.

Table 1. Key Indicators of the Sample MFIs in China

Items	CZWSDA ¹	Nanzhao FPC ²	Zhuoquan ³ SSCOP	Linxian VPF ⁴
Start-up Year	1997	1995	2001	1993
State Designated Poor County	Yes	Yes	Yes	Yes
Loan Portfolio end of 2004 (1,000 ¥)	4,400	8,640	3,600	About 1,000
Number Borrowers ⁵	3,800	7,793	4,085	About 250
% Women borrowers ⁵	100	100	50	n.a.
Management Agency	CICETE Beijing ⁶	FPC Beijing	CFPA Beijing ⁷	Poverty Fund
Sources of MF Funds	a). UNDP, b). Japanese Government c). Grameen Trust	Yang Lin ⁸	a). HK Foundation b). County Government	Private donation
Location: Province	Inner Mongolia	Henan	Shanxi	Shanxi
Counties	Balin Right, Lincheng, Aohan and Songshan	Nanzhao	Zhaoquan	Linxian
Covering Townships	8 townships in the 4 counties	4 Townships in Nanzhao	6 Townships in Zhaoquan	3 Villages in one township

Source: Survey data.

Notes: 1. Chifeng Zhaowuda Women's Sustainable Development Association; Nanzhao FPC – Funding the Poor Cooperative in Nanzhao County; SSCOP – The Support Service Cooperative of the Poor); 4. Village Poverty Foundation; 5. The figures are for the end of 2004. 6. UNDP – United Nations Development Program, CICETE – China International Centre for Economic and Technical Cooperation; 7. China Foundation for Poverty Alleviation; 8. Yang Lin is a Taiwanese Businessman with business operations in China.

The households were sampled first from the counties where the four MFPs are located. As shown in Table 1, all the programs but Chifeng geographically cover one county only and Chifeng covers three counties and one district (a district an urban administrative unit at the county level). The households were sampled from the following four counties: Nanzhao, Zhuoquan Linxian, and Aohan Banner of Chifeng Prefecture.⁷ Owing to the limited funds of the MFPs, a county MFP usually covers a number of townships in the county (see Table 2). Then we sampled the households from those townships covered by MFPs. The number of households sampled from each county is in an approximate proportion to the total number of MFP clients in the county. At the village level, we selected households from both the MFP villages and non-program villages in Aohan, Nanzhao and Zhuoquan (Table 2). Households in In the non-program villages had little knowledge of MFPs. The villages and households were selected randomly from the program townships.

⁷ A county in Inner Mongolia is called a banner, usually with mixed cropping and animal activities.

Table 2. Sampling of Townships and Households in the Four Counties

	Aohan	Nanzhao	Zhuoquan	Linxian	Total
Total Townships in the County	29	16	10		
Population of the county	593,000	614,000	163,000		
Total rural households	111,300	129,850	39,779		
Sample Townships	3	4	6	1	15
Sample Villages	5	11	13	3	32
Total Sample Households	159	312	209	141	821
From Program Villages	90	234	138	141	603
From Non-Program Villages	69	78	71	0	218

Source: Survey data.

The key indicators for the sample households in the four counties are illustrated in Table 3. Table 3 indicates that, in terms of family net income per capita, the family income is the highest in Aohan, followed by Zhauoquan, Nanzhao and Linxian. Incomes from agriculture (cropping and animal production mainly) made up of nearly 50 per cent of family incomes in Aohan, and less than 20 per cent of the incomes in Zhuoquan and Linxian. Apparently, the higher proportion of farm incomes, as well as the higher value of productive assets and animal stock, in Aohan is related to the large cultivated land area in the county. It was found in the survey that the cultivated land in Linxian County is fragmented and located on the high mountains, so the land productivity is very low. Moreover, incomes from migrant workers and family operated off farm businesses become important sources of family incomes, over 50 per cent of the family incomes for all the counties but Aohan, as high as 74 per cent for Linxian.

Table 3. Means and Standard Deviations of Some Key Indicators of Sub-samples

	Unit	Aohan	Nanzhao	Zhuoquan	Linxian	Total
NoB ¹		145	293	182	101	721
Family size		3.61	4.1	3.7	4.46	3.95
Labourers (definition)		2.10	2.6	2.29	2.65	2.44
Migrant workers (definition)		0.22	0.61	0.24	0.52	0.43
Per capita Net incomes	¥	3,586.1	2,950.5	3,030.4	2,327.9	3,013.7
(StDev)		(3,438.4)	(2,412.3)	(3,288.5)	(1,637.9)	(2,818.3)
Average Household incomes	¥	12,115.3	12,179.3	10,755.8	10,098.1	11,526
Cropping	%	33.7	15.2	11.7	10.6	17.7
Animal production	%	14.5	7.8	7.9	4.9	8.9
Migrant workers and wage	%	21.0	39.9	30.6	53.0	35.4
Off farm operations	%	22.4	30.7	37.7	21.1	29.3
Others	%	7.8	4.7	11.4	7.1	7.2
Household Assets	%					
Housing	¥	14,870	10,826	15,666	15,994	13,570.6
Productive	¥	11,202	5,452	6,924	3,775	6,752
Consumer durable	¥	3,892	4,725.6	4,107	4,468.4	4,362.6
Cultivated Land Areas	Mu	19.1	2.9	3.65	8.54	7.2
Animal Stock end 2004	¥	3,144.3	661.9	1,100	512.8	1,260.2

Source: Survey data.

Notes: 1. Number of valid observations, some sample households failed to provide information for all the items in the table.

III. Microfinance Outreach in the Sample Areas

3.1. The Mechanisms for Microfinance Outreach in China

The micro-finance movement in China, initiated in the early and middle 1990s and backed strongly by donor agencies, is extensively for poverty reduction.⁸ First of all, donors and the national government had a strong mandate for poverty reduction in China then.⁹ Second, microfinance in China emerged as a contrast to the poorly performed state poverty loans, the latter had had a very poor repayment record while failed to reach the poor. It was anticipated that the micro-loans, using Grameen methodologies, would be able to reach the poor while maintaining a high loan repayment record. Last but not the least, under the strict financial regulation and control on entry in China, poverty reduction has been the most important justification for the MFPs, a credit program, to emerge and sustain. Given the sensitivity of Non Government Organizations (NGOs) in China, the banner of poverty reduction has provided NGO MFIs and microfinance practitioners with important protection, when there is a lack of legal mechanism for the new social institution engaging in lending activities.

China provides a very good case for studying microfinance outreach as the Chinese MFPs have overwhelmingly targeted the very poor areas and very poor households. Geographically, most microfinance programs in China are rural programs located in the remote mountainous areas of Northwest and Southwest. A large majority of the MFPs in China have targeted the poorest of the poor (or the core poor). A recent survey of NGO MFIs in China (Cheng 2006a) shows that, over 90 per cent of the 67 MFPs investigated (about one third of all the MFIs/MFPs in China) cited poverty alleviation as their institutional objectives while the remaining 10 per cent cited the poverty related objectives, usually development of women and children and provision of jobs for retrenched state workers as their institutional objectives. For the reason given in the paragraph above, no one program has explicitly aimed at financial development, as China's MFIs are not financial institutions.

To ensure the achievement of the poverty and other social objectives, MFPs in China have used direct means for targeting. In addition to the geographic targeting, MFPs have targeted directly individual poor households (see Table 4). Other MFPs in China have adopted similar criteria for targeting the poor and poor women. Apparently very conservative criteria on the per capita incomes and family assets have been applied by MFPs in China to emphasizing on their poverty orientation.

MFPs in China have also employed indirect means for achieving deeper outreach by designing their micro-lending methodologies based on Grameen Bank model of microfinance that targets the landless poor women in Bangladesh. The micro-loan package of China's MFPs are characterised by the small loan size (usually

⁸ For an overview of the microfinance movement in China, see Cheng (2003).

⁹ The UNDP MFPs in China were officially named the revolving fund schemes for social and economic development in poor areas of China.

initial loan size at ¥ 1000 or US\$ 125, and a loan ceiling of ¥3000 or 375 US\$ for subsequent loans), group guarantee, weekly or bi-weekly centre meetings and loan repayment, and relatively high rates of interest (Cheng 2006b). The effective rates of interest charged by the more sustainable MFPs in China have been between 14-17 per cent per annum, which is higher than the lending rates charged by the rural credit cooperatives (RCCs, ranging from 7-11 per cent) and the lending rate by state owned commercial banks (currently below 6 per cent per annum) in rural China.¹⁰ The small loan size, higher lending rates, weekly or bi-weekly centre meetings and loan repayment are designed partly for building the capacities for the poor and partly for increasing the borrowing costs for the loan applicants.¹¹ The rationale of the design for outreach is that, given the current social and economic set-up in the poor areas of rural China, the micro-loans can reach the poor households only when the better off ones are no longer interested in the loans. A higher borrowing cost therefore provides a somewhat negative incentive for the better off households from joining the program. This technique for screening micro-loan applicants applied by MFPs in China has been called automatic target of MFPs - automatically target the poor.

Table 4. Targeting Criteria by the Sample MFIs in China

Item	CZWSDA in Chifeng	Nanzhao FPC	Zhuoquan SSCOP
Net Income per capita (¥)			
At the outset of the program ¹	<624	<800	<625
In 2005	<824	<1000	<800
Comparative Income level in the locality			
At the outset of the program	The poorest	Below average	Below average
In 2005	About average	Below average	Below average
Net Family Assets (¥)			
At the outset of the program	<10,000	<10,000	No restriction
In 2005	<15,000	<15,000	No restriction
State designated poor Households ²			
At the outset of the program	Yes	Yes	Yes
In 2005	Yes	Yes	Yes
Gender Restrictions			
At the outset of the program	Female only	Prefer Female	No restriction
In 2005	Female only	Prefer Female	No restriction

Source: survey data.

Notes: 1. These per capita income figures are well below the average income levels in these counties. As the project proceeded, these income criteria became the figures on the paper and project documents.
2. State designated poor households could be regarded as the very poor in the poor counties.

The creation of such an indirect mechanism is based first on the Grameen Bank model of microfinance, and perhaps more importantly, on China's own experience with the heavily subsidized poverty loans channelled through the state banks. As

¹⁰ For a historic review of interest rates charged by formal financial institutions in rural China, see Cheng and Xu (2004).

¹¹ The costs of small size of loans combined with weekly loan repayment are very high for the poor borrowers, as the rural poor in China have engaged mainly in farm activities.

happened in other less developed countries,¹² the heavily subsidized poverty loans in China disbursed through the state banks since the middle 1980s have basically failed to target the poor and the loan repayment rates have been very low (Cheng 2003).

3.2. Outreach Achieved by MFPs in the Study Area

Recent studies of MFPs in China have indicated that many MFPs have deviated from their institutional objective of targeting the designated poor in the poor areas of China. In general, MFPs in China have targeted the middle income, rather than very poor, or poor households in the poor counties of China. Park and Ren (2001) found that in the NGO programs, the very rich are effectively excluded, but among eligible households rich and poor are equally likely to participate. In a study of community fund micro-credit program in Caohan of Guizhou Province, Wang (2001) observed that the net income, asset value and grain production per person, as well as the average years of education for the participating households are significantly higher than those for non participating households. Based on a survey of borrowers and non borrowers in Yixian of Hebei Province and Nanzhao of Henan Province, Sun (2005) also noted that borrowers of micro-loans are mainly the middle and above middle income households in the project areas.

A better understanding of microfinance outreach require an examination of relative incomes and assets of microfinance borrowers, as well as those of borrowers of alternative lenders on the market. In Table 5, we divide the sample households into five equal number groups, YI to YV, according to their income levels. In each income group, we further divide the households into four sub-groups according to the sources of their loans. If a household has loans from more than one source, we take the higher order source, in descending order of RCC, MFI, and informal sources of finance. For example, if a household had loans from both RCCs and the MFI during 2003-2005, we take the household as a RCC borrower. This is based on the assumption that households prefer RCC loans (at an effective interest rate of 7 to 11 per cent per annum, the loan size is usually much larger than a micro loan and there is generally no requirement for loan repayment in instalments) to MFI loans (at an effective rate of interest of around 14-17 per cent per annum, usually small size of loans with frequent loan repayments), and prefer MFI loan to informal loans (at an interest rate of 15-20 per cent, or no interest for loans from relatives). It was found in the field investigation that households usually do not like to borrow from relatives for the non interest loans, as the borrower is expected to reciprocate the lender in the future.

Table 5. Outreach of Various Lenders in the Sample Counties

Items	YI ¹	YII	YIII	YIV	YV	Total
Average Incomes (¥)	<1278	1280-1893	1894-2685	2686-3981	>3981	
RCC borrower ²	24 (14.6)	21 (12.8)	21 (12.8)	29 (17.7)	40 (24.4)	135
MFI borrowers ³	68 (41.5)	78 (47.6)	95 (57.9)	84 (51.2)	87 (53.0)	412
Informal borrowers ⁴	41 (25.0)	32 (19.5)	22 (13.4)	19 (11.6)	17 (10.4)	131
Non borrowers	31 (18.9)	33 (20.1)	26 (15.9)	32 (19.5)	20 (12.2)	142
NOB ⁵	164 (100)	164 (100)	164 (100)	164 (100)	164 (100)	820

Source: survey data.

¹² For the lessons of the provision of heavily subsidized loans to the target groups in other LDCs, see Adams et al (1984).

Notes: Numbers in brackets are the percentage of the total observations in a income group. 1. Household net income per rural capita in 2004 in Chinese yuan; 2. Number of households in the sample who borrowed from Rural Credit Cooperatives between 2003-2005; 3. Number of households in the sample who borrowed from Micro-finance Institutions between 2003-2005; 4. Number of households in the sample who borrowed from informal sources, including relatives and friends and moneylenders, between 2003-2005; 5. Number of observations.

It is shown in Table 5 that the proportion of borrowers for various lenders changes with the increase in group incomes. Following the increase in household incomes, the proportion of RCC borrowers steadily increases from less than 15 per cent to 24 per cent, an increase of about 10 per cent. The proportion of micro-loan borrowers increases first and then declines with the increase in incomes, and the proportion of informal borrowers decline steadily from 25 per cent to about 10 per cent. Micro-loan borrowers have presented in all the income groups, with a slightly higher proportion found in the above middle income groups, which is broadly in line with the findings by others discussed above. Apparently, MFPs in China have failed to targeted exclusively the very poor in poor areas of China. However, these programs have outreached their micro-loan services to the poor, including some very poor households, though the distribution of the micro-loan clients are biased sightly toward richer households.

Table 6. Outreach of MFPs and Other Borrowers in the Project Areas

	NoBs	% Total	Yt p.a. ³	Ynf % ⁴	V-house	V-Animal	Land
Four Counties ¹							
RCC borrower ²	123	17.5	3510.3	0.51	15337	1698	9.77
MFI borrowers (current) ³	345	49.2	3170.8	0.64	13832	1231	6.74
Informal borrowers ⁴	115	16.4	2443.6	0.55	13149	985	7.13
Non borrowers	118	16.8	2751.3	0.62	11713	1202	5.98
Means ⁵	701	100.0	3040.5	0.603	13627	1268.2	7.22
Aohan of Chifeng							
RCC borrower	52	35.6	3411.2	0.28	17125	3140.5	18.4
MFI borrowers (current)	43	29.5	4861.5	0.37	14837	3591	23.9
Informal borrowers	28	19.2	2707	0.34	11996	2561.8	15.7
Non borrowers	23	15.8	2860.5	0.52	13165	2959	15.1
Means	146	100.0	3616.4	0.36	14844	3133.8	19
Nanzhao							
RCC borrower	40	14.0	3463.9	0.68	11310	754.9	2.95
MFI borrowers (current)	147	51.6	3018.3	0.69	11536	599.6	2.79
Informal borrowers	42	14.7	2367.5	0.6	9950	633.9	3.24
Non borrowers	56	19.6	2808.7	0.65	9366	858.8	2.93
Means	285	100.0	2943.8	0.67	10844	677.4	2.9
Zuoquan							
RCC borrower	26	14.9	3516.6	0.66	19429	591.5	3.79
MFI borrowers (current)	91	52.3	3332.6	0.67	15239	1455.2	3.92
Informal borrowers	30	17.2	2596	0.63	17987	497.3	3.5
Non borrowers	27	15.5	2435.8	0.65	10956	844.4	3.12
Means	174	100.0	3093.9	0.66	15674	1072.4	3.71
Lingxian							
RCC borrower	5	5.2	4880.8	0.89	7700	0	5.54
MFI borrowers (current)	64	66.7	2155.1	0.68	16431	781.3	8.44
Informal borrowers	15	15.6	1860.8	0.69	18587	0	9.26
Non borrowers	12	12.5	2983.5	0.67	21583	150	9.16
Means	96	100.0	2354.6	0.69	16332	539.6	8.51

Source: survey data.

Notes: NOBs -- Number of observations; % Total: Percentage of total observations; Yt p.a. -- Household Net income per rural capita in 2004, Chinese yuan; Ynf % -- percentage of off farm incomes to total household incomes %; V-house – Current Value of the residential house for a household, in ¥; V-animal – value of animal stock at the end of 2004, ¥
Land – cultivated land areas per household

1. For all the four counties; 2. Number of households in the sample who borrowed from Rural Credit Cooperatives between 2003-2005; 3. Number of households in the sample who borrowed from Micro-finance Institutions between 2003-2005; 4. Number of households in the sample who borrowed from informal sources, including relatives and friends and moneylenders, between 2003-2005; 5. Number of total observations. 5. Average for all the borrowers and non borrowers in the sample.

The figures in Table 6 provide further evidence that the middle and above middle income households are the major beneficiaries of the MFPs. To take all the four counties as a whole, the level of incomes and assets of MFP clients is lower than that of RCC borrowers but higher than that of informal borrowers. For Chifeng, Nanzhao and Zuoquan, the incomes of MFP borrowers are higher than the means incomes. Linxian can be regarded as a special case, as the MFP in Linxian is basically a community fund model whilst the other three are Grameen replicates. It appears that RCCs have targeted top income households and the poor ones have been served

mainly by informal sources of finance. Instead of providing micro-loans directly to the very poor, MFPs have helped to extend the micro-loan services from the top to the upper middle and middle-income households in poor areas of China.

Compared with RCC and informal borrowers, MFP borrowers have a higher ratio of off farm incomes but less cultivated land areas. One plausible conclusion is that the MFIs have targeted automatically off farm activities, as off farm family operations are more likely to generate cash incomes to meet the requirement for weekly or bi-weekly loan repayments.

If we take MFIs as a semi formal financial institutions subsidized by donors, the introduction of the MFPs has not changed the fact that the subsidized loans of formal and semi formal financial institutions have benefited the better off in the poor counties of China while the poor are served by informal sources of finance. The borrowers of RCCs have the highest average incomes whereas the nominal cost of borrowing is the lowest for RCCs; and the incomes of borrowers of MFPs are higher than the average.

MFPs in China should still be regarded as poverty reduction programs though the major beneficiaries of these programs are middle and upper middle income households in the poor rural counties of China. As shown in Table 6, the incomes of micro-loan borrowers are slightly higher than the average incomes of the sample households, which is close to the national average for rural households in China. China's average net income per rural capita is ¥ 2,936.4 for 2004 (China Statistical Yearbook 2005, p.359) and ¥ 3,255 for 2005, being less than one third of their urban counterparts (China Rural Economy Green-book, 2006). It is safe to argue that on the whole these MFPs have benefited China's relatively poor rural population, and have helped to move the formal lending services down towards the lower income households in rural China.

Then why have the MFPs failed to provide micro-loans to the very poor exclusively, under the objective of reaching out to the very poor and equipped with direct and indirect means of targeting? The trade-off between outreach and sustainability provides part of the answers from the supply side. Group guarantee applied by the Grameen replicates in the three of the four sample counties have helped to exclude the poorest from their programs.¹³ Loan officials and centre chiefs who are responsible for loan repayment are expected to screen micro-loan applicants further according to their loan repayment capacities, which tends to exclude more poor applicants from micro-loans. Richer households can reduce their borrowing costs for micro-loans by pooling micro-loans, which makes one of the most important indirect mechanisms for poverty targeting less effective (Liu et al 2006). The scarcity of the cheap loans from formal sources, RCCs and the Agricultural Bank of China (ABC) also pushed better off households to seek micro-loans. Other answers however lie with the demand for micro-loans from poor households discussed below.

¹³ Group guarantee has not been applied in Linxian of Shanxi Province.

Part IV. The Demand for Micro-loans from the Households in the Sample Areas

4.1. Model Specification

In a study of the rural credit market in India, Kochar (1997) found that the extent of credit rationing is considerably less than what is conventionally assumed, by taking account of the effective demand for credit into consideration. By the same token, the extent of outreach achieved by a given MFI is expected to be dependent on the supply - credit rationing exercised by MFIs as discussed above, as well as on the effective demand for micro-loans, in turn a function of the demand for credit and its availability from other sources.

In this section, we seek the answers for the outreach of the MFPs to the middle and above middle income households from the demand side. A Probit model is employed to estimate the determinants of the demand for micro-loans. In the estimation, we exclude the households from Linxian from the sample for a number of reasons. First, different from the other three MFPs in the sample and from most MFPs in China, Linxian MFP is not a Grameen replicate. Next, not until recently, financial sustainability has not been high on the agenda for the program and there have been more refinancing for the MFP in Linxian, as the program has not required frequent loan repayments. In the estimation, we also delete the observations (households) from non-project villages in the sample counties, for the obvious reason that the households from non-project villages have little knowledge of MFPs and their demand for micro-loans would be very different. After removing the households from Linxian and non-program villages, we have 557 valid observations.

A clear definition of the demand for credit is crucial for any studies on the demand for credit. Here it is important to distinguish demand for credit from the concept of market participation (total loan value received by a household) and the decision to apply for a loan. In this study, we define the households with a demand for micro-loan as including the following households:

- (a). Current borrowers of micro-loans at the time of survey;
- (b). Non-borrowers who have applied for a micro-loan but were rejected by loan officials;
- (c). Non-borrowers who did not apply for a micro-loan, because they thought their application will be rejected by the loan official if they had applied;
- (d). Past borrowers who have quit the program because they had difficulties in loan repayment, and they want to borrow now but the MFI is unwilling to lend to them again.

It is important to include (c) and (d) in the sub-sample of those who have a demand for micro-loan, as the credit supply is expected to impact on the demand for credit. Univariate probit models are used to estimate the determinants of the

$$\text{Prob (DML)} = F(Y, H, O, A), \quad (I)$$

Where

Demand =1, for the households that have a demand for a micro-loan from the MFI
 Demand = 0, for all the other households.

In (I), DML is the demand for micro-loans from MFIs, Y represents household incomes, H is the human capital, O the opportunities in farm and off farm investment, and A refers to alternative sources of borrowing. Our hypothesis is that, the demand for micro-loans is determined first by the investment opportunities in off farm and farm investment, in turn determined by the levels of household incomes and savings, cultivated land area, human capital and social capital owned by the household. The demand for micro-loans is also affected by the household demand for money for smoothing family consumption. The access to formal and informal sources of loans is expected to contribute negatively to the household demand for micro-loans. The higher income households, which tend to have more access to formal loans, are expected to have less demand for micro-loans from MFIs. The price - lending rate of interest (or borrowing costs for which lending rate is a part of it), has not entered into the equation, as all the households in a county face the same lending rate of interest for micro-loans from the MFI.

In the model, we use household incomes to represent household wealth and savings for investment, the ratio of household off farm business incomes and the ratio of wage incomes for household opportunities in off farm production, and the cultivated land area for the opportunities in farm production. An increase in household income is expected to raise the household demand for micro-loans, up to a point of incomes where the households have access to cheap loans from formal sources. The ratio of off farm income to total family incomes and the cultivated land area are expected to be positively correlated with the probability of household demand for micro-loans. A higher ratio of labourers to family population is also expected to increase household demand for micro-loans.

It is further postulated that the demand for micro-loan is positively correlated with household human capital. The human capital includes the school education received by household heads and female borrowers (usually partners of household heads), and skills of household heads. We also add the official status of household members as a variable for social capital to test whether township and village officials have a higher demand for micro-loans.

We use the large events in 2004 to represent the important family consumptions, including wedding, funerals, and house building, and large medical expenses. The access to other loans, of particularly cheap loans from RCCs is expected to reduce the household demand for micro-loans. The independent variables are shown in Table 7.

Table 7. Definition of the Variables Used in the Probit Model

Variables	Definition
DML	Demand for Micro-loans
YTNA	Net Family Income Per Capita
YTNA2	Net Family Income Per Capita Squared
SCH	School year of household heads
SCHW	School year of housewives

SKL	Whether the household head has skills in special trade and off farm activities
LBSZ	The ratio of family labourers to population
OFFI	Official Status of Family members
YWR	The ratio of wage income to total incomes of the households
YNOR	The ratio of off farm business income to total incomes of the households
LA	Cultivated land area
LE04	Whether the family had the large events in 2004, including wedding, funerals and house building
RCC035	Whether the family had loans from RCCs 2003-2005
IL035	Whether the family had loans from informal sources 2003-2005
A2	Dummy variable for County 2
A3	Dummy variable for County 3

4.2. Discussion of the Results

We followed the *top down* or *general to specific* approach advocated and refined by Hendry and popularised by Hendry and Richard, and Gilbert (Hendry and Richard 1983; Gilbert 1986). According to the latter approach, we start with a very general model, with a specification of the function form, which is typically more complicated than deemed necessary, and progressively simplify it with a sequence of ‘simplification tests’. Results from the general model are presented in Table 8 and results from the final specific model are presented in Table 9.

Table 8. Estimation Results, General Model

Log likelihood = -302.949 Number of observations = 550 Number of positive obs. = 393 Fraction of Correct Predictions = 0.727273				
Parameter	Estimated Coefficients	t-Statistics	dP/dX	
			0	1
YTNA	8.36E-05	1.75309 *	-0.000026144	0.000026144
YTNA2	-4.03E-09	-1.98498 **	1.25908D-09	-1.25908D-09
SCH	-0.026729	-1.07573	0.0083541	-0.0083541
SCHW	0.05673	2.62808 **	-0.017731	0.017731
SKL	-0.093648	-0.716959	0.029269	-0.029269
LBSZ	0.143763	0.459556	-0.044933	0.044933
OFFI	0.261148	0.90855	-0.081621	0.081621
YWR	-0.29893	-1.22293	0.09343	-0.09343
YNOR	0.403433	1.54552	-0.12609	0.12609
LA	0.01893	1.67223 *	-0.0059166	0.0059166
LE04	-0.031297	-0.732655	0.0097817	-0.0097817
RCC035	0.389712	2.24377 **	-0.1218	0.1218
IL035	-0.113614	-0.913393	0.03551	-0.03551
A2	0.131947	0.495741	-0.04124	0.04124
A3	0.341621	1.28224	-0.10677	0.10677

Notes: for t-Statistics, * refers to significant at 10 per cent and ** refers to significant at 5 per cent.

Table 9. Estimation Results, Specific Model after Removing the Insignificant Variables

Log likelihood = -312.080 Number of observations = 557 Number of positive obs. = 395 Fraction of Correct Predictions = 0.718133				
			dP/dX	
	Estimated coefficients	t-Statistics	0	1
YTNA	.927880E-04	2.05119**	-0.000029499	0.000029499
YTNA2	-.429502E-08	-2.18594 **	1.36546D-09	-1.36546D-09
SCHW	0.047723	2.44479 **	-0.015172	0.015172
YNOR	0.605918	3.03894 **	-0.19263	0.19263
LA	0.017473	2.38961 **	-0.0055551	0.0055551
RCC035	0.311081	1.89604 *	-0.098898	0.098898
A3	0.223424	1.70173 *	-0.07103	0.07103

Notes: for t-Statistics, * refers to significant at 10 per cent and ** refers to significant at 5 per cent.

As shown in Table 9, the percentage of correct prediction, which is the choice of explanatory variables correctly predicted the household's demand decision is good, at 72 per cent. Marginal effect (dP/DX) indicates the effect of one unit change in an exogenous variable on the probability of the household demand for micro-loans. Marginal effects were estimated but only used for continuous variables because they may not be meaningful for binary variables.

The results confirm our hypothesis that the household demand for credit is affected by the household investment opportunities in off farm and farm production and investment. Following income growth, the probability of the demand for micro-loans increases up to a point and then declines. The higher income households are expected to have more investment opportunities and repayment capacities. Up to a certain point, household demand for credit tends to fall, following the income growth, as the households in the top income groups tend to have more of their own funds for investment, or they might have been less interested in the micro-loan for which the lending rate is higher. The relationship between the ratios of off-farm incomes (representing the opportunities for off farm production), cultivated land area (representing the opportunities for farm investment) and household demand for micro-loans is positive, as expected. The effect of wage income ratio (YWR) on the demand for micro-loan is insignificant, a point expounded below.

Of the three human capital variables, school education of household heads, female borrowers (or partner of household heads), and skills of household heads, only schooling education of female borrowers is significant. The importance of school education of female borrowers is related to the fact that two of the three programs have targeted women only. The effect of the social capital on credit demand, as represented by the official status of household members, is insignificant, which indicates that those households that have members who are government or village officials might have more access to formal loans.

The effect of the large family events in 2004 on demand for micro-loans is insignificant, different from our expectation. Possibly, LE04 may not be a good indicator for household consumption.

The access to other loans, of particularly cheap loans from RCCs, is expected to reduce the household demand for micro-loans. The regression results contradict our hypothesis. This implies that even the borrowers of RCCs are still subject to credit rationing from RCCs, so they demand more credit from MFPs to meet their investment and consumption need.

The results above contradict one of the essential assumptions for the Grameen replicates in China that these programs automatically target the poor in the poor areas of China, or the so-called indirect mechanism for targeting by MFPs in China. Obviously, those households that have relatively higher levels of incomes, higher proportion of off-farm incomes, higher levels of education and more access to RCC loans have a higher demand for micro-loans. One conclusion is that these MFPs at their current form have automatically targeted better off, rather than the poor ones, in the poor areas of China.

With the variables in Table 9, we deleted the households in the top 20 per cent income group and re-estimated the same model and the results are shown in Table 10. This is based on the observation from our field investigation that the composition of incomes for the top 20 per cent households is different from the rest of the households, the former has a higher proportion of incomes from off farm family operation while the incomes from farm activities and migrant workers are more important for the latter.

Table 10. Estimation Results of the Probit Model by Deleting the Households in the Top 20 Per cent Income Group

Log likelihood = -240.131 Number of observations = 421 Number of positive obs. = 288 Fraction of Correct Predictions = 0.684086				
	Estimated coefficients	t-Statistics	dP/dX	
			0	1
YTNA **	1.10E-03	3.3352	-0.00035588	0.00035588
YTNA2 **	-1.92E-07	-2.65266	6.19240D-08	-6.19240D-08
SCHW **	0.057031	2.51479	-0.018407	0.018407
YNOR	0.09632	0.321506	-0.031088	0.031088
LA *	0.016714	1.834	-0.0053945	0.0053945
RCC035	0.228984	1.16238	-0.073907	0.073907
YW **	-5.69E-05	-2.15812	0.000018364	-0.000018364
A3 **	0.317238	2.12422	-0.10239	0.10239

Notes: for t-Statistics, * refers to significant at 10 per cent and ** refers to significant at 5 per cent.

After deleting the top 20 per cent income group from the sample, the ratio of incomes from off farm family operation (YNOR) becomes insignificant while the

ratio of wage incomes becomes significant, but negatively correlated with the demand for micro-loans. This is consistent with our field observation that the increases in the wage incomes tend to reduce the household demand for micro-loans because these households tend to have very limited investment opportunities in off farm family operations. Moreover, migrant labour does not need much fund investment and incomes from migrant workers provide the families with cash for smoothing family consumption. Finally, owing to the very small size of farms, the demand for investment in farm production is limited except for large-scale farm investment by specialist farm households.

An important policy implications is that the adjustment in rural structure characterised by the outflow of rural labour from poor inland areas to the coastal areas of China tends to reduce the demand for credit for those households that have limited investment opportunities for off farm family production in local areas. A further conclusion is that the migration of large amount of rural labour out of poor areas is expected to have a profound impact on the demand for credit from the poor and middle income households in these areas, and on the overall demand for and supply of credit in these areas.

Part V: The Demand for Micro-loans: Why Not?

The positive relationship between the demand for micro-loans and household incomes leads to the question: why are the poor households more likely to exclude themselves from the micro-loan market?

To analyse further the households who have no demand for micro-loans, we first divide the sample households according to their demand for micro-loans (Table 11). We then classified those households with no demand for micro-loans further into five sub-groups according to their answers to the question that why they do not need a micro-loan. It is important to note that as the sample is biased slightly toward current borrowers in the project areas, the proportion of the households who have no demand for credit in the project areas could be higher than the proportion as shown in the table.

Table 11. Classification of Household Demand for Micro-loans

Items	Observations	%	Y-mean ¥
Total Observations (for the project areas in the three Counties)	573		3,255
With Demand for MLs	407		3,438
Without Demand for MLs	166		2,806
Don't need a loan	71	42.3	
Do not Need a Micro-loan	38	22.6	
Of which: have access to other loans	7	4.2	
Did not apply due to poor repayment Capacities	26	14.9	1,539
Do not understand the micro-loan	4	2.4	
Other	15	9.5	
Total	168	100.0	

The figures in Table 11 confirm further that the demand for micro-loans is positively related to household incomes. Moreover, of those who have no demand for a micro-loan, over 40 per cent do not need a loan and a further 22 per cent do not need a micro-loan. For the former, an increase in investment opportunities is expected to raise their demand for micro-loans. For the latter, their demand for micro-loan might increase following improvement in micro-loan product design. A further 15 per cent did not apply because they do not think they can repay the micro-loans. They effectively rationed themselves out of the market (risk rationed, see Bucher 2001). The average income for this group of households is significantly lower than both the mean incomes for the sample households and the mean incomes for the households who have no demand for micro-loans. A few households have no demand for micro-loan because they do not understand it. From the demand side, MFPs can improve their outreach by improving their loan products and by promoting their products better to the farmers. Outreach can also be improved by improving the opportunities for family off farm production in the poor areas.

Table 12. A Comparison of Risk Rationed and Other Households in the Project Areas

	Unit	Other Households	Risk Rationed HHs ¹
No. of Observations		547	26
Net Income per capita	¥	3,318.7	1,725.3
Total Household Incomes	¥	12,384.7	6,111.7
Cropping Income	¥	2,148.6 (17.3%) ⁶	1,938.2 (31.7%)
Animal Incomes	¥	1,189.4 (9.6%)	850.9 (13.9%)
Migrant and wage income	¥	3,863.8 (31.2%)	2,628.4 (43.0%)
Off farm business Income ²	¥	4,154.2 (33.5%)	45.5 (0.7%)
Cultivated land Area	Mu	6.7	6.9
Family House Value	¥	13,555.0	5,782.4
Value of Animal Stock ³	¥	4,288.4	1,883.9
Fixed Assets ⁴	¥	8,229.2	2,452.7
Labourers/population	%	0.61	0.58
Age of Household head		43.3	48.2
Formal Education of Head ⁵	Year	6.9	6.3
Education by Partners ⁵	Year	5.4	3.7
Household with sick people ⁶	%	8.7	23.1

Source: Survey data.

Notes: 1. Risk rationed households here refer to the households that did not apply for a micro-loan as they think they were not be able to repay the loan. 2. Incomes from off farm family production undertaken by the household; 3. As at the end of 2004; 4. It refers to fixed productive assets; 5. Formal school education received by household heads and their partners. 6. Percentage of the households that have one or more family members with chronic diseases, or seriously ill, or disability, and can hardly undertake any work. 7. Numbers in brackets are percentage of total household incomes.

Risk rationed households are the very poor households in the project areas. These households are official target of MFPs in China. As shown in Table 12, the incomes of risk rationed households are about half and their family assets are less than half of those of other households in the sample. Compared with other households, the largest differences are incomes from off farm production and investment. Accordingly, they tend to be lack of opportunities in off farm production and

investment. Next, the average age of risk-rationed households is older than that of other households, and the educational levels of household heads and their partners of the risk-rationed households are lower than those of other households. Finally, the percentage of the households with sick family members of the risk-rationed households is much higher than that of other sample households. Apparently, the very poor households tend to ration themselves out of the micro-loan market.

The strong link between the low loan repayment capacities (as perceived by the households) and the level of poverty indicates that micro-loans may not be the appropriate tool for this category of households at present. For the very poor households, the provision of better education, better infrastructure, better health and extension services would be more important to raise their incomes and investment opportunities, and their repayment capacities, hence to raise their demand for micro-loans in the future. For the very poor households, MFPs may try other products, such as microfinance plus (the provision of micro-loans plus training, agricultural technical extension, farm business training and infrastructure work), micro-savings and micro money transfer and micro-insurance.

The households who do not need a micro-loan in Table 11 are classified further into 6 sub-groups (see Table 13). For the household in this category, the demand for micro-loan can be raised by simplifying loan application and approval procedures and tailoring the loan terms to the need of the applicants according to their loan uses.

Table 13. The Reasons for No Demand for a Micro-loan

	No. Households	Percentage
DO Not Need a Micro-Loan	38	100.0
Too high (i)	6	15.8
Small loan size	1	2.6
Borrowing Costs (appli procedures complicated and loan size)	6	15.8
Frequent loan repayment	14	36.8
Other loans	7	18.4
Other	4	10.5

Part VI. Conclusions and Policy Implications

6.1. Conclusions

The studies on the level of outreach achieved by MFPs so far have focused on the supply side and on the trade-off between outreach and sustainability. Using the data from a large household survey in China, we analyse the effects of the demand for micro-loans on the outreach achieved by MFPs in China.

The Grameen replicate MFPs in China have aimed at poverty reduction by providing micro-loan services to the poor in the very poor areas of China. To target the poor effectively, these programs have employed direct and indirect means for outreach to the poor. Our survey of more than 600 households with three best-performed MFPs in the state designated poor counties of China found that the middle

and above middle income households, instead of the poor, are the major beneficiaries of these MFPs. Although MFPs have targeted the middle income and richer households in poor areas of China, these programs have contributed positively to poverty reduction, as the middle and above middle-income households in the poor counties of China can be regarded as the poor, with their incomes below the national average.

From the supply side, group guarantee applied by the Grameen replicates in the three of the four sample counties have helped to exclude the poorest from their programs. Loan officials and centre chiefs who have been responsible for loan repayment are expected to screen micro-loan applicants further according to loan repayment capacities, which tends to exclude more poor applicants from micro-loan programs. Richer households would also have reduced their borrowing costs for micro-loans by pooling micro-loans.

The failure of the MFPs to target the poor in the poor areas of China exclusively can be attributed to the demand factors as well. Our study of the demand for micro-loans found that the household demand for micro-loans is positively correlated with household income, the education level of female borrowers, and the household access to formal loans from RCCs. These results contradict one of the central assumptions for the Grameen replicates in China that the design of these programs targets the poor automatically. On the contrary, these MFPs at their current form have automatically targeted richer households and households with off farm investment generating frequent cash incomes to meet the regular loan repayment requirement.

After we removing the top 20 per cent income households from the sample, we found that the demand for micro-loan is negatively correlated with wage incomes. This confirms our observation that the increases in the wage incomes of the households that have limited investment opportunities in off farm production tend to reduce the household demand for micro-loans as the migrant labour usually does not need financial investment and the wage incomes from migrant workers provide the families with cash for smoothing family consumption. An important policy implications is that the adjustment in rural structure characterised by the outflow of rural labour from poor inland areas to the coastal areas of China tends to reduce the demand for credit for those households that have limited investment opportunities for off farm production in local areas. A further conclusion is that the migration of large amount of rural labour from poor areas is expected to have a profound impact on the demand for credit from the poor and middle income households in these areas, and on the overall demand for and supply of credit in these areas.

Detailed studies of the households who have no demand for micro-loans indicate that risk rationed households are the very poor households in the sample areas. Compared with other households, these households have low levels of incomes, low levels of schooling education received, poorer health conditions and have fewer opportunities in off farm production and investment.

6.2. Policy Recommendations

Donors and national government should continue their support to the best performed MFPs in China, as these programs have generally provided their micro-

loan services to the relatively poor in China and have helped to outreach the micro-loan services to those rural households that have little access to the formal services.

The study advocates a strategic policy shift for the donors and governments for microfinance in China: to redefine the major clients of micro-loan services from the very poor in the poor areas of China to all those who have no access to formal loan services in the poor areas of China, and extend to micro-entrepreneurs and low income earners in non poor counties of China.

The logic of indirect mechanism to screen out the rich should be replaced by designing the new microfinance products so as to minimise the borrowing costs for the clients while mitigating credit risks of the MFP.

MFPs in China should be encouraged to further outreach their services to the poorer communities and households by designing pro-poor microfinance products, such as microfinance plus (the provision of micro-loans plus training, agricultural technical extension, farm business training and infrastructure work), micro-savings and micro-money transfer services, and micro-insurance. As the poorer households tend to have a higher proportion of their incomes from farming, a more flexible loan repayment schedule tends to increase the demand for micro-loans from the poor households. A more liberal policy approach in terms of financial regulation and subsidies are needed for MFPs to reach out to the poorer communities and households in the poor areas of China. Outreach can also be improved by improving the opportunities for off farm production by the poor in the poor areas.

For the very poor households in poor areas of China, the provision of basic education and health services, and better infrastructure and extension services would be more important to raise their investment opportunities and their repayment capacities, hence to raise their demand for micro-loans in the future.

ABBREVIATIONS

ABC	Agricultural Bank of China
CFPA	China Foundation for Poverty Alleviation
CICETE	China International Centre for Economic and Technical Cooperation;
CZWSDA	Chifeng Zhaowuda Women's Sustainable Development Association
FPC	Funding the Poor Cooperative, under the Chinese Academy of Social Sciences (CASS).
MFI	Microfinance institutions
MFP	Microfinance programs
NGO	Non government organizations
RCC	Rural Credit Cooperatives in China
SSCOP	The Support Service Cooperative of the Poor, CFPA county level Microfinance institutions
UNDP	United Nations Development Program
¥	RMB, Unit of Chinese currency

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