



# Microfinance with Chinese Characteristics

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**Summary.** — Analyzing household survey data from three microfinance program sites, we provide an early systematic assessment of Chinese microfinance programs, which have grown rapidly since 1994, are based on the Grameen model, and include an unprecedented large-scale government initiative. We examine the empirical propositions that underpin successful microfinance programs—reaching the poor (targeting), financial and operational performance (sustainability), and program benefits (impact). We find that nongovernmental programs perform well in all three areas, but that governmental programs perform poorly. Given the remote location and focus on agricultural projects in China's poor areas, we advocate greater flexibility in loan contract terms, especially repayment schedules. © 2000 Elsevier Science Ltd. All rights reserved.

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## 1. INTRODUCTION

In recent years, the microfinance movement has taken China by storm. Following initial experiments by researchers at the Chinese Academy of Social Sciences (CASS) begun in 1994, a host of international and domestic organizations (often in partnership) have introduced a variety of microfinance models to rural China (Table 1). Provincial governments, seeing the positive experience of pilot programs and frustrated by the disappointing performance of China's subsidized poverty loan program, have also turned to microfinance design features, and the national Office of the Leading Group for Economic Development in Poor Areas has given the movement its blessing. Even though microfinance still reaches only a small proportion of China's rural villages, thousands of farmers spread across nearly every poor province in China have benefited from microfinance loans over the past several years. The nongovernmental programs, many featuring group lending contracts, have reported high rates of repayment (all above 90%, many near 100%) and practitioners and clients feel that the loans are making a difference. The movement appears ready to move beyond

initial experiments to strengthening institutional practices as part of a process of steady maturation. With the world's largest rural population, 124 million of which were poor in 1997 based on the World Bank's dollar-per-day poverty standard, China represents an important testing ground and opportunity for the microfinance movement.

Microfinance programs are united in aiming to provide financial services to individuals traditionally excluded from the banking system, especially women. Most microfinance initiatives in China, as well as many programs elsewhere (most notably Grameen Bank in Bangladesh), explicitly target the poor. They overcome conventional obstacles to banking with the poor by paring down traditional branch-banking structures to reduce transac-

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Table 1. *International microfinance projects in China*<sup>a, b</sup>

	Funding (F), Implementing (I), and Chinese Partner Agencies (P)	Provinces (counties/ pref.)	Time	Loan size (yuan)	Repayment
(1)	AUSAID (F), Qinghai MOFTEC, Ag. Bank of China (I)	Qinghai (Haidong)	8/96-6/03	400-1,000	6 months to 1 year
(2)	Caritas Germany (F), Center for Int'l Agricultural Development (I), MOFTEC, IDAZ (P)	Sichuan (Yilong)	98-00	500-1,000	Every 10 days, repayments begin after 20 days
(3)	Canadian International Development Agency (F), Canadian Coop. Association (I), MOFTEC (P)	Xinjiang (Hetian, Pisan)	96-02	1,000	6-monthly installments
(4)	Developpement International Desjardins (F,I), RCC (I,P)	Hebei (Luanping)	1/98-12/00	1,000	Every 2 weeks, starting from 5th week
(5)	Development Organisation of Rural Sichuan (F,I), Poverty Alleviation Office (P)	Sichuan (Hanyuan)	97-	800-1,000	Two 6-month installments
(6)	Ford Foundation, Grameen Trust, Canada Fund (F), CASS (I)	Hebei, Henan, Shaanxi	4/94-	1,000	Loan period 1 yr., weekly
(7)	Ford Foundation, Asia Foundation, Oxfam HK (F), Rural Women Knowing All and Women's Federation (I)	Five provinces, eight counties	11/96-	500-2,000	Loan period 1 yr., monthly repayments from 3rd month
(8)	German Govt.-GTZ (F,I), Jiangxi Provincial Committee for Mountain River Lake Regional Development (I)	Jiangxi (Ganxian, Chongyi, Nankang)	4/96-2/99	500-2,000	Variable loan periods, one-time repayment
(9)	Int'l Fund for Ag. and Development (F), RCC (I), Ministries of Finance and Agriculture (P)	Sichuan, Anhui, Qinghai, Guizhou	96-04	100-3,000	Repayment period varies from 1 to 6 years
(10)	Int'l. Crane Foundation Trickle-Up Program (F), Caohai Nature Reserve, Guizhou Env. Prot. Bureau (I)	Guizhou (Weining)	6/95-	200-2,000	Repayment in full after three months
(11)	Jianhua Foundation (F,I), county and township governments (P)	Hebei, Inner Mongolia	2/99-	Most 300, 3,000-4,200	8 month loans repaid at end or 22 months, 2 installments
(12)	Oxfam (F,I), Yunnan Poverty Alleviation Office, Guizhou Agriculture Bureau, Guangxi Minority Affairs Committee (P)	Guizhou, Guangxi, Yunnan	92-00	150-1,000	Repayment period varies from 3 months to 3 yrs.
(13)	Salvation Army (F,I), Women's Federation (P,I)	Yunnan (Luxi)	3/98-2/00	800-2,500	Loan period 1 yr., monthly repayment
(14)	UNICEF (F), MOFTEC (P),	12 provinces (24 counties)	96-00	600-800	Loan period 3-14 months, monthly repayment (minimum 10 yuan)
(15)	Heifer Project International (F,I), Provincial Animal Husbandry Bureau (P)	Sichuan (16 counties), four other provinces	85-	200-1,000	Three installments within 3 yrs.
(16)	World Bank (F), Human Resources Development Centre for Western China, Leading Group for Economic Development in Poor Areas (I,P)	Sichuan (Langzhong), Shaanxi (Ankang)	1/97-9/02	1,000	Loan period 1 yr., every 10 days
(17)	World Food Program (F), Women's Federation (I,P), Ministry of Agriculture (P)	Ningxia (Guyuan)	8/95-8/00	1,000	Loan period 1 yr, repayment 10 yuan per month from 3rd month, rest at end of yr.

<sup>a</sup> Source: Chinabrief (1999).<sup>b</sup> MOFTEC = Ministry of Foreign Trade and Economic Cooperation, RCC = Rural Credit Cooperative.

tion costs, by using collateral substitutes that harness peer screening and monitoring effort via group-lending contracts, and by creating dynamic incentives by increasing loan sizes over time conditional on repayment histories. The rapid expansion and growing diversity of microfinance programs in China mirrors worldwide trends (Morduch, 1999b).<sup>1</sup> Recent research suggests that such programs have increased incomes and had other positive effects, such as gender empowerment, improved nutrition, lower fertility, higher educational attainment, and reduced consumption variability (Pitt, Khandker, McKernan, & Latif, 1999; Pitt & Khandker, 1998; Hulme & Mosley, 1996).<sup>2</sup>

Their appeal notwithstanding, the ability of microfinance programs to help the poor rests on a set of propositions that must be proven rather than assumed in each empirical context. First, if targeting is a goal, the programs must reach the poor. The poor must demand loans at the program interest rate, and so have projects with expected returns that exceed the cost of participation, and which cannot be financed more cheaply from existing formal and informal credit sources. Programs also can establish eligibility rules directly to exclude the rich, although program screening increases administrative costs. Second, whether the goal is to reach financial sustainability or maximize benefit-to-cost ratios, programs must achieve high rates of repayment by establishing key microfinance principles such as group liability, dynamic incentives, and regular repayments in their operations. Third, the loans must bring net benefits to the poor and not simply crowd out credit from other sources (impact). These benefits must exceed not only the program costs but also the potential benefits from competing projects.

In this paper, we examine these propositions in evaluating the early performance of microfinance programs in China. In addition to reviewing existing literature, we draw upon 1997 household survey data collected by the authors from several pilot microfinance program sites. Our goal is to provide an early systematic assessment of the operation and performance of Chinese microfinance programs. We pay particular attention to the appropriate design of microfinance programs given China's unique institutional and socioeconomic environment.

Distinguishing features of that environment include the following. First, the poor are

increasingly concentrated in remote, mountainous regions where income-generating activities are more agricultural and less diversified than in more densely populated areas (e.g., Bangladesh, Indonesia). Second, because of the strong administrative authority of local governments, village and township leaders play a prominent role in almost all development initiatives. This is true even for nongovernmental microfinance programs. China is the first country where the government itself has initiated a large-scale microfinance program. Bank-supervised programs in Indonesia (e.g., Bank Kredit Desa) have also utilized village governance structures. Third, in China land is collectively owned, preventing its use as collateral, and an underdeveloped legal system makes seizure of collateral difficult. Thus, the poor may have even greater difficulty gaining access to formal credit. Fourth, broader aspects of rural financial system reform constrain the prospects for microfinance. The state banking system steers resources to state-owned enterprises, leaving fewer funds for commercial use. Regulations prevent microfinance programs from registering as financial institutions (and taking deposits), and interest rates have been tightly controlled at below market-clearing levels.

We find reasons for both optimism and caution in assessing China's microfinance movement. While many farmers in poor areas do have access to at least some formal loans (including microfinance participants), expanded credit access can enable some of the poor to undertake projects not otherwise possible. The performance of the surveyed nongovernmental program provides a model for the potential benefits of microfinance programs. It charges a moderate interest rate attractive to some of the poor, has enjoyed excellent financial performance, achieving near-perfect repayment rates, has adhered to basic principles of peer screening and monitoring as well as dynamic incentives, and has increased rural incomes. The NGO pilot programs have, however, received strong advisory support from researchers at the Chinese Academy of Social Sciences, and it will be a challenge to replicate their exemplary performance on a large scale. In considering China's unique "characteristics," we find, first, that the remote location and focus on agricultural projects in poor areas, make meetings costly and frequent repayment difficult.<sup>3</sup> We advocate greater flexibility in loan contract terms, especially repayment schedules. Second,

we show that government-run microfinance has performed extremely poorly, casting doubt on the prospects for recent large-scale government microfinance initiatives, at the very least pointing out the need to make greater managerial incentives and independence a high priority. Finally, we warn that microfinance will help only some of the poor and is not a panacea.

The paper is organized as follows. Sections 2 and 3 describe the rural financial landscape and the government's growing shift toward microfinance models. Section 4 introduces the survey data from three Chinese microfinance program sites. The next three sections critically examine the empirical propositions that underpin successful microfinance programs—reaching the poor (targeting), financial and operational performance (sustainability), and program benefits (impact). The concluding section makes some overall assessments and considers the question of which design features are appropriate for China.

## 2. RURAL FINANCIAL INSTITUTIONS

In considering the appropriate role of microfinance in China, one must begin by describing the rural financial landscape. The main Chinese rural financial institutions providing loans to rural households are the Agricultural Bank of China (ABC, or *nongye yinhang*) and the Rural Credit Cooperatives (RCCs, or *xinyongshe*).<sup>4</sup> The ABC is one of China's four specialized banks, with the largest branch network among specialized banks, extending to most but not all townships. In 1996, the ABC accounted for 14% of lending volume in China.<sup>5</sup> Most lending was working capital loans for state commercial enterprises, 14% went to township and village enterprises (TVEs), and 16% to agriculture (including some households). The ABC currently administers China's subsidized poverty loan program. The RCCs are cooperatives in name only (not in governance). They are under the administrative supervision of the Peoples Bank of China and are the only financial institutions with branch outlets extending to most villages. In 1996, RCCs accounted for 10% of national lending, with 52% of RCC lending going to TVEs and 24% to agriculture (including households). RCCs are by far the most important source of formal credit in rural areas. Formal intermediation in rural areas has not increased

substantially during the reform period, however, and most rural loans continue to come from informal sources (Park, Brandt, & Giles, 1997).

A number of factors impede the ability of China's rural financial system to meet the financial service demands of rural households, especially the poor. First, rural financial institutions are part of a national banking system in which a large share of lending is driven by government policy objectives (one estimate is 42% of loans), mainly to support state-owned enterprises but also for grain procurement (Lardy, 1998). This leaves fewer funds for commercial loans. Second, because China's official loan interest rates are often set below market-clearing rates, excess credit demand leads to credit rationing. Local government officials, whose views often carry weight with banks, prefer to see rationed loans go to productive investments that will generate tax revenues (e.g., industrial enterprises), rather than to rural households. Third, even without rationed credit or local political pressure to lend to TVEs, financial institutions often exclude poor households because of high transaction costs, lack of collateral, and high risks (Carter, 1988). The lack of private land makes collateral-based lending especially difficult in China. Finally, banks and RCCs are restricted in the financial instruments (both savings and credit) that they can offer to households, preventing innovations that might profitably better meet the credit and savings needs of the poor.

Despite these problems, it would be a mistake to assume automatically that lack of credit access is a critical constraint facing the poor. Barriers to interbank lending in China, especially by RCCs, may have reduced capital outflows from poor areas (Park & Sehrt, 1999). This, combined with the lack of enterprise activity in poor areas, weak managerial incentives, and political rhetoric to support local agriculture, may lead RCCs to lend more to households in poor areas. A separate 1997 survey of households in six poor counties in different provinces (hereafter, *poverty survey*) found that nearly two-thirds of households either had an outstanding formal loan (mainly from RCCs) or felt they could get one if they wanted (the amount, however, is constrained).<sup>6</sup> On the one hand, the fact that RCCs lend to poor households suggests that a promising approach to microfinance may be to reform the policy environment for existing financial

institutions in China, but on the other hand, the lending itself reflects a highly regulated environment that makes innovative reform difficult and has led to mounting financial losses. As China's rural financial institutions become more commercialized, funds are increasingly likely to flow out of poor areas and into richer areas.

### 3. GOVERNMENT POVERTY LOANS AND MICROFINANCE

The Chinese government has tried to expand credit access of the rural poor through a targeted subsidized-loan program begun in 1986 that is the centerpiece of China's poverty alleviation program. In September 1996, the central government convened a national work conference on poverty in Beijing, attended by China's top central and provincial government leaders (including Jiang Zemin, Li Peng, and Zhu Rongji) to emphasize the importance of meeting the goals of the *baqi* (8-7) plan established in 1993 to eliminate the remaining 80 million rural poor by the year 2000 (within seven years). The government increased significantly national funding for the subsidized loan program, from 5.5 billion yuan in 1996 to 8.5 billion yuan in 1997. By 1998, the official poverty count had fallen to 42 million.

Unfortunately, China's subsidized loan program, like a litany of similar programs in other developing countries, has been heavily criticized for failing to reach the poor and for achieving low rates of repayment (Adams, Graham, & von Pischke, 1984). Subsidized rates of 2.88% (compared to official interest rates of 8-10%) have made the loans an attractive target for rich households, enterprises, and local leaders eager to support revenue-generating industrial projects. The loans are considered to have a welfare dimension that encourages delinquency. Average timely repayment rates have been only about 50%.

After initial skepticism toward microfinance models, the Chinese government has become an active proponent. Much of the initiative has come from local governments eager to meet poverty reduction goals of the *baqi* plan (perhaps leading to a short-term outlook) and dissatisfied with the performance of earlier programs. Mainly since 1996, government-financed programs, mainly based on the Grameen model, have begun in Fujian, Guangxi, Hebei, Henan, Liaoning, Sichuan, Shanxi,

Shaanxi, and Yunnan. Most programs use funds previously allocated to the subsidized loan program. The largest programs are in southern Shaanxi Province, which in its first year (1996) already reached over 50,000 households. According to the Office of the Leading Group for Economic Development in Poor Areas, by August 1998, 605 counties in 22 provinces were involved in government microfinance programs with total funding of 600 million yuan. While microfinance still reaches only a small share of China's rural population, it is relatively large in absolute terms in comparison to programs in other countries. The rapid expansion of government microfinance has no precedent internationally, and probably should be cause for as much concern as excitement. Local officials may have interests that compromise their ability to effectively implement lending programs. Officials have narrowly focused on the ability of microfinance to increase repayment rates without grasping basic principles. Interest rates remain highly subsidized.

### 4. SURVEY DATA

In December 1997, household surveys were conducted to evaluate three Chinese microfinance programs, all of which adopted the Grameen model and which are located in nationally designated poor counties. The programs have two distinguishing features. First, they differ in the degree of local government involvement—a nongovernmental organization (NGO) program, an NGO-government (or *mixed*) program, and a government program. Second, the NGO program is located on a flood plain while the other two are in mountainous regions. The three programs are the following.

#### (a) *NGO program*

Funding the Poor Cooperative (FPC) in Yucheng County, Henan Province. Begun in 1995, Yucheng FPC is the second oldest microfinance program in China and viewed by many as one of China's most successful programs. Yucheng is located on a flood plain, with a relatively high population density compared to other poor areas. Since its inception, the program has been supported by the active involvement of researchers from the Rural Development Institute (RDI) of the

Chinese Academy of Social Sciences (CASS). It is funded by international donors, including Grameen Bank.

(b) *Mixed program (NGO-government)*

Funding the Poor Cooperative (FPC) in Danfeng County, Shaanxi Province. The Danfeng program, begun in the fall of 1996, originally was managed in the same way as the Yucheng program. Unlike in Yucheng, however, where the FPC maintained clear independence from the local government, in Danfeng the FPC has had a strong government involvement. For instance, the manager of Danfeng FPC is also the director of the county poverty alleviation office (PAO), and some of the staff are cadres of the county PAO or other government departments. Most funds now come from government subsidized loan funds. Sampled townships, however, were those that first began microfinance lending, mainly using international funds.

(c) *Government program*

The program in Luonan County, Shaanxi Province, begun in late 1996, is completely government-run. It is part of the large government microfinance initiative in Shangluo Prefecture of Shaanxi Province, which was undertaken with the strong support of the provincial government. By the end of 1997, over 50,000 households were participating in these government programs.

Our sample consists of 449 households in 18 villages, eight townships, and three counties; 223 households are in NGO program villages, 163 in mixed program villages, and 63 in government program villages. Households in randomly selected villages with microfinance programs were divided into two groups—those participating and those not participating in the microfinance program. Borrowing groups in each village were randomly sampled, and all members in selected groups were surveyed. In addition, a random sample of one nonparticipant for every two participants was interviewed, so that our sample consists of 305 microfinance program members and 144 nonmembers. Ninety percent of participants in the NGO and mixed program are women, compared to only 32% in the government program.

## 5. REACHING THE POOR

(a) *Targeting versus sustainability*

Although microfinance is often sold as a win-win proposition for financial institutions and poor borrowers, the tradeoff is not necessarily so simple. The extent to which programs can both focus on the poor and achieve financial sustainability depends on how cost-effectively programs can be operated, and on the extent to which higher interest rates will deter poor borrowers. Evaluating the social desirability of the program requires selection of social weights on benefits to the poor and nonpoor. If the relative weight on the poor is high enough, programs may benefit from eligibility restrictions that exclude households above the poverty line. Grameen, for example has an eligibility restriction based on the size of landholdings.

If the poor have lower reservation interest rates than the rich, the interest rate may directly affect targeting goals. The extent to which the interest rate is a barrier to participation by the poor remains controversial (e.g., CGAP, 1996; Morduch, 1999b). Nonetheless, internationally, poverty-focused programs with a commitment to achieving financial sustainability cover only about 70% of full costs on average. Well-known programs exemplify the tradeoffs. Grameen Bank (Bangladesh) offers small loans at interest rates below those that are financially sustainable (20% versus 32%). Banco Solidario (Bolivia) and Bank Rakyat Indonesia (BRI) provide loans that tend to be larger (and less focused on the poor) at commercially viable rates (48% and 34%).<sup>7</sup> While subsidizing interest rates can improve targeting in theory, in practice charging interest rates that are *too* low makes the loans attractive to the rich, making it politically difficult to effectively implement eligibility rules.

(b) *Credit demand of the poor*

The NGO and mixed programs in China charge effective interest rates of 16%,<sup>8</sup> while the government program charges the official subsidized rate of 2.88%. The low rates reflect a commitment to targeting and a policy environment that discourages high interest rates. Evidence from different sources suggests that interest rates at these levels do not discourage most poor borrowers. When surveyed microfinance participants in the NGO and mixed programs were asked at what interest rate they

would opt out of the program, the average responses were 32% and 20% (Table 2). The 1997 poverty survey found that among those willing to take a new formal loan, the highest interest rate respondents were willing to pay for RCC loans was 35% on average for households in the richest quartile and 25% for households in the lowest quartile, suggesting that the poor do have lower "reservation" interest rates (Park & Wang, 1999).<sup>9</sup> Most groups in the Caohai (Guizhou) revolving fund program, in which 10-member groups set their own interest rates, charge 3% per month.<sup>10</sup> A 1996 national village survey reported an average informal interest rate of 2% per month in villages reporting non-zero interest loans, although most villages reported only zero-interest loans. These data suggest a conservative estimate of 20% annually for what many of the poor are willing to pay, a

rate above those currently charged by China's microfinance programs.

Microfinance programs also create other participation costs that may cause "effective" rates of interest to be much higher than the announced loan interest rate. The main cost is the time spent attending weekly meetings. The average time for traveling, waiting, and meeting are 19, 15, and 68 min, or a total of 102 min (Table 3). In the mixed and government programs, which are located in mountainous terrain, about 8% of households must walk for more than an hour to get to center meetings. Total time is shortest for the NGO program (about 90 min), and longer for the mixed and government programs (120 min). The average distance from home to meeting place is 0.5 km on average, with the distances highest in the mixed program (0.7 km) and lowest in the NGO program (0.3 km). Assuming an oppor-

Table 2. *Reaching the poor*

	Total	NGO	Mixed	Government
1. If not a member, did you apply? (% Y)	11	8	15	18
2. If you did not apply, why not? (%)				
(1) Feel unqualified for the program	12	8	21	0
(2) Difficulty finding other group members	3	5	16	0
(3) No demand for loan	57	68	26	50
(4) Dislike weekly repayment	15	8	0	0
(5) Dislike weekly meetings	8	10	55	0
(6) Other	4.5	1	0	50
3. What is the highest monthly interest rate you are willing to pay?	2.34	2.72	1.68	1.78
4. Percentage of households with outstanding loans other than microfinance loans				
Members	52	21	75	96
Nonmembers	55	35	74	81
5. Loans by source (%)				
(1) Agricultural bank				
Members	7.5	8.7	6.9	7.8
Nonmembers	0.8	2.1	0	0
(2) Rural credit cooperative				
Members	55.3	48.3	61.6	46.3
Nonmembers	46.1	15.8	57.3	80.4
(3) Other				
Members	37.2	43	31.5	0
Nonmembers	53.1	82.1	42.7	0
6. If there was no microfinance program, would you still undertake the project? (% Y)	57	47	69	75
7. If yes, would the scale be same? (% Y)	40	38	39	50
8. If yes, where would the funds come from?				
(1) Saving	14	16	14	7
(2) Sell products or assets	19	21	19	13
(3) Borrow from informal sources	28	37	18	27
(4) Borrow from bank or RCC	14	4	19	33
(5) Apply for special poverty funds	9	15	5	0
(6) Both sell products and borrow	9	2	14	13
(7) Other	7	5	10	7

Table 3. *Time costs of participation*

	Total	NGO	Mixed	Government
1. Round trip time from home to meeting place				
Mean (min)	19	13	27	21
Distribution (%)				
(1) 0 min	4.3	0.6	9.4	3.8
(2) 1–10 min	50.2	65.8	28.3	50.0
(3) 11–30 min	34.2	28.9	40.6	38.5
(4) 31–60 min	7.8	4.7	14.2	0.0
(5) 61–120 min	3.6	0.0	7.5	7.7
2. Distance from home to meeting place (m)	490	288	790	423
3. Waiting time (min)	15	9	22	17
4. Meeting time (min)	68	65	70	82
5. What do you feel is the appropriate meeting time? (min)	64	64	61	72
6. Furthest distance between the homes of any two members in your group (m)	410	263	657	395

tunity cost of one yuan per hour, for a loan size of 1000 yuan, the cost of 90 min to 2 h per week is 75–100 yuan for a 50-week loan cycle, equivalent to an increase in the effective interest rate of 15–20%.<sup>11</sup> Thus, weekly center meetings can substantially increase the costs of borrowing, and this does not count additional time spent with small groups or monitoring group members. While the opportunity cost of time is higher for the rich, meetings may also drive away the poor, who have lower reservation interest rates. High dropout rates (described below) partly may be due to initial underestimation of participation costs.

It is possible that many poor households simply do not want loans. Most eligible nonparticipants reported no demand for loans or a dislike of weekly meetings or repayments (Table 2). The 1997 poverty survey found that 60% of households had no demand for a new formal loan at the prevailing interest rate. Only 20% of households (32% of households in the poorest quartile) reported that they desired a new formal loan but felt incapable of obtaining one. Nonetheless, even those with access to loans may be constrained in the *amount* of available loans.

Conditional on eligibility, we estimate probit models of participation for each program (Table 4). It is difficult to generalize about participants in the NGO program; most coefficients are imprecisely estimated so it is not obvious whether richer or poorer households are more likely participants. In the mixed program, more consumer durables (and to a lesser extent housing and high quality land) predict nonparticipation. Fixed assets and livestock, on the other hand, increase the like-

lihood of participation. Thus, participants tend to be poorer households engaged in activities other than cropping. In the government program, participants are generally the rich and those with noncropping activities. These results are consistent with the asset per capita distributions of members and nonmembers (Figure 1). They are also consistent with the interpretation that interest rates themselves do not deter poor borrowers; in mountainous areas (i.e., mixed program) costly meetings may deter the rich; but in the government program where interest rates are very low, meetings are infrequent, and village leaders control groups, the wealthy desire and obtain microfinance loans.

One must take seriously the concern that efforts to offer new lines of credit will simply substitute for other credit sources and have small marginal effects. High repayment rates are not the same as high impact. Surveys of the microfinance programs found that over 50% of households in program areas had outstanding loans from other sources, and that this percentage was similar for both members and nonmembers. The most common source by amount was Rural Credit Cooperatives (55% for members, 46% for nonmembers), followed by informal sources. Thus it does not appear that microfinance participants lack access to other credit sources, whether formal or informal. Total borrowing by microfinance members is greater, suggesting higher credit demand, but it is not clear whether microfinance lending relieves credit constraints at the margin or simply crowds out borrowing from other sources. Support for the former rather than the latter comes from the finding that only one-fourth of microfinance participants in the



Table 4. *Determinants of participation and eligibility (probit estimation results)<sup>a</sup>*

	NGO		Mixed		Government	
	Marginal	S.E.	Marginal	S.E.	Marginal	S.E.
<i>Participation</i>						
Consumer durables	0.0446	0.0450	-0.137	0.0600	0.119	0.0756
House	-0.0101	0.0134	-0.0273	0.0214	0.0934	0.0624
Fixed assets	0.00485	0.0187	0.0207	0.0134	-0.0101	0.0274
Livestock	-0.000774	0.0191	0.0472	0.0161	0.0255	0.0152
Cultivated land	-0.0583	0.0838	0.0270	0.0820	-0.177	0.139
High quality land	0.00456	0.0121	-0.0506	0.0196	-0.0920	0.0343
Labor	0.0765	0.0404	0.0180	0.0465	-0.0356	0.0698
Education (of labor)	-0.00991	0.0146	0.0259	0.0185	0.0227	0.0263
<i>N</i>	201		147		54	
<i>Eligibility</i>						
Consumer durables	0.00906	0.00751	-0.0390	0.0249		
House	-0.00922	0.00610	0.00856	0.00717		
Fixed assets	-0.000670	0.00223	-0.00794	0.00781		
Livestock	-0.000700	0.00202	0.00831	0.00758		
Cultivated land	0.0230	0.0185	0.00376	0.0412		
High quality land	-0.00350	0.00276	-0.00127	0.00951		
Labor	-0.00504	0.00530	0.0361	0.0278		
Education (of labor)	-0.00159	0.00205	0.00852	0.00894		
<i>N</i>	211		160			

<sup>a</sup> Units: all asset values in log(yuan), land in mu (0.53 ha), education in years, labor is number of adults of working age. Participation probits include village dummy variables.

surveyed CASS programs said they would have undertaken projects at the same scale absent microfinance loans (43% would not have undertaken the project at all), and even those individuals could still benefit in other ways from increased credit. Park and Wang (1999) also find that greater credit access positively affects incomes earned by poor households. We believe microfinance remains a promising approach for helping *some* but not all of China's poor.

### (c) *Eligibility rules*

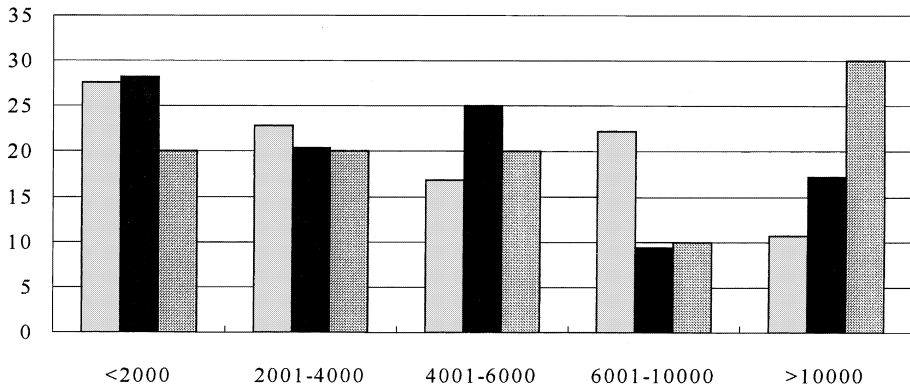
One way to focus resources on the poor is directly to exclude richer households on the basis of eligibility requirements. As discussed earlier, in subsidized programs targeted at the poor, screening applicants may be an important determinant of project success. Grameen Bank, for instance, requires that members have landholdings of less than one-half acre, although in practice 20–30% of borrowers exceed the standard (Morduch, 1999a). In China, land size is less ideal as an eligibility criteria because it is distributed relatively equitably within villages (Burgess, 1998) and does not strongly predict income differences (Benjamin, Brandt, Glewwe, & Li, 1998). Instead, commonly used indicators are the quality of housing and other visible

assets such as consumer durables (Chinese programs generally do not focus on a single indicator).

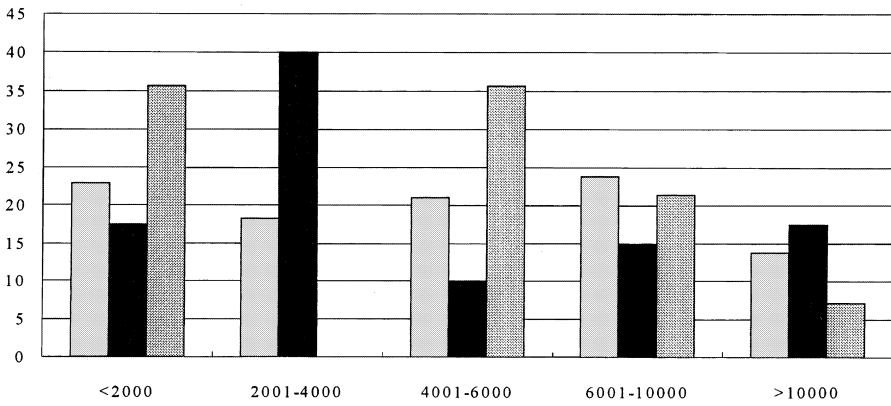
We evaluate the extent to which Chinese programs have successfully excluded the rich. We identify ineligible households as those whose applications were turned down or who did not apply because they did not think they were eligible. Such households accounted for 14% of surveyed nonmembers in the NGO program, 26% in the mixed program, and 6% (only one household) in the government program (25 of 144 surveyed nonmembers in total). The distribution of household asset value per capita for eligible and ineligible households reveal that only the NGO program successfully excludes the richest households. The program also excludes some households of lower wealth levels. In the mixed program, the wealth distributions of eligible and ineligible members are not very different. The government program excludes only one household in our sample, which is of average wealth.

We estimate a probit model of the determinants of eligibility for the NGO and mixed programs. In the NGO program, eligibility is negatively associated with most economic indicators—housing, fixed assets, livestock, high quality land, labor, and education (Table

NGO



Mixed



Government

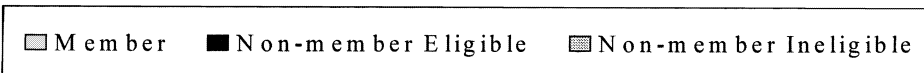
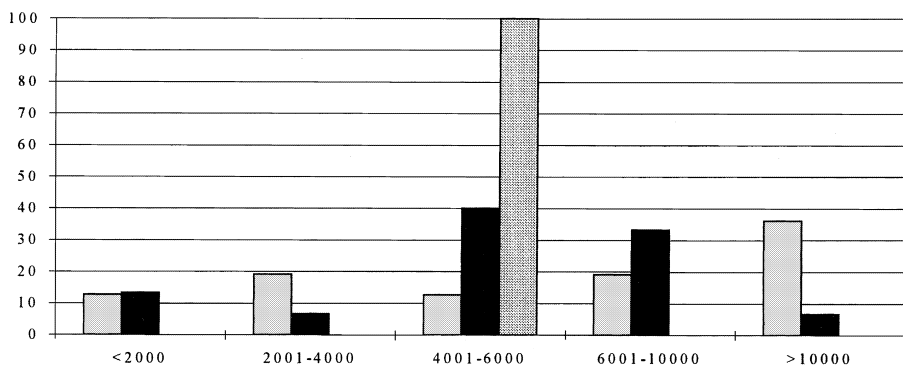


Figure 1. Household asset value distribution before program.

4). But, only the coefficient on housing has high statistical significance (high-quality land is somewhat significant), suggesting that housing is being used as an eligibility criterion. The data show that the average housing value of the ineligible is almost twice that of the eligible (although still with considerable variation). The coefficients on consumer durables and cultivated land, on the other hand, are positive. For the mixed program, the signs are mixed and not precisely estimated, leaving some doubt about the eligibility criteria being used.

If Chinese programs desire to exclude the rich, what are the most appropriate criteria? Simple indicators are desirable for their transparency and ease of implementation. Using data from the 1997 poverty survey, we estimate double logarithmic regressions of income per capita on each of four key asset categories measured at the start of the year (livestock, consumer durables, housing, and fixed productive capital).<sup>12</sup> We find only small differences in their ability to explain income variation (measured by  $R^2$ ). An overall asset measure (the sum of the four) performs best but much of the income variation remains unexplained.<sup>13</sup> It also outperforms single indicators such as the amount of cultivated land, the labor dependency ratio, whether a household member is engaged in off-farm employment, the education of the household head, having a brick house, and having a color TV. The asset category which best predicts income differs sometimes by region, however, and likely depends on the part of the distribution being excluded (e.g., very rich, moderately rich, etc.). We thus resist recommending specific indicators. In consideration of the administrative costs associated with program screening, the imprecision of wealth indicators, and self-selection associated with high costs of weekly meetings for the rich (for which there is some evidence in the mixed program), programs intent on targeting may be best advised to use simple wealth indicators (such as housing) to exclude only the very rich rather than attempt ambitious screening procedures.

#### (d) *Targeting outcomes*

The descriptive and estimation results for participation and eligibility suggest the following conclusions about within-village targeting in the three programs. In the NGO program, the very rich are effectively excluded, but among eligible households rich and poor are

equally likely to participate. In the mixed program, eligibility restrictions do not seem to improve targeting of the poor, but the rich are likely to self-select out of the program. In the government program, the rich are both eligible and more likely to participate. This contrasting result on the willingness of the rich to participate is not surprising considering the higher rents associated with lower interest rates and infrequent meetings that reduce participation costs.

## 6. FINANCIAL AND OPERATIONAL PERFORMANCE

In evaluating microfinance programs, benefits to targeted and untargeted groups must be weighed against program costs, which depend on financial performance. Microfinance programs are encouraged to strive for financial sustainability; if programs pay for themselves, they can expand coverage over time to reach large numbers of households. Important factors affecting financial performance are the interest rate, the repayment rate, and overall operational efficiency. The interest rate is set by the program while repayment often depends on how effectively programs establish basic microfinance principles. For Grameen-style programs, the two most important principles are peer selection and monitoring, and dynamic incentives linking new, larger loans to past repayment. In this section, we examine overall financial performance, repayment, peer selection and monitoring, and dynamic incentives.

### (a) *Operational and financial sustainability*

Recent external audits conducted with the assistance of international experts show that the NGO program and other CASS experiments in Henan and Hebei have not only reached operational sustainability (i.e., they are covering operating costs inclusive of subsidies), but also are approaching or have achieved financial self-sufficiency (where costs, especially capital, are measured at their market value).<sup>14</sup> By the end of 1998, the CASS Funding the Poor Cooperatives in Yucheng (Henan), Nanzhao (Henan), and Yixian (Hebei) were easily covering operating costs, and had financial self-sufficiency rates of 86%, 102%, and 97% (Table 5). Through October, 1999, the rate for Yucheng went down to 81% while that of Nanzhao increased to 149. The financial self-

Table 5. *Financial performance and costs of NGO microfinance programs<sup>a</sup>*

	Yucheng	Nanzhao	Yixian
Operational self-sufficiency (%)			
1997	107	128	141
1998	156	152	174
1999 (January–October)	144	225	
Financial self-sufficiency (%)			
1997	42	45	51
1998	102	97	86
1999 (January–October)	81	149	
Program cost shares (January–October, 1999)			
A. Financial cost	29.5	32.5	
(1) Interest	23.2	23.1	
(2) Loan loss provision	6.3	9.4	
B. Operating costs	70.5	67.5	
(1) Salary and bond	42.7	46.9	
(2) Other personnel expenses	23.8	17.5	
(3) Depreciation	2.1	3.0	
(4) Other	1.9	0.1	

<sup>a</sup>All programs are administered by researchers at the Chinese Academy of Social Sciences. Yucheng and Nanzhao are in Henan Province, Yixian is in Hebei Province.

sufficiency rates are revenues as a share of costs, where costs are valued at their market price (exclusive of subsidies from low-interest loans or grants or from wage payments and other contributions of local governments). The CASS projects are all financed by grants (Ford Foundation) and low interest loans (1.2% from Grameen Bank and 2.88% from Chinese government), which accounts for the large gaps between operational and financial self-sufficiency. Thus, the share of financial costs in total costs is unusually low (Table 5).

It is surprising that financial self-sufficiency can be achieved by programs that charge such a modest interest rate. If replicable, it raises the prospect that Chinese programs can both become financially sustainable and reach the poor. It is especially encouraging that the surveyed CASS programs are succeeding not just in flood plains (Yucheng, the surveyed NGO program) but also in hilly and mountainous regions (Nanzhao and Yixian) which are more typical of China's poor areas (although assessments were not done for programs located in the western part of the country).

How has China been able to charge interest rates which would be financially unsustainable in many other parts of the world? In addition to access to low-interest donor funds, the main reason is low operating costs. In poor areas, it is relatively easy to find skilled local staff among government staff or retired workers,

because fiscal crises are leading many county governments to downsize staffs and accumulate wage and pension arrears that make many eager to find new employment. Also, poor counties are often in remote areas with few enterprises, so that land and office rents are not bid up as in urban and peri-urban areas.

There are, however, reasons to be cautious about overly rosy financial assessments. First, the "commercial" interest rate used to value capital is 7%, the official rate charged by state banks, but this rate is administratively set and may underestimate the true opportunity cost of capital. 1997–99 was a period of unusually low inflation in China, which kept nominal interest rates low. Second, the program costs in Table 5 do not include the extensive advisory support provided to pilot projects by Chinese researchers at CASS and other donor-funded consultants who have made frequent visits. CASS staff have traveled worldwide to learn "best practices" and it may be unreasonable to expect that other programs can achieve such high repayment rates absent similar support. To be weighed against these caveats is the strong likelihood that the CASS programs will become more cost-efficient over time as they achieve scale economies and benefit from continued learning.

#### (b) *Repayment*

Defaults on loans are close to zero in the NGO and mixed programs. There is more

variation in the timeliness of weekly repayments. In the NGO program, 95.3% of participants have never had a late repayment while only 67.5% and 24.2% can make the same claim in the mixed and government programs (Table 6). Overall, the percentage of weekly repayments not repaid on time is only 2% in the NGO program, 5.3% in the mixed program, and 36% in the government program (Table 6). High repayment rates, especially in the NGO program, support the idea that the poor are creditworthy, and suggests that projects tend to be successful. The extremely low repayment rate in the government program, on the other hand, casts doubt on government programs. Wu (1999) analyzes the determinants of loan

repayment and finds that the following factors increase repayment: being female, having more or better quality land, not having a health shock, less geographic distance among group members, and expecting a new loan if the current loan is repaid (dynamic incentive). The effect of distance may reflect the inconvenience and high cost of meeting attendance. Interestingly, the quality of group relations among members, measured by previous gifts and loans, does not significantly affect repayment rates.

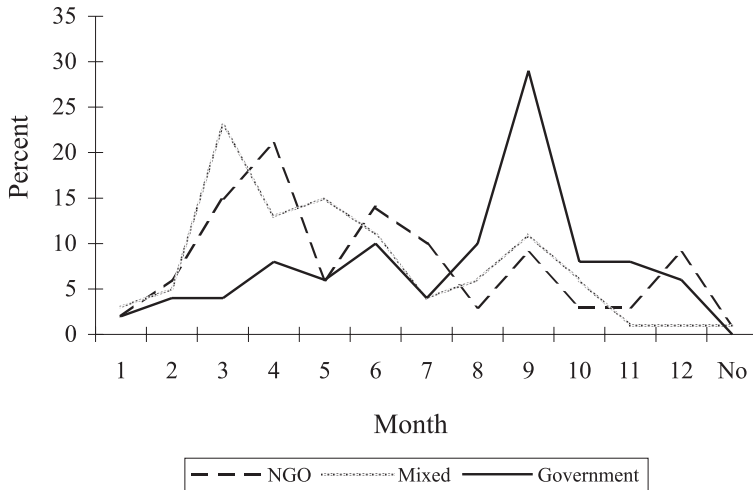
To understand repayment performance, it is helpful to look at the projects for which the loans are being used (Table 7). Raising livestock is the most popular use of microfinance

Table 6. *Repayment*

	Total	NGO	Mixed	Government
1. The percentage of household that have had at least one late repayment (%)	22.3	4.7	32.5	75.8
2. The percentage of weekly repayments not repaid on time	5.8	2	5.3	36
3. To make repayments,				
(1) Borrowed from outside the group				
Times	3.2	4.6	1.7	2.2
Amount (yuan)	78	102	73	60
(2) Borrow from group member				
Times	0.4	0.3	0.6	0.1
Amount (yuan)	62	52	70	70
(3) Borrow from group fund				
Times	0.9	2	0.1	0
Amount (yuan)	166	205	88	0
4. Percentage of households that did not meet all repayments due in the past month	11	0	6	55
5. Difficulty in making repayments in past month (%)				
(1) Very difficult	16	3	25	43
(2) A little difficult	17	9	23	34
(3) Not difficult	67	88	52	23
6. During the most difficult month, what kind of expenditures were reduced? (% Y)				
(1) Food	45	49	50	25
(2) Daily	21	9	28	38
(3) Clothing	3	6	1	0
(4) Fertilizer and pesticide	6	9	1	10
(5) Gift	1	1	0	0
(6) All of above	24	26	20	28
7. During the most difficult month, did family members work more? (% Y)	69	64	66	86
8. Sources of loan repayment in past month (%)				
(1) Sell agriculture and livestock products	32.7	37	23.2	31
(2) Sell durable goods or production material	0.6	1.0	0.0	0.0
(3) Wage income	7.8	5.6	12.6	9.2
(4) Self-employment income	40.0	46.6	32.7	21.0
(5) Cash in hand	4.3	2.9	9.5	0.0
(6) Borrow	6.8	0.0	8.5	38.8
(7) Other	7.8	6.9	13.5	0.0

Table 7. *Project selection (%)*

	Total	NGO	Mixed	Gov.
1. Livestock	44	38	55	41
2. Cropping	13	9	8	39
3. Processing	6	7	5	3
4. Manufacturing	7	10	7	0
5. Business	22	27	20	5
6. Services	4	6	2	0
7. Other	4	3	3	12

Figure 2. *Most difficult month to pay repayment installment.*

loans in all three programs (45% of loans). This is unusual when compared to microfinance programs in other countries, where self-employment in nonagricultural activities tends to dominate. Apart from livestock, there are large differences in the projects chosen across programs. In the government program, cropping is also popular, and there is virtually no self-employment activity. In the NGO and mixed programs, nonagricultural businesses (processing, manufacturing, other businesses, services) are more popular, accounting for about half of all projects. Missed repayments are less common when the borrower is engaged in manufacturing activity (statistically significant) and more common among those undertaking agricultural projects, which are expected to have poorer cash flow.

At the time of the survey (December 1997), 48% and 77% of households in the mixed and government programs reported at least a little difficulty in making payments in the most recent month (versus only 12% in the NGO

program). Figure 2 shows the months of the year that households report being the most difficult to make repayment installments. In general, the most difficult times are the months before the fall and summer harvests, although the pattern differs somewhat by county. During the most difficult month, many respondents (45%) report that they reduce food expenditures and increase labor supply (69%), implying cash flow difficulties in meeting repayment installments and possible negative welfare effects of "forced" repayments (Table 6). Most members have borrowed funds to meet weekly repayments at least once, with the frequency highest for the NGO program. For repayments in the most recent month, NGO program members obtain most funds from self-employment income (47%), more than in the mixed program (33%) and government program (21%). Only 8% of funds come from wage income, while income from agricultural activities is a relatively large share (over 30%). Taken together, this description of project choices and

repayment suggests that some farmers in mountainous areas with nondiversified income may face difficulty in maintaining adequate cash flow to meet weekly repayment installments.

(c) *Peer selection and monitoring*

Group lending exploits local information to improve the screening of borrowers and enforce loan repayment. According to the Grameen model, individuals (mainly women) form groups of five and select a leader. Two members

receive a loan, upon successful repayment two more members borrow, and finally the last person borrows. Members are liable for loan repayments by other members, and no group members can receive new loans until all group members repay their loans. Five to eight groups form a center, which holds weekly meetings at which households repay their loan installments in the presence of the others, discuss problems, and receive extension advice or other "training." In China, members are also required to save one yuan per week and to contribute 50 yuan to a group fund at the

Table 8. *Group formation and performance*

	Total	NGO	Mixed	Government
1. How did members hear about the program? (%)				
(1) Villagers	12	18	5	5
(2) Township and village leaders	38	34	25	88
(3) Program field staff	46	41	69	5
(4) Other	4	7	1	2
2. Why did you form a group with these persons? (%)				
(1) They have good reputation	5	5	8	0
(2) Get along well	47	62	41	5
(3) Same economic activity	3	6	0	0
(4) Neighbor	20	18	26	17
(5) Arranged by village leader or other people	21	3	24	78
(6) We formed by ourselves	3	5	1	0
(7) Do not know	0	1	0	0
3. How was the group leader selected? (%)				
(1) Elected by all members	85	95	90	44
(2) Appointed by township or village leaders	8	1	1	51
(3) Appointed by field staff	3	1	6	2
(4) Other	4	3	4	2
4. How is the center leader selected? (%)				
(1) Elected by all members	78	85	78	41
(2) Elected by group leaders	7	7	8	4
(3) Appointed by field staff	5	4	7	0
(4) Appointed by township or village leaders	7	1	4	44
(5) Position taken by township/village leader	1	1		4
(6) Other	3	2	3	7
5. Does your group meet regularly? (% Y)	74	89	67	42
6. A center meeting is held every how many weeks? (%)				
One week	48	47	52	33
Two weeks	32	45	20	20
Four weeks	15	5	18	20
More than four weeks	5	3	20	27
7. Are members' projects approved by the group? (% Y) (group leader response)	45	60	40	1
8. Are you responsible for repaying loans of other members who do not repay on time? (% Y)	81	94	77	44
9. What is the main function of the group fund? (%)				
(1) Pay installments when members have hard time	71	82	74	25
(2) Other	29	18	26	75
10. In the past 10 meetings, how many times were you absent?	1.6	1.6	1.7	2.6
11. Are all installment repayments and loan disbursements processed in the center meetings? (% Y)	86	91	86	46

Table 9. *Center meeting content (%)*

	Total	NGO	Mixed	Government
1. Collect installment				
Regularly	97	99	99	80
Occasionally	1	1	1	0
Never	2	0	0	20
2. Monitor loan use				
Regularly	81	89	74	64
Occasionally	18	11	26	24
Never	1	0	0	12
3. Discuss program selection				
Regularly	55	77	31	16
Occasionally	39	22	60	60
Never	6	1	9	24
4. Deal with late repayment				
Regularly	33	41	20	36
Occasionally	42	34	54	44
Never	25	25	26	20
5. Training				
Regularly	52	76	28	12
Occasionally	42	23	61	76
Never	6	1	11	12
6. Provide and exchange information				
Regularly	76	89	66	40
Occasionally	21	11	32	40
Never	3	0	2	20

outset, which can finance temporary loans to members and is returned to the member after all loans are repayed.

Across almost all indicators of group performance, there is a clear rank ordering of success of the three programs. The NGO program performs best, followed by the mixed program, while the government program performs poorly (Table 8). In the NGO program, households report that leaders or other non-group members rarely arrange groups (3%); group and center leaders are elected (95% and 85%); groups meet regularly (89%) typically every week or two, and approve projects (60%); and members feel liable for repayment of loans by other group members (94%) and see the group fund as a source of cash to avoid delinquency (82%). In the government program, most participants report that township or village officials inform villagers about the program, decide who will be in each group, and appoint group and center leaders (Table 8). The groups do not meet regularly and do not approve projects. Most group members do not feel responsible for repaying the loans of other members, and do not view the group fund as a source of funds to avoid delinquent payments. Attendance at center meetings is poorer than in the other programs, and repayments are often

made outside of the center meetings. The mixed program's experience is somewhere between the NGO and government programs, in most cases closer to the NGO program.

There are also significant differences across programs in the content of center meetings. Most members of the NGO program report that the content of center meetings regularly includes collection of repayments, monitoring of loan use, discussion of program selection, training activity, and exchange of information (Table 9). The percentage of members in the mixed and government programs reporting regular inclusion of each of these issues is consistently lower. In particular, center meetings in the mixed and government programs do not regularly discuss project selection or provide training activities.

#### (d) *Dynamic incentives*

A key incentive for repayment in microfinance programs is the promise of a new, additional loan if the previous loan is successfully repaid. Only the NGO program, however, has been successful in convincing farmers of this commitment. The percentage of households who feel they will "definitely" get another loan upon successful repayment is 95% in the NGO



program, 47% in the mixed program, and 23% in the government programs (Table 10). In the latter two programs, both of which had completed at least one loan cycle, members were asked if they had, in fact, received a new loan if they successfully repaid earlier loans. Sixty-one percent in the NGO program and only 28% in the mixed program received a new loan. The low rate in the mixed program was not due, however, primarily to lack of funds, but rather to disenchantment with the program. Of those without new loans, 20% reported a general dislike of the program, another 20% complained about an inability to repay installments, and 18% said they had no appropriate project. Since funds are sufficient for providing new loans in the NGO program, most of the 40% of households not getting new loans probably also left voluntarily.<sup>15</sup> We find that dropouts are more likely to be engaged in agricultural projects and to be wealthier.<sup>16</sup> These exit rates suggest the need to scrutinize the design of pilot programs. Since the programs are young, high dropout rates suggest that households may have underestimated the costs of participation.

7. IMPACT

To examine the impact of microfinance on household welfare, we tabulate subjective assessments by participants and present econometric estimates of the income effects of

program participation and eligibility within program villages. Because the programs are relatively young, it may be difficult to quantify program benefits. At the time of the survey, the NGO program had been operating for less than three years, the mixed program 15 months, and the government program one year.

Participants were asked if they felt that participation in the microfinance program had increased household consumption. The percentage of households reporting increases in consumption was 97% in the NGO program, 71% in the mixed program, and 63% in the government program. In the NGO program, of the 97% reporting increases, 54% reported that consumption had increased a lot while the rest reported that consumption had increased a little. In the mixed program, 15% reported large consumption increases, and in the government program only 6%. We expect positive bias in respondent's subjective assessments, so the reporting of "large" increases is probably more telling than "little" increases. Part of the differences in program impact may be due to the longer life of the NGO program.

An estimating equation for measuring impact is the following:

$$Y_{iv} = \alpha_p P_{iv} + \beta X_{iv} + \sum_v \delta_v D_v + \varepsilon_{iv}. \tag{1}$$

Here,  $Y_{iv}$  is the log of income of household  $i$  in village  $v$ ,  $P_{iv}$  a participation dummy,  $X_{iv}$  a vector of household characteristics,  $D_v$  are village dummies, and  $\varepsilon_{iv}$  is an error term which

Table 10. *Dynamic incentives*

	Total	NGO	Mixed	Government
1. If you pay all installments on time do you think you can get another loan? (%)				
(1) Yes, definitely	68	95	47	23
(2) Probably	27	4	46	60
(3) Probably not	1	1	3	0
(4) Do not know	4	0	4	18
2. If you have successfully repaid a loan, did you get another loan, in fact? (%)				
(1) Yes	45	61	28	
(2) No	54	37	72	
3. If you did not get another loan, why? (%)				
(1) No loans are provided now.			12.5	
(2) Other member didn't repay on time			17.5	
(3) No proper program			17.5	
(4) Cannot repay installments			20	
(5) Cannot form a group			10	
(6) Do not like this program			20	
(7) Other			2.5	

includes measurement error and unobserved household characteristics. Evaluation is complicated by the selection problem. Participants may have higher or lower unobserved ability (for example, members may have more initiative, but they also might have a lower opportunity cost of time), so that simply comparing incomes of members and nonmembers within villages after controlling for observable household characteristics may produce biased estimates. Ordinary Least Squares (OLS) estimates of (1) show positive but imprecisely estimated effects for all three programs.

The identification problem can be solved if suitable instruments can be found which affect participation but are not correlated with income. Implicitly this approach assumes a linear probability model for participation, with the advantage that identification does not rely on distributional assumptions. One possible set of instruments are consumer durables and housing (or *durables*) at the beginning of the program, which should not affect production (and income) since durables are not productive assets but may correlate with household wealth, and so with credit demand. Wealth might also be correlated with other unobservables that affect income, such as social networks or ability. A second identification strategy focuses on discontinuities in participation due to eligibility criteria (Pitt & Khandker, 1998; Morduch, 1999a).<sup>17</sup> Unfortunately, there are no clear eligibility rules in the Chinese programs. Unlike other surveys, however, our survey directly asks nonmembers whether they were eligible. This information can be used to construct valid instruments if eligibility decisions follow rules that restrict participation in ways unrelated to income effects (e.g., in a discontinuous way or based on factors unrelated to unobserved determinants of income).<sup>18</sup> An additional concern is that we have very few observations on ineligible households in each program (10 and 14), which are only 5% and 10% of the samples for the NGO and mixed programs (the government program does not identify eligible households).

We implement both instrumenting strategies, recognizing their limitations. First-stage *F*-statistics and overidentification tests provide some information on the suitability of the instruments, but the results should be viewed cautiously. We run separate regressions for each program, since the nature of selection, as well as the determinants of income may differ

by program. Durables as instruments perform poorly. They weakly explain participation in the NGO and government programs (possibly because factors affect eligibility and participation in opposite ways). In all three programs, the IVs fail the overidentification test at the 10% level (the mixed program fails at the 5% level). Resulting estimates are too high or low to be plausible. The positive bias of OLS in the mixed program and the negative bias in the government program make sense if durables are associated with positive unobservables since those with more durables are less likely to participate in the mixed program and more likely to participate in the government program. The eligibility restriction performs much better. Not surprisingly, it strongly predicts participation, and the appropriate instruments (eligibility interacted with participation variables) pass the overidentification tests for both NGO and mixed programs. Compared to OLS, the IV estimation results suggest much greater benefits of participation in the NGO program, increasing the estimated coefficient from 0.149 to 0.541, but the precision of the estimate remains moderate. The mixed program estimates change little, but the already large standard errors increase substantially.

We also compare incomes in program versus nonprogram villages, controlling for household characteristics. We combine household data from our surveys in 10 other villages in the same county in Henan (for the NGO program) and six other villages in the same prefecture in southern Shaanxi (for the mixed and government programs), which were undertaken at the same time as the microfinance surveys. This allows estimation of the following equation:

$$Y_{iv} = \alpha_{PV}PV_v + \beta X_{iv} + \varepsilon_{iv}, \quad (2)$$

where  $PV_v$  is a dummy variable for whether the village has the microfinance program. We do not, however, have village-level variables to control for village differences, so our program dummy captures the average effects of the program as well as village differences affecting program placement. In all three cases, incomes are lower in program villages, most likely reflecting nonrandom program placement in poorer villages (Table 11).<sup>19</sup> This provides some evidence of village-level targeting (or negative program effects).

Table 11. *Program impact*

	NGO	Mixed	Government
Participation effect ( $\alpha_P$ )			
OLS	0.149 (0.106)	0.190 (0.208)	0.212 (0.406)
IV-durables	1.39 (1.58)	-2.19 (1.29)	4.43 (3.78)
First-stage <i>F</i> -test ( <i>p</i> -value)	0.339	0.0144	0.225
Overidentification test ( <i>p</i> -value)	0.060	0.024	0.068
IV-eligibility	0.541 (0.360)	0.198 (0.487)	
First-stage <i>F</i> -test ( <i>p</i> -value)	0.0011	0.000	
Overidentification test ( <i>p</i> -value)	0.307	0.358	
Program village effect ( $\alpha_{PV}$ )	-0.0938 (0.0973)	-0.131 (0.187)	-0.134 (0.214)
Eligibility-program effect ( $\alpha_{EPV}$ )	0.394 (0.254)	0.144 (0.317)	

We utilize the eligibility criteria and data from control villages to estimate average program effects by regressing log income on household characteristics, village dummy variables, and a program-eligibility interaction term which is equal to one if the household is eligible and is in a program village ( $E_{iv}$  is an eligibility dummy variable)<sup>20</sup>:

$$Y_{iv} = \alpha_{EPV}E_{iv}PV_v + \beta X_{iv} + \sum_v \delta_v D_v + \varepsilon_{iv}. \quad (3)$$

This specification identifies the effect of eligibility controlling for village unobservables and household characteristics, and avoids selection bias related to participation decisions (but not from eligibility decisions). Consistent with the participation effects, we find a positive program effect of 0.394 for the NGO program and a smaller and imprecisely estimated effect of 0.144 for the mixed program (Table 11).

Finally, we consider whether microfinance programs improve consumption-smoothing ability, as found by Morduch (1999a) in Bangladesh. Credit access can help increase the ability of households to smooth consumption when incomes are variable. But, regular repayments can be painful in periods of unusually low income, exacerbating rather than ameliorating the negative effects of low income realizations. Our data do not permit direct tests of consumption smoothing, but survey responses and anecdotal accounts suggest some hardship in meeting repayment schedules.

## 8. MICROFINANCE WITH CHINESE CHARACTERISTICS

Microfinance is a movement founded on the promise of institutional innovation. Most but not all programs (including the earliest ones) in China are based on the Grameen Bank model. Allegiance to this model has probably constrained the innovative potential of the microfinance movement in China. Internationally, there are many alternative models which include features such as individual lending (BRI), flexible loan duration and repayment frequency (Banco Sol), and larger groups and no training component (Association for Social Advancement (ASA) in Bangladesh, village banking by the Foundation for International Community Assistance, or FINCA). It remains an open empirical question which design features matter most for program success. In a large and heterogeneous country such as China, it is likely that loyalty to any one model will be counterproductive.

### (a) *Opinions on program design*

Table 12 presents survey results on the opinions of Chinese microfinance members about program design features. What people want is not always what will best serve program goals, but the heterogeneity in reported attitudes is suggestive.

#### (i) *Loan amount*

Members across all programs on average prefer loans of 2,280 yuan, with this value

Table 12. *Opinions on microfinance program design*

	Total	NGO	Mixed	Government
1. How large a loan would you prefer? (yuan)	2280	2531	2081	1911
2. Preferred loan duration (%)	58	62	55	54
(1) ≤ 3 months	7	1	18	2
(2) 4–6 months	6	4	12	0
(3) 7–12 months	70	78	49	89
(4) 13–24 months	13	10	19	9
(5) >25 months	4	7	2	0
3. Preferred repayment frequency (%)	12	10	14	13
(1) 1 week	26	40	9	10
(2) 2 weeks	10	6	19	5
(3) 3–4 weeks	28	24	32	31
(4) 1–6 months	28	22	28	52
(5) >6 months	8	8	12	2
4. Would you prefer the timing of repayments to be regular or to vary? (%)				
(1) Regular	49	57	52	19
(2) Vary	49	43	44	79
(3) No preference	2	0	4	2

highest for the NGO program and lowest for the government program. All three programs begin with loans of only 1,000 yuan. A main principle of microfinance is that borrowers must prove their creditworthiness, so starting small may make sense. But, greater flexibility in loan amount based on desired projects may make loans more desirable. Desired loan sizes are largest for those engaged in services and business (4,000 and 3,354 yuan on average), and smallest for those raising livestock (1,680 yuan).

#### (ii) *Loan duration*

There does not seem to be great dissatisfaction with the current one-year length of microfinance loans, with 70% preferring the current duration, and about 17% preferring longer durations. Households with more land tend to prefer longer durations.

#### (iii) *Repayment frequency*

Only one-fourth of members prefer the program's weekly repayment schedule. Support is much higher in the NGO program (40%) than in the other programs. More popular repayment frequencies are 3–4 weeks (28%) and 1–6 months (28%). Frequent repayments are considered desirable by programs because they facilitate learning about potential repayment problems earlier and help force households to maintain cash flow discipline. High repayment frequency, however, can be a burden to farmers without strong cash flows (especially those without off-farm income and whose projects

have long gestation periods). The percentage of respondents favoring less frequent repayment is highest for those engaged in cropping (81%), followed by livestock (65%) and business (62%).

#### (b) *Chinese characteristics*

There are many reasons to be optimistic about China's microfinance movement. The surveyed NGO and mixed programs charge a modest interest rate that does not appear to deter poor borrowers. Yet, the pilot NGO programs are approaching financial sustainability thanks to unusually low operating costs and high rates of repayment. In the most successful surveyed program (the NGO program), repayment is nearly 100% and the program has effectively established key microfinance principles of peer screening and monitoring, dynamic incentives, and regular repayments. Subjective and econometric estimates of program impact find evidence of positive effects on income. Thus, the early microfinance pilot programs serve as useful models for what can be achieved by well-run microfinance programs in China.

It will not necessarily be easy to replicate this success throughout China. Reasons for concern relate back to distinguishing Chinese "characteristics." First, China's poor are concentrated in remote, mountainous regions where agriculture (cropping and livestock) is more common. Agricultural projects take longer than trade and manufacturing projects to produce cash

flow. For households lacking diversified incomes, weekly repayments can cause difficulty, even hardship, especially during certain times of the year. Remote locations also increase the travel time required for weekly meetings, increasing participation costs for both rich and poor. A large majority of surveyed participants prefer less frequent repayments. Relatively high dropout rates suggest that some households may be discouraged by the costs of participation even at moderate interest rates. This evidence provides justification for more flexibility in loan contract terms, especially the repayment schedule. Some programs in other countries have even been successful eliminating group lending altogether. In China, too, a number of programs have altered design features and experimented with loan contract terms (Table 1) or very different microfinance models (e.g., Caohai group revolving funds, CIDA village banking project).

Second, we are skeptical about the prospects for government-run microfinance programs. The surveyed government program does not target the poor effectively, does not effectively establish basic principles, and achieves low repayment rates. In these respects, the program differs little from the failed subsidized loan program it replaced. These problems are due both to overly rapid expansion without proper preparation and to inherent incentive conflicts when local government officials manage targeted programs. This pessimistic view contrasts with some positive accounts of the role of village governance structures in Indonesian microfinance programs (Morduch, 1999b, but see Holloh, 1998, for evidence of problems). Different outcomes may be attributable to differences in the accountability of local leaders to the populations they serve or

the role of bank supervision. Concerns about agency problems in government programs should be openly recognized and if the government insists on administering programs, efforts should be made to provide strong managerial incentives and independence to program managers.

Third, China's microfinance movement should be part of an overall strategy to create a rural financial sector with a diversity of institutions that face competition and specialize in meeting the needs of groups with different demand characteristics (ranging from banks to cooperatives to microfinance institutions). Reform should push on all fronts. In particular, efforts to encourage existing financial institutions to profitably target previously excluded savers and borrowers with innovative contracts (e.g., Aus Aid collaboration with the ABC, Development International Desjardins project with the RCC) may have the greatest potential to expand financial services throughout rural China. Moreover, in order to expand outreach, it will be important eventually to allow successful microfinance institutions to take deposits as recognized financial institutions. Possible tradeoffs between targeting and sustainability should be acknowledged and discussed openly. There is considerable evidence that only some of the poor will benefit from greater credit access, so that there is a real danger that the recent surge in donor funding of microfinance programs may overlook more pressing needs facing many of the poor. The Chinese experience may be instructive for other countries that share "Chinese characteristics" such as mountain poverty, a strong government regulatory and administrative role in development initiatives, and a relatively unreformed financial sector.

## NOTES

1. There are over 10,000 microfinance institutions worldwide. The World Bank estimates that \$400–600 million dollars of donor funds are earmarked for microfinance each year (Economist, 1999).

2. Morduch (1999a), however, finds no program impacts other than improved consumption smoothing using the same data from Bangladesh as Pitt and Khandker (1998).

3. Even in nonremote areas, the cost of meetings can be high and discourage borrowers from participating, and there is a trend toward offering individual loan products for successful borrowers to reduce drop-out.

4. Until 1999, rural cooperative foundations (RCFs, or *nongcun hezuo jijinhui*) could also be found in many townships, especially in richer areas (38% of all townships in 1996). The RCFs were quasi-government

organizations under the administrative supervision of the Ministry of Agriculture. In 1996, RCF deposits were estimated to be one-ninth that of RCCs. A national survey found that 24% of RCF loans went to TVEs and 45% to households. RCFs often had significant involvement of township officials, lack legal status as financial institutions, and often charged effective interest rates above regulated rates. Following a 1998 State Council circular, they were dissolved in 1999.

5. The Agricultural Development Bank of China (ADBC, or *nongye fazhan yinhang*) separated from the ABC as one of three policy banks established in 1994, with branches at the county level. In 1996, the ADBC accounted for 10% of national lending. Ninety percent of loans were for agricultural procurement, mainly grain.

6. Survey conducted by the authors in 1997 of 450 households living in poor counties in six provinces (Henan, Jiangxi, Shaanxi, Gansu, Sichuan, and Guizhou).

7. Inflation rates were less than 5% in Bangladesh and Bolivia in 1998, and 9% in Indonesia before the financial crisis. See Morduch (1999b) for a comprehensive review of international experience.

8. Interest is 80 yuan for a 1,000 yuan loan, with half paid immediately and half at the end of the 50-week loan duration. Weekly principle repayments are 20 yuan. In addition, members pay a small group fund of 50 yuan deducted from the loan amount and returned after successful loan repayment as well as a savings requirement of one yuan per week.

9. From poverty survey.

10. Willingness to pay in revolving funds may be greater since the payments go back into the collective pot to finance future loans.

11. Daily labor wage in poor rural areas is typically 10–15 yuan (poverty survey). Given a poverty line of 800 yuan per capita and a dependency ratio of 1.5, income for a laborer should be 2000 yuan per year, or about seven yuan per day assuming 300 work days in a year.

The opportunity cost of time may, however, be lower for women and be highly seasonal.

12. We avoid using data from program sites because estimates may be biased if incomes reflect access to microfinance programs, and eligibility or participation is based on initial wealth. Regressions control for between-county differences.

13. Adding asset value to a regression including only county dummies increases the  $R^2$  by 10%.

14. These calculations are consistent with international standards for determining financial sustainability and sustainable interest rates (e.g., CGAP, 1996; Micro-Banking Bulletin, 1998).

15. The question on reasons for dropping out was asked only for the mixed program.

16. Based on separate probit model estimates (not reported) of dropping out as a function of project types and household characteristics (same variables as in eligibility and participation equations).

17. This is because eligibility criteria's effect on participation is discontinuous, whereas the effect of land or other assets on income is continuous.

18. The instruments are household characteristics  $X_{it}$  interacted with a dummy variable for eligibility.

19. Nonprogram villages are a representative sample chosen by China's State Statistical Bureau. For the mixed and government programs, control villages are those in a neighboring county.

20. This approach follows Morduch (1999a). Morduch suggests estimating both with and without village fixed effects in case village effects are not constant across village groups (especially rich versus poor). When we omit village effects, coefficient estimates are negative, likely due to negative unobservables in program villages.

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APPENDIX A

Table 13. *Estimated coefficients for impact regressions (dependent variable: household income)*

	NGO		Mixed		Government	
	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.
<i>OLS</i>						
Member	0.149	0.106	0.190	0.208	0.212	0.406
Fixed assets	0.0727	0.0273	-0.00320	0.0357	0.156	0.0874
Livestock	0.0055	0.0262	-0.0516	0.0417	0.00363	0.0569
Cultivated land	0.201	0.123	0.667	0.195	0.496	0.410
High quality land	-0.0100	0.0178	0.0232	0.0510	-0.0769	0.0829
Labor	0.133	0.0602	0.145	0.120	-0.0540	0.236
Education (of labor)	0.0212	0.0211	0.0941	0.0421	0.0400	0.0790
<i>IV-durables</i>						
Member	1.39	1.58	-2.19	1.29	4.43	3.78
Fixed assets	0.0673	0.0366	0.0178	0.0512	0.155	0.157
Livestock	0.00709	0.0346	0.0700	0.0868	-0.119	0.149
Cultivated land	0.199	0.162	0.668	0.273	1.19	0.959
High quality land	-0.00522	0.0243	-0.106	0.0990	0.228	0.307
Labor	0.0666	0.115	0.212	0.171	-0.320	0.485
Education (of labor)	0.0374	0.0346	0.112	0.0598	-0.116	0.198
<i>IV-eligibility</i>						
Member	0.541	0.360	0.198	0.487		
Fixed assets	0.0710	0.0283	-0.00327	0.0359		
Livestock	0.00603	0.0271	-0.0520	0.0474		
Cultivated land	0.201	0.127	0.667	0.195		
High quality land	-0.00848	0.0185	0.0236	0.0564		
Labor	0.112	0.0650	0.145	0.120		
Education (of labor)	0.0263	0.0223	0.0941	0.0423		
<i>Program in village</i>						
Program	-0.0938	0.0973	-0.131	0.187	-0.134 <sup>a</sup>	0.214
Fixed assets	0.0601	0.0204	0.0249	0.0253		
Livestock	0.0459	0.0177	-0.0144	0.0237		
Cultivated land	0.326	0.107	0.492	0.134		

Continued next page

Table 13—(continued)

	NGO		Mixed		Government	
	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.
High quality land	0.00320	0.0143	-0.00366	0.0342		
Labor	0.0723	0.0470	0.142	0.0849		
Education (of labor)	0.0183	0.0167	0.0911	0.0272		
<i>Eligible and program</i>						
Eligible and program	0.394	0.254	0.144	0.317		
Fixed assets	0.0671	0.0206	0.00460	0.0283		
Livestock	0.0232	0.0183	-0.0211	0.0272		
Cultivated land	0.258	0.112	0.685	0.163		
High quality land	-0.00241	0.0147	0.0171	0.0430		
Labor	0.120	0.0487	0.161	0.0941		
Education (of labor)	0.0232	0.0169	0.0952	0.0305		

<sup>a</sup> Estimated jointly with mixed program (same region).